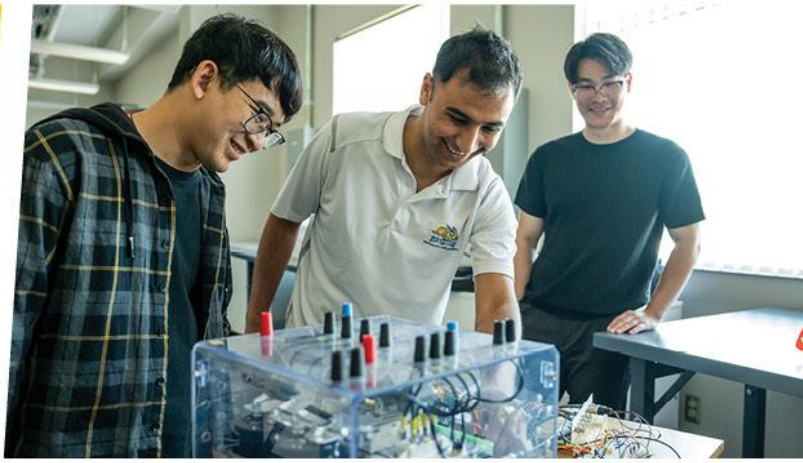




South Dakota State University

GRADUATE CATALOG

2026-2027











South Dakota State University

Graduate Catalog 2026-2027

Per SDBOR Policy 2.3.1:

The information contained in this catalog is the most accurate available at the time of publication, but changes may become effective before the next catalog is published. It is ultimately the student's responsibility to stay abreast of current regulations, curricula, and the status of specific programs being offered. Further, the university reserves the right, as approved by the Board of Regents, to modify requirements, curricula offerings, and charges, and to add, alter, or delete courses and programs through appropriate procedures. While reasonable efforts will be made to publicize such changes, a student is encouraged to seek current information from appropriate offices.

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About SDSU

History and Mission: The Land-Grant Heritage

A Brief History

South Dakota State University is the state's largest, most comprehensive institution of higher education. The land-grant heritage of South Dakota State University, which began with a college founded in 1881, originates from local and national legislation dating back to 1862. The Morrill Act, passed by Congress and signed by President Abraham Lincoln in July of that year, embodied a revolutionary idea in higher education. The legislation created a new type of educational institution, one to give instruction in both liberal and practical arts to people in all parts of the country who needed to work for a living. In 1889, when South Dakota achieved statehood, Congress, acting under the Morrill Act of 1862, granted 160,000 acres of land for the use and support of the "agricultural college." By accepting this land allocation, the State had to designate the Agricultural College as a land-grant college.

State Agriculture Experiment Stations were formed in 1887 under the Hatch Act of Congress, which provided for establishment of agricultural experiment stations in connection with Land-Grant universities and colleges. The stations were established to conduct research to address relevant agricultural and rural issues for their home states and regions.

The Cooperative Extension Service was established in 1914 to provide useful, current, research based agricultural, home, family, and youth related information to the people of the State. Federal funds are appropriated through the U.S. Department of Agriculture, which cooperates with state colleges of agriculture and counties in conducting planned programs of extension work.

Historically, the Land-Grant institutions have had the responsibility of training individuals to be U.S. Military officers in the event of war or military emergency, thus, alleviating the need to have a large standing army. During WWII, SDSU as a Land-Grant University served a central role in preparation of students and graduates for military service through ROTC. SDSU continues to have an exemplary ROTC program. Following the war, SDSU and other Land-Grant institutions accepted an international responsibility contributing to economic and agricultural revitalization in war devastated countries. International responsibility has continued to evolve as a part of the Land-Grant mission.

In 1917, the Smith-Hughes Act, provided for the preparation of teachers for secondary-school level instruction in agriculture, industrial arts, and home economics. By 1928 South Dakota State College had been chosen to conduct this program.

As of 1923 South Dakota State College had an instructional program organized under five divisions: Agriculture, Engineering, General Science, Home Economics, and Pharmacy. Thirty years later, General Science was renamed the Division of Science and Applied Arts. The Nursing Division was created in 1956. The following year all graduate work was organized into the Graduate Division.

Status as a university began when the South Dakota Legislature changed the name of South Dakota State College to South Dakota State University on July 1, 1964. At that time the following colleges were created: Agriculture and Biological Sciences, Arts and Science, Engineering, Home Economics, Nursing, Pharmacy, and the Graduate School.

In 1994 the Federal Government granted 29 tribal colleges (four in South Dakota) land-grant status. Tribal land-grant college extension programs are conducted in cooperation with the traditional (1862) land-grant institutions; therefore, SDSU has an on-going relationship with the tribal colleges through the land-grant linkage.

Today SDSU consists of the following colleges:

- College of Agriculture, Food and Environmental Sciences
- College of Arts, Humanities and Social Sciences
- College of Education and Human Sciences
- College of Natural Sciences
- College of Nursing
- College of Pharmacy and Allied Health Professions
- Graduate School
- Jerome J. Lohr College of Engineering
- Van D. and Barbara B. Fishback Honors College

South Dakota State University Mission Statement

(SDBOR Policy 1.2.5)

Organizational Structure

South Dakota State University (SDSU) was granted the responsibility to serve as the State of South Dakota's land-grant institution of higher education through the federal enabling act of statehood in 1889. With this responsibility came the expectation to collaborate and partner with other land-grant universities throughout the United States to ensure groundbreaking discoveries and technologies positively impacting society.

SDSU understands its identity and responsibility as the state's land-grant university. This understanding extends to the tripartite mission of the 1862 Morrill Act, 1887 Hatch Act, and the 1914 Smith-Lever Act, with responsibility for teaching and learning; research, scholarship, and creative activity; and service and outreach.

SDSU has fundamental units serving the state of South Dakota:

- **Main Campus (Brookings)**: South Dakota State University is the state's land-grant university, headquartered in Brookings, South Dakota, with extension, teaching, outreach, and other activities throughout the state. The SDSU mission statement is grounded in the tripartite mission of teaching and learning at the undergraduate and graduate levels; research, scholarship, and creative activity; and service and outreach. The research mission is one of the cornerstones of a land grant university and directly supports educational programming content. The campus serves residential students in undergraduate, professional, and graduate programs. The campus includes the College of Agriculture, Food and Environmental Sciences, College of Arts, Humanities and Social Sciences, College of Education and Human Sciences, College of Natural Sciences, College of Nursing, College of Pharmacy and Allied Health Professions, and the Jerome J. Lohr College of Engineering.
- **Agricultural Experiment Station (Statewide)**: Agriculture Experiment Station (AES) is authorized by SDCL § 13-58-11 and tightly couples with the universities research mission. SDSU's research mission is to find solutions to

current problems surrounding the environment, food production, nutrition, and economics, as well as identify opportunities for the future. The new knowledge created from our AES research enhances the quality of life in South Dakota through the beneficial use and development of human, economic and natural resources. In addition to enhancing the quality of life in our state, AES research directly supports the teaching programs offered by the College of Agriculture, Food and Environmental Sciences, the College of Education and Human Sciences, the College of Arts, Humanities and Social Sciences, the College of Natural Sciences, and the educational programs delivered by SDSU Extension.

- **Cooperative Extension (Statewide)**: As a cornerstone of SDSU's land-grant university mission and authorized by SDCL § 13-54-1, SDSU Extension empowers citizens to be more competitive and successful in our growing global economy through education and technical training or assistance. Its' purpose is to foster a learning community environment that empowers citizens to advocate for sustainable change that will strengthen agriculture, natural resources, youth, families, and the communities of South Dakota.
- **State Animal Disease Research and Diagnostic Laboratory**: Critical to the mission of SDSU, and authorized by SDCL § 13-58-13, is located at the main campus in Brookings, South Dakota.

Academic Curriculum and Credentials

SDSU is statutorily authorized through SDCL § 13-58.1, to offer academic programs in the liberal arts and sciences and professional education in agriculture, education, engineering, home economics, business economics, nursing, and pharmacy. SDSU has the authority to credential certificates, associate degrees, baccalaureate degrees, master's degrees and doctoral degrees provided formal approval by the Board of Regents. The Board of Regents may authorize academic programs outside of the statutory mission as identified by the Regents due to workforce needs, strategic needs of the state, etc. All program requests must comply with SDBOR Policy 2.3.2 and 2.3.3.

Authorized Degrees

Undergraduate Degrees

- Associate of Arts (A.A.)
- Associate of Science (A.S.)
- Bachelor of Arts (B.A.)
- Bachelor of Fine Arts (B.F.A.)
- Bachelor of General Studies (B.G.S.)
- Bachelor of Landscape Architecture (B.L.A.)
- Bachelor of Music Education (B.M.E.)
- Bachelor of Science (B.S.)
- Certificates in related fields

Graduate Degrees

- Doctor of Nursing Practice (DNP)
- Doctor of Pharmacy (Pharm.D.)
- Doctor of Philosophy (Ph.D.)
- Master of Architecture (M.Arch.)
- Master of Arts (M.A.)
- Master of Education (M.Ed.)
- Master of Engineering (M.Eng.)
- Master of Mass Communication (M.M.C.)
- Master of Public Health (M.P.H.)
- Master of Science (M.S.)
- Certificates in related fields

Research and Economic Development

As part of its land-grant mission, SDSU has a robust research enterprise including, but not limited to, the Agricultural Experiment Station and SDSU Extension, which provides a connection for scientists and South Dakota residents, taxpayers, and producers. SDSU is strongly committed to extending the research discovery and best practices to producers and consumers across the state, nation, and world.

Public university research and innovations feed growth and resiliency in South Dakota's economy. The state of South Dakota's land-grant university mission drives real solutions to dynamic challenges through research-based discovery and innovation. High quality, leading-edge university research programs also develop a knowledge-based workforce. University faculty engaged in research, scholarship and creative activity best serve our students as they are current and informed in their evolving discipline resulting in a high-quality educational experience for all students. Undergraduate students participating in rigorous land-grant university research gain experiential learning that differentiates them in the marketplace. Graduate students in land-grant university research laboratories gain hands-on research experience and leadership skills they use to drive innovation in the private and public sectors. SDSU's fundamental assets for fulfilling its land-grant research mission are stable, talented faculty and modern, reliable facilities and specialized equipment.

Accreditations and Certification

(SDSU Academic Accreditations and Certifications)

South Dakota State University is accredited as an institution by the Higher Learning Commission. The most recent reaffirmation of accreditation occurred in 2019-2020, and SDSU received the full 10-year accreditation, with the next reaffirmation of accreditation in 2029-2030.

In addition, many academic programs are accredited or approved by their respective professional organizations and agencies.

- Accreditation Board for Engineering and Technology (ABET)
- Accreditation Commission for Programs in Hospitality Administration (ACPHA)
- Accreditation Council for Pharmacy Education (ACPE)
- Accreditation Council for the Education of Nutrition and Dietetics (ACEND)
- Accrediting Council on Education in Journalism and Mass Communication (ACEJMC)
- American Association of Museums Accreditation Commission (AAM)
- American Association of Veterinary Lab Diagnosticians (AAVLD)
- American Chemical Society
- American Nurses Credentialing Center (ANCC)
- American Society of Agricultural and Biological Engineers (ASABE)
- American Society of Animal Science (ASAS)
- American Society of Biochemistry and Molecular Biology (ASBMB)
- American Society of Health-System Pharmacists (ASHP)
- Association to Advance Collegiate Schools of Business (AACSB)
- Aviation Accreditation Board International (AABI)
- College Reading and Learning Association (CRLA)
- Commission on Accreditation of Athletic Training Education (CAATE)
- Commission on Accreditation for Respiratory Care (CoARC)
- Commission on Accreditation for the Exercise Sciences (CoAES)
- Commission on Collegiate Nursing Education (CCNE)
- Council for Interior Design Accreditation (CIDA)
- Council for the Accreditation of Counseling and Related Education Programs (CACREP)
- Council for Accreditation of Educator Preparation (CAEP)
- Council on Education for Public Health (CEPH)
- Department of the Army
- Institute for Food Technologists (IFT)
- Landscape Architectural Accreditation Board (LAAB)
- National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)
- National Architectural Accrediting Board, Inc (NAAB)
- National Association for Education of Young Children (NAEYC)
- National Association of Schools of Art and Design (NASAD)
- National Association of Schools of Music (NASM)
- National Association of Schools of Theatre (NAST)
- National College Learning Center Association (NCLCA)
- National Collegiate Honors Council
- Society for Range Management (SRM)
- Society for Simulation in Healthcare (SSH)
- Society of Health and Physical Educators (SHAPE)
- United States Geospatial Intelligence Foundation (USGIF)

Research, Scholarship, and Creative Activity

The University is committed to excellence in its mission of research, scholarship and creative activity. Discovering new knowledge, ideas, and processes are fundamental Land-Grant University contributions to economic development and quality of life. Students are afforded opportunities to enrich their intellectual experience and differentiate themselves by participating in leading-edge research, scholarship, and creative activity.

To support research, scholarship, and creative activities, the University and its faculty actively secure sponsorship funds through grants, cooperative agreements, and contracts with other institutions, state and federal agencies, foundations, and the private sector. Student participation is encouraged as a way to begin an exciting career path and to gain unique experience. Students can often conduct research through mentorship with faculty and publish the results of their work. An annual event highlights graduate student research, scholarship, and creative activity accomplishments.

South Dakota State University is classified by the Carnegie Classification of Institutions of Higher Education as a Research 2: High Spending and Doctorate Production institution.

For information, contact the Division of Research and Economic Development.



Admission Information

This section outlines Graduate School admission policies at South Dakota State University. The South Dakota State University Policy and Procedure Manual is the definitive source for the most current South Dakota State University policies. Policies duplicated on other websites or in print may not be the most current version. All policies documented on the site are official and supersede policies located elsewhere. South Dakota State University is governed by state and federal law, administrative regulations, and policies of the South Dakota Board of Regents (SDBOR) and the State of South Dakota.

Admission to Graduate School

For pursuit of an advanced degree or certificate, students must be admitted to a graduate program. A completed application must be submitted to Graduate and International Admissions. Students who are not pursuing an advanced degree but wishing to enroll in graduate coursework should apply as a non-degree seeking student by completing a non-degree seeking application prior to the start of the semester.

Application Materials

To be considered for admission, a student must submit the following documents by the application deadline:

- Completed admissions application
- Official or unofficial academic transcripts from all postsecondary institutions attended
- Application fee of US $40
- Graduate Record Exam (GRE) (if applicable and required by the program)
- Resume (if applicable and required by the program)
- Statement of Purpose (if applicable and required by the program)
- Letters of Recommendation (if applicable and required by the program)

Additionally, international applicants must submit:

- Copy of Passport photo page
- Proof of English language proficiency

Application Form

A completed online application must be submitted and accompanied by a non-refundable application fee of $40.00. Certain programs may have additional application fees. There is no fee for non-degree seeking applications.

Graduate Application Deadlines

For students seeking admission for the Fall semester, the application deadline is April 15th preceding the start of the fall semester term. For students seeking admission for the Spring semester, the application deadline is October 15th preceding the start of the spring semester term.

Students should check with their academic program of interest for specific admission deadlines which may differ from the application deadlines listed above.

Official Transcripts

Upon enrollment and matriculation to the university, all students must submit their final, official transcripts and official score reports. For fall semester enrollment, all final official transcripts and score reports must be submitted by October 1st of the fall semester. For spring semester enrollment, all final official transcripts and score reports must be submitted by February 15th of the spring semester.

As a courtesy to the applicant, Graduate and International Admissions will retrieve all required South Dakota regental transcripts.

Transfer students who have completed a degree outside the United States must provide a professional transcript evaluation from an evaluation service accredited by the National Association of Credential Evaluation Services (NACES) or Association of International Credential Evaluators (AICE) for the purpose of transfer credit evaluation. Examples of acceptable services include, but are not limited to: Educational Perspectives, World Education Services (WES), and Foreign Credits. Evaluations must include transcript authenticity, Grade Point Average (GPA) calculation, and U.S. degree equivalency and be sent directly from the evaluation service. Submitted transcripts become the property of South Dakota State University and will not be returned. Official transcripts/transcript evaluations can be sent electronically (sdsu.gradadmissions@sdstate.edu) or by mail. The Graduate and International Admissions mailing address is as follows:

Office of Admissions
South Dakota State University
Enrollment Services Center
Box 511
Brookings, SD 57007

Baccalaureate Degree

Admission to a graduate program requires that the applicant has a baccalaureate degree, or equivalent, from an institution of higher learning. The baccalaureate-granting institution must be one of recognized standing (including U.S. institutions accredited by agencies recognized by the U.S. Department of Education) whose requirements are substantially the same as those of South Dakota State University program(s) in which the advanced degree will be taken.

If applicants are enrolled in U.S. institutions, and if the application is submitted before the bachelor's degree is complete, a partial transcript must be submitted as part of the application packet, and a student may be admitted provisionally. A transcript indicating the bachelor's degree has been awarded must be received no later than the dates referenced above related to official transcripts.

Program Requirements

Individual programs may have additional admission requirements. Applicants should inquire about such requirements from the program of interest. Additional admission requirements for each program are provided under Academic Programs.

Graduate Record Examination (GRE)

The Graduate Record Examination is not a Graduate Admissions requirement; however, some programs may require test scores to be submitted. Please review the admission requirements for the program of interest. For the location of testing centers and more information regarding the GRE, please contact the Educational Testing Service.

If submitting Graduate Record Examination scores, please send scores directly to SDSU through ETS. The SDSU GRE code is 6653. Applicants to Jerome J. Lohr College of Engineering (JJLCOE), should send scores using the JJLCOE GRE code of 2862.

International Student

International Enrollment Deposit

All admitted international students must submit a $400 international student enrollment deposit by the deposit deadline noted to enroll at the university. For a Fall semester enrollment, the international enrollment deposit deadline is May 1st. For a Spring semester enrollment, the international enrollment deposit deadline is December 1st.

The international student enrollment deposit will be used as a deposit on a student's enrollment for the first two terms of enrollment and split and applied to a student's university account for the first two terms. This is not an additional fee but rather a pre-payment of part of your university expenses. Students should note that this is non-refundable if you choose not to enroll, so please only pay the deposit once your visa has been issued and are ready to confirm your attendance at SDSU.

English Proficiency Scores

To demonstrate English language proficiency, international applicants must meet the minimum scores on one of the following exams.

Exam	Minimum Score or Grade
TOEFL	4.0
IELTS	6.0
Duolingo English Test	100

Some programs may require higher test scores for admission and are listed within each program section in this catalog. Also, programs may require additional testing upon arrival.

Waiver of English Language Proficiency Test based on Country of Citizenship

Citizens of Anguilla, Antigua and Barbuda, Australia, Bahamas, Barbados, Belize, Bermuda, British Overseas Territories, Cameroon, Canada, Cayman Islands, Christmas Island, Cook Islands, Dominica, Eswatini, Falkland Islands, The Gambia, Ghana, Grenada, Kenya, Kiribati, Ireland, Jamaica, Jersey, Liberia, Malawi, Marshall Islands, Micronesia, Montserrat, New Zealand, Nigeria, Norfolk Island, Philippines, Pitcairn Islands, Puerto Rico, Rwanda, St. Helena, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Sierra Leone, Sint Maarten, South Africa, South Sudan, Tanzania, Tonga, Trinidad and Tobago, Turks and Caicos Islands, Uganda, United Kingdom (England, Scotland, Wales) and Northern Ireland , Virgin Islands, Zambia, and Zimbabwe do not need to submit English Language proficiency test score to meet the English Language Proficiency requirement for admission to the university.

Waiver of English Language Proficiency Test based on U.S. accredited Degree

Applicants that have completed a baccalaureate or graduate degree from an U.S. accredited institution of higher learning do not need to submit an English Language Proficiency Test.

Waiver of English Language Proficiency Test based on U.S. Education

Applicants that have completed two full semesters in a degree program within the United States may not need to submit an English Language Proficiency Test. Determination will be made on a case-by-case basis, dependent on overall GPA of completed coursework – work with the Graduate and International Admissions office for details.

Financial Support

Evidence of available financial support for at least one year must be submitted to the Office of International Student and Scholar Engagement for issuance of an I-20. Applicant must also show evidence that the financial support will be continued throughout their program, at least two years for master's degrees or four years for doctoral degrees. For any financial assistance from this institution, the applicant must contact the program.

I-20 Visa Requirements

Following admission, international students must submit a Financial Certification Form including supporting financial documentation and schedule an I-20 interview with SDSU's Office of International Student and Scholar Engagement. These materials and interviews are required for SDSU to issue Form I-20, which students will use to apply for an F-1 visa. Failure to successfully complete the I-20 interview process or to be successfully issued an I-20 by the university may result in revocation of a student's admission.

Students applying for a visa cannot be admitted conditionally into any graduate program. For inquiries, please contact the Office of International Student and Scholar Engagement.

Application Processing

When all required admissions documents are received, the application and supporting documentation are forwarded to the program for review. The program makes a recommendation of acceptance or denial to the Director of the Graduate and International Admission who, in turn, acts on the recommendation and notifies all concerned parties of the decision in the form of acceptance or denial sent electronically.

Admission Status

Full Admission

An applicant may be admitted without provisions or conditions if a bachelor's degree, or equivalent, has been earned, all undergraduate prerequisites for major and minor (if required) fields of study have been satisfactorily completed, and the applicant has an average of 3.0 or higher on a 4-point grading system (A = 4, B = 3, C = 2, D = l). Admission to all degree programs is competitive and limited by the availability of personnel, facilities, and funding. International applicants must meet the English Language Proficiency for admission to the university.

Provisional Admission

Provisional admission status is an admission processing status for students who are admitted and are completing the final coursework in their undergraduate degree, or have outstanding official documentation pending, such as final transcripts or degree confirmation. Failure to successfully complete the provisions of their admission and/or submit official documentation pending, such as final transcripts, will result in revocation of admission from the program and the university.

Conditional Admission

Conditional admission may be offered to applicants who are academically admissible but must complete specific prerequisite coursework, leveling requirements, or other academic conditions established by the program as a condition of their admission to the program and the university. International applicants cannot be conditionally admitted to the university.

A student admitted conditionally must satisfy any conditions within the first semester of enrollment in the graduate program. Performance required to meet conditions will be provided to the student by their respective department. Failure of a student to meet the stated conditions may result in dismissal from the program.

Deferring Admission

Admitted students may request to defer their admission up to two academic terms. The deadline for requesting an admission deferral is August 15th for a fall semester enrollment and December 31st for a spring semester enrollment. Admission deferrals are intended to provide flexibility for students experiencing delays related to visa processing, personal financial circumstances, personal emergencies, military obligations, health concerns, or other documented situations that prevent enrollment in the admitted term. Deferrals are not guaranteed and are subject to institutional review, program availability, and compliance with applicable university, state, and federal regulations. Admitted students should submit their deferral request by completing the Enrollment Decision Form prior to the start of classes for the admitted term. International students requesting deferrals may be required to submit updated immigration documentation prior to issuance of a new Form I-20 or DS-2019. Students must continue to meet all English language proficiency, financial certification, and immigration requirements applicable to the deferred term.

Admission Exception

Admission exception may be made for applicants who do not meet one or more minimum admission requirements but demonstrate strong potential for graduate success through professional experience, prior academic performance, research experience, or other qualifications. Admission by exception requires departmental recommendation. Failure to meet English language proficiency cannot be an admission exception for an international applicant.

Non-Degree Seeking Student

Students who are not pursuing a degree may register as a non-degree seeking student. There is no application fee to register as a non-degree seeking student, though the student is responsible for tuition and fees. Non-degree seeking students may not receive graduate assistantships, financial aid, or enroll for thesis/dissertation credits. A non-degree seeking student may apply for admission into a graduate program using the normal procedures outlined in this document. No more than twelve credits acquired under non-degree seeking student status may be applied toward a degree.

Readmission

Students formerly enrolled as graduate students at South Dakota State University and who have not maintained continuous enrollment (excluding summer semesters) must apply for readmission to their program. Graduate School policies in effect for the term of readmission will apply. Official transcripts must be furnished for graduate work taken at other institutions since last enrolled at South Dakota State University. Programs may require the student to update supporting documents for the application. Readmitted students are encouraged to contact their graduate advisor prior to registration. Students who are readmitted may be required to change their advisory committee, file a new plan of study, or resubmit other matriculation documents. The application fee will be waived for those applicants applying for readmission if the student was enrolled within the past three terms; excluding summer.

Immunization Requirements

Upon admission to the University and prior to enrolling for classes, all new students must comply with SDBOR Policy 2.2.1.2, General Admission Immunization Requirements. Documentation regarding immunizations from the student must be submitted within 45 days after the start of classes. Students may request a waiver and/or an exemption for the immunization requirements through the university's student health clinic. If granted, the waiver will not extend to third party organizations, including clinical sites.

Residency Requirements

South Dakota State University is required to establish residency status of all applicants. Please review the residency requirements prior to completing an application. A full description of qualifications is available in the Residency Application.

Graduate applicants may also qualify for reduced tuition programs such as WICHE, SD Advantage, or Child of Alumni if they meet specific requirements established by the SD Board or Regents and South Dakota State University.

Appeal of Denied Admission Decision

(SDSU Policy 2:26)

Any applicant who is denied admission may request a reconsideration of the decision as follows:

1. The applicant shall contact the Director of Graduate and International Admissions within thirty calendar (30) days of receipt of the admission decision to seek informal reconsideration.
2. In the request for reconsideration, the denied applicant must cite one or more of the following reasons as the basis for the reconsideration:
    a. The admission decision resulted from administrative error or from misapprehension of some material fact or circumstance; or
    b. The admission decision departed substantially from accepted academic standards for the discipline and/or the University; or
    c. Circumstances suggested that the admission decision reflected the prejudiced or capricious consideration of applicant opinions or conduct unrelated to admission or academic standards, of student status protected under SDBOR policy, state or federal civil rights law, or of other considerations that are inconsistent with the bona fide exercise of academic judgment.

    The denied applicant must then explain in detail how one or more of the above bases for reconsideration describe the admissions decision. If none of the above bases for reconsideration are specifically cited in the request, or if the request offers no explanation as to how the admission decision fits one of the above bases for reconsideration, the request for reconsideration shall be dismissed by the Director of Graduate and International Admissions. The Director shall otherwise review the applicant's concerns, shall provide explanation, and shall reconsider the admission decision if the student provides convincing argument for doing so. The Director shall document the contact date, decision, and rationale for the decision by and submit the same to the Vice Provost for Graduate Education and Extended Studies, or designee, within fifteen (15) working days after the applicant makes the contact. A copy of the document shall be sent to the applicant and Program Officials.
3. If, after discussion with the Director of Graduate and International Admissions, the applicant's concerns remain unresolved, the applicant may appeal the matter in writing to the Vice Provost for Graduate Education and Extended Studies, or designee. The written request for reconsideration must be submitted to the Vice Provost for Graduate Education and Extended Studies, or designee, within ten (10) working days from the date the applicant received the response of the Director of the Graduate School. The Vice Provost for Graduate Education and Extended Studies will render a decision within fifteen (15) working days of receipt.



Tuition, Fees, and Financial Assistance

This section outlines policies and general information on tuition, fees, and financial aid at South Dakota State University. The South Dakota State University Policy and Procedure Manual is the definitive source for the most current South Dakota State University policies. Policies duplicated on other websites or in print may not be the most current version. All policies documented on the site are official and supersede policies located elsewhere. South Dakota State University is governed by state and federal law, administrative regulations, and policies of the South Dakota Board of Regents (SDBOR) and the State of South Dakota.

Tuition and Fees

Tuition and fee rates are set according to the policies of the South Dakota Board of Regents and are subject to change without prior notice. For current information view the SDSU Financial Aid or SDSU Tuition and Fees webpage.

Residency Requirements

In order to establish residency for tuition purposes you must live in South Dakota for twelve (12) consecutive months immediately preceding the first scheduled day of classes of the semester. Attendance at the college or university controlled by the Board of Regents does not count in determining the twelve (12) month period of residence.

Residency qualifications for tuition purposes may be obtained by contacting the Admissions Office at 605-688-4121.

Billing and Payment of Student Accounts

All tuition, fees, housing, food service and miscellaneous charges to student accounts will be on an electronic billing (eBilling) system and can be viewed on SDePay, a secured website via the Internet. Payment of the student account can also be made electronically (ePayment) through SDePay. Students can authorize parents, spouse or other individuals to view the eBill and make an ePayment on their student account.

Each student makes full payment of charges based on the number of registered credits, residency status, campus housing and other charges by the day after census date. Late fees will be assessed starting on the day after the established payment due date. SDSU encourages students to make payments through SDePay electronic checks. Payment of tuition and fees can be made by cash or check directly to the University Cashier's Office SAD 136 PO Box 2201, Brookings, SD 57007-2098.

Payment of tuition and fees using a debit or credit card can only be made through SDePay, electronic billing and payment system. American Express, Visa, MasterCard and Discover cards are accepted by SDePay. A 2.85% service fee is assessed by and payable to NelNet, host provider of SDePay. No service fee is charged for electronic check payments. Authorized payers may view and pay the students' account by going to the South Dakota Public Universities Authorized Payer login at SDePay. Students may link to SDePay through their secure account on MyState.

Automatic payment plan options are available online through SDePay with a $45 set up fee per semester. The monthly payment amount would automatically occur on the fifth of the month to pay the balance throughout the semester. Please visit the Cashier's Office webpage for more information

Late Charges

A fee is charged if tuition and fees are not paid during the regular established payment periods. Failure to satisfy financial obligations when due may result in a student's administrative withdrawal from the University.

Indebtedness

If you are indebted to the University and do not satisfy financial obligations when due, you may be denied admission to the University. You may be administratively withdrawn from the University after notice from the University and you will not be permitted to register until the indebtedness is paid. This applies to your indebtedness to the University for tuition, fees, required deposits, room and board and financial aid, but not obligations due to student organizations. All accounts that the University is unable to collect will be submitted for collection and forwarded to a credit reporting bureau. The debtor will be responsible for all collection fees and attorney's fees that result from collection of an account.

Special Tuition Rates

(SDBOR Policy 5.5.1)

The South Dakota Board of Regents and the South Dakota State Legislature have allowed special tuition rates for students enrolled in state support courses for children of alumni, students from the following states as part of the SD Advantage Tuition program: Colorado, Illinois, Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North Dakota, Wisconsin, and Wyoming, persons 65 years of age or older, graduate fellows and assistants, Reserve Officer Training Corps Cadets, military science courses, Western Regional Graduate Programs, employees of the State of South Dakota, members of the SD National Guard, Veterans and others who performed war service, children and spouses of National Guardsmen disabled or deceased in line of duty, visually impaired persons, children of residents who died during service in armed forces, dependents of prisoners or missing in action, certain elementary and secondary teachers, school counselors, and vocational instructors, survivors of certain fire fighters, certified law enforcement officers and emergency medical technicians, rehabilitation services' clients, and non-resident South Dakota National Guard members.

Fees for Auditing Courses

Regular tuition and fees, per credit, will be charged for auditing a course. Registration as an auditor is by petition. Auditing courses will be a matter of record (recorded on the academic transcript). Grades will be designated by the instructor as Audit (AU). Audit courses are not counted in calculating undergraduate or graduate full-time student status.

Thesis and Dissertation Fees

Students are responsible for following all deposition protocols and paying all archiving fees associated with a thesis or dissertation.

Refunds

(SDBOR Policy 5.7)

Students may be entitled to a financial refund based on the status of their registration cancellation or reason for the withdrawal. Students should consult with their instructor, academic advisor, or department/school leadership prior to

cancelling registration or withdrawing from the University. Contact the Registrar, Enrollment Services Center, for information regarding registration, cancelation, and withdrawals.

Tuition and Fees Refund Policy

The end of the drop/add period for standard (those that conform to the regular semester schedule) and non-standard courses offered in a semester is the date the first 10% of the term ends or the day following the first class meeting, whichever is later.

Refunds for Dropped Courses

A student receives a 100% refund of tuition and per-credit-hour fees for courses dropped within the drop/add period. No refund shall be provided for courses dropped after that time, except by administrative action. Any course meeting within a standard semester but for less time than the standard semester shall be treated as a non-standard semester course for refund purposes. Courses offered during summer school session are considered non-standard courses.

Students who withdraw, drop out, or are expelled within the drop/add period receive a 100% refund of tuition and per-credit-hour fees. Students who withdraw, drop out, or are expelled after the drop/add period for which they are assessed may be entitled to a pro-rated refund as set forth herein.

Refunds for Withdrawals

Students who withdraw from the University may be entitled to a refund of tuition and fees and institutional charges calculated through 60% of an enrollment period. The refund shall be determined by computing the percentage of an enrollment period remaining after the date of withdrawal multiplied times the tuition and fees originally assessed the student. At no time will refunds be awarded after the 60% point of the enrollment period.

Cancelled Registration

If a student's registration is cancelled, no tuition and fee payment is due. If payments have been made, a student is eligible for a full refund.

Extensions and Waivers

The University President, or a designee, may extend or waive the time periods in the following circumstances:

- the death of the student;
- the student's disabling condition or severe illness;
- the death, disability, or severe illness of immediate family members causing severe financial hardship to the student; or
- other extenuating circumstances beyond the student's control.

Students may complete the appropriate petition process if extenuating circumstances may warrant exception of the published refund policy. Petitions are available through Registrar Forms and Petitions.

Refunds for Residence Hall Fees

Students with a room contract who withdraw from the Regental system will receive a proportional refund at the time of withdrawal up to the 60% point after which no refund is available.

Refunds for Food Service Fees

Students with a food service contract who withdraw from the Regental system will receive a proportional refund of their food service plan and 100% of the unused flex dollars at the time of withdrawal up to the 60% point. After the 60% point no refund is available.

Refunds for First Day Access Charges

A student receives a full refund of First Day Access charges for courses dropped within the drop/add period. No refund will be provided for charges related to courses dropped after the drop/add period has ended. Access to the First Day content will be removed upon a student's drop date or date of withdrawal.

Refunds for Parking Permits

A student holding a valid parking permit for fall and spring semesters may receive a refund after the completion of the fall semester provided the student withdraws from the university and returns the actual permit or terminates the virtual permit prior to the beginning of the second semester.

Military Service - Withdrawal without Penalty

Refund of Tuition and Fees

Students required to withdraw from the Regental system before completing a semester may receive credit or refund privileges if:

- they are regularly enrolled and belong to a military unit called for duty, or
- they are drafted and not eligible for deferment, and
- the discontinuance of class attendance is on the last practicable day before reporting for duty as determined by the student's Home University.

Eligible students who receive credit, or an incomplete, in progress, or normal progress grade for any course for which they are enrolled shall not be entitled to any refund of tuition or fees paid.

Eligible students who do not receive an incomplete, in progress, or normal progress grade or credit for a course in which they are enrolled shall be entitled to a full refund of tuition and academic fees.

The following table determines the eligibility for a grade or refund.

Options for Final Grades and Refunds

	Weeks Remaining in Standard Semester	
	More Than 4 Weeks	Less Than 4 Weeks
Course Grade	Refund	Student Options
A	Refund	A or Refund
B	Refund	B or Refund
C	Refund	C or Refund
D	Refund	Refund
F	Refund	Refund
S	Refund	S or Refund
U	Refund	Refund
I, IP, NP	Refund	I, IP, NP or Refund

Note: Course Grade is as determined by the instructor, either the grade to date or the final grade earned to date.

Refunds for Room and Board

Refunds for room and board shall be pro-rata refunds for the entire semester. Board flex plans will be refunded at 100% of the unused value.

Refunds for Books

Refunds for books for military personnel called up for active duty is as follows:

- New books with no markings or writing – 100% of purchase price
- New books with highlighting or writing – 75% of purchase price
- Books purchased used – 100% of used price

Books must be returned within the semester. Normal campus refund policies apply to books that are not returned prior to the end of the semester.

Return of Funds for Federal Financial Aid Recipients

When a student receiving Federal Title IV financial aid officially withdraws from SDSU, the amount of Title IV funds (excluding Federal Work-Study earnings) the student earned during the enrollment period is prorated as of the student's withdrawal date. Students earn Title IV funds based on the percentage of days completed through the 60% point in the enrollment period. Once a student has completed more than 60% of the enrollment period, the student has earned 100% of Title IV funds.

If a student withdraws before completing 60% of the enrollment period, SDSU calculates the portion of the aid disbursed that was earned by the student before the withdrawal date. The unearned Title IV funds are returned to the respective federal aid programs. Unearned aid is the amount of disbursed Title IV aid that exceeds the amount of Title IV aid earned.

For students who fail to officially withdraw when they stop attending classes and are assigned "F" grades for all courses for the semester, the Return to Title IV Funds policy requires SDSU to calculate the earned financial aid amounts based on the 50% point of the semester. Unearned federal aid is returned to the respective federal aid programs. If the aid was disbursed after the 50% point of the semester, the student will be required to return 100% of the funds.

Title IV Financial Aid includes Federal Direct Loans, Federal Pell Grants, Direct PLUS Loans (parent or graduate), Federal TEACH Grants, Federal Iraq Afghanistan Service Grants, and Federal Supplemental Educational Opportunity Grants.

For purposes of the Return of Title IV Funds calculation, a student's withdrawal date is the date the student began the withdrawal process by contacting the SDSU Registrar's Office; or the midpoint of the period for a student who leaves during the term without notifying SDSU, or at SDSU's discretion, the student's last documented date of academically-related activity.

Students may also be considered to have withdrawn from the University if the student is attending modular classes (such as summer courses) that do not span the entire length of the term, and the student fails to complete all of the days the

student is scheduled to attend. Exceptions are made for students who complete their programs of study during the term, complete at least half-time enrollment during the term, or complete modular courses spanning at least 49% of the term or semester. For additional information please refer to the Return of Title IV Funds Policy.

SDSU is required to provide information on the Return of Title IV Funds policy and procedure to students. This information is available at on SDSU's website and from the SDSU Financial Aid Office. SDSU is also required to calculate the Return of Title IV Funds for federal financial aid recipients who withdraw from SDSU and to return any Title IV funds to the respective Title IV funds account. The student is responsible to repay any Title IV funds that the student was determined to be ineligible for via the Return to Title IV funds calculation.

Financial Aid

Student financial assistance programs including grants, scholarships, student loans and work-study are administered through the SDSU Office of Financial Aid and Scholarships located in the Enrollment Services Center. The Financial Aid Office may be contacted at 605-688-4695 or by email.

Financial aid information including information on how to apply for financial aid and financial aid forms can be found be found on our website. Visit the Financial Aid Policy page for information about our policies.

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. Graduate assistantships, fellowships, and traineeships are administered by the SDSU Departments offering the programs.

Qualifying graduate students who complete the FAFSA are eligible to receive Unsubsidized Federal Direct Loans. Starting summer 2026, Federal Direct Loans for students who enroll less than full-time for the aid year will be reduced proportionately to the student's less than full-time credit load.

Starting July 1, 2026, Direct Graduate PLUS Loans are no longer available unless the student meets federal credit requirements and qualifies for a limited exception. To qualify for a limited exception, students must meet all of the following conditions:

- Prior to July 1, 2026, have borrowed a Direct Loan for the same graduate level SDSU program of study.
- Remained continuously enrolled in the same SDSU program of study.
- Have been enrolled in the SDSU program of study less than the published length of the program.

Eligibility for the limited exception expires at the earlier of the end of the Spring 2029 term or when the student no longer meets all of the conditions listed above.

Students may also borrow private or alternative loans through a bank, credit union or state agency. SDSU does not have a preferred lender list, and students may obtain a private education loan from any eligible lender. Visit SDSU's Private Lender page and click on FastChoice for a list of lenders commonly used by SDSU students.

A student may not receive financial assistance that exceeds the student's cost of attendance.

General Eligibility Requirements

To qualify for federal financial aid graduate students must:

1. Be enrolled as a regular student in a SDSU degree program
2. Be enrolled at least half-time (5 graduate level credits)
3. Be a United States citizen or eligible non-citizen
4. Not be in default on a federal student loan or owe a refund to a federal student grant program
5. Maintain Satisfactory Progress
6. Submit a FAFSA for the award year and meet all Verification and other FAFSA requirements
7. Meet all other federal and institutional requirements

Students can access their financial aid awards on the Financial Aid Self Service portal.

Satisfactory Academic Progress

To receive Federal Title IV Financial Aid, students must meet the University's Satisfactory Academic Progress Standards. Generally, to meet the standards, students must

- Maintain a cumulative GPA of 2.0 or better for undergraduate programs and of 3.0 or better for graduate programs
- Complete with a passing grade 67 percent of the credits attempted
- Complete the degree program with credits attempted that are not greater than 150 percent of the credits required for the degree program

Satisfactory academic progress is calculated annually at the end of the spring term for students enrolled in programs greater than one year in length. For students in programs that are one year or less in length, Satisfactory Academic Progress is calculated at the end of each term. Students who fail to meet Satisfactory Academic Progress Standards will be suspended from receiving Federal Financial Aid.

Suspended students may appeal to continue receiving financial aid. Appeals must document the mitigating circumstances that prevented the student from being successful as well as the changes that have occurred that will allow the student be successful going forward. Appeals are reviewed by a committee. Students will be notified of the outcome of the appeal in their Jacks email account. It may take up to four weeks for appeals to be reviewed, and student bills cannot be deferred pending the outcome of the appeal. The appeal form can be found on the Financial Aid Forms page.

Please refer to the University's Satisfactory Academic Progress policy to view the full policy.



Policies and General Academic Information

This section outlines academic policies as well as general information related to academics at South Dakota State University. The South Dakota State University Policy and Procedure Manual is the definitive source for the most current South Dakota State University policies. Policies duplicated on other websites or in print may not be the most current version. All policies documented on the site are official and supersede policies located elsewhere. South Dakota State University is governed by state and federal law, administrative regulations, and policies of the South Dakota Board of Regents (SDBOR) and the State of South Dakota.

Academic Integrity and Academic Appeals

(SDSU Policy 2:4, SDSU Policy 3:1, SDBOR Policy 2.9.2, SDBOR Policy 3.4.1)

South Dakota State University has taken a strong and clear stand regarding academic dishonesty. Academic integrity embodies ethical principles to act responsibly and take responsibility for one's actions. Integrity and honor function as forms of a "social contract" where individuals have a duty to follow the rules and norms of academia as well as a duty to ensure their peers also follow such rules and norms. Undergraduate and graduate students at the university are expected to maintain the highest standards of academic conduct; if violated, the university takes a strong and clear stand regarding academic dishonesty. The consequence of academic dishonesty ranges from disciplinary probation to expulsion. For additional information on the academic dishonesty and academic appeals process and procedure reference SDSU Policy 2:4, SDSU Policy 3:1, SDBOR Policy 2.9.2, and SDBOR Policy 3.4.1.

Academic Performance and Progression

Credit Load

Full time students are required to take a minimum of 9 credits. Half-time students are required to take a minimum of 5 credits. Three-fourths time students are required to take a minimum of 7 credits. Students may take a maximum of 12 credits per semester. Domestic students must be enrolled at least half-time (5 credits) to receive Federal Aid. Loan deferment may also require full or part-time status. Eligibility varies with financial aid programs and students should contact their lender for requirements.

To be eligible for overload status (more than 12 credits), a student must have approval by the Graduate School Director. The Graduate School Director may certify that a student enrolled for less than 9 credit hours is to be considered full time for purposes of awarding assistantships and tuition reduction.

Graduate Assistants

(SDSU Policy 2:19)

All graduate assistants must register for a minimum of one (1) credit (including summer) in order to receive an assistantship.

Credits needed for full-time student status for graduate assistants:

	All Semesters
25% time assistantship	7
49% time assistantship	5

*For financial purposes, students need to be enrolled in at least 5 credits regardless of semester of study. Students with financial aid questions should email the Financial Aid Office or visit their website.

Graduate assistantships are designed to provide financial support and intellectual guidance in support of the student's education. The primary goal of an assistantship is to facilitate progress toward the graduate degree. Assistantships are not the form of compensation for the time graduate students spend on their thesis or dissertation research. Students on research assistantships are expected to work on their own research over and above the time for which they are compensated. Graduate Research Assistants must complete a work log documenting compensable hours.

See the Graduate Assistant website for more specific criteria, guidelines, and more information regarding Graduate Assistantships.

International Graduate Student Credit Requirements

Fall/Spring Semester

International graduate students are required to pursue a full time course of study to maintain non-immigrant status in accordance with the U.S. Code of Federal Regulations. International students without an assistantship must register for nine (9) credit hours per semester to pursue a full course of study. Students with an assistantship would need to enroll in the appropriate number of credits corresponding with the percentage of their assistantship. Students who fail to maintain a full course of study will be considered out of status and may be terminated. The exceptions to a full course of study are limited but very important. Students must seek the approval of a Designated School Official (DSO) in the Office of International Affairs for authorization to drop below nine (9) credits per semester. See the International Student Handbook for more information.

Summer Semester

Full time enrollment is required when the summer session is an international student's first semester. According to the United States Citizenship and Immigration Services (USCIS), international students who begin their studies during a summer session must be enrolled full time in order to maintain their F1/J1 status. It is a violation of USCIS regulations to permit an international student to begin a program and only register for 1 credit the first semester they are here. Graduate programs that intend to admit international students for the summer session/term must ensure that students will be able to enroll in enough credits to maintain their full time status. Students without an assistantship would need to register for 9 credits. Students with an assistantship would need to enroll in the appropriate number of credits corresponding with the percentage of their assistantship. International students are allowed to register for less than a full time course load during all subsequent summer terms. This policy only pertains to international students who are beginning their programs during a summer term.

Registration and Status

To maintain active status, students must be registered each semester of the academic year (excluding summer). Students completing their final oral exam or other degree requirements during a summer semester must be registered. All graduate assistants must register for a minimum of one (1) credit (including summer) in order to receive an assistantship.

Students who are not registered each semester (excluding summer) will be moved to inactive status and will be required to reapply before continuing their graduate studies.

Continual Registration for Dissertation, Thesis, Research/Design Paper

All graduate students who have completed the dissertation/thesis/research-design paper credits specified on their plan of study are required to do one of the following each semester during the academic year and summer term until the degree is awarded:

1. Students who have completed the required number of dissertation/thesis/research-design paper credits on the plan of study, but are still involved in research work as part of the degree requirement, must continue to register for one credit for each succeeding semester, including summer.
2. Students who miss the deadline for graduation in a given semester, but successfully complete their final oral exam and all other requirements prior to the start of the next semester, do not have to enroll in that semester in order to graduate.

Registration is the student's responsibility and must be completed and payment made by the appropriate deadline each semester. Failure to register may delay award of the degree and thereby require additional registrations.

Academic Probation

(SDSU Policy 2:26)

Graduate students whose plan of study cumulative grade point average drops to less than 3.0 will be placed on academic probation and a hold will be placed on his/her registration for the subsequent semester. This hold can be removed only after the student and his/her advisor submit a plan of improvement form to the Graduate School indicating how the GPA will be brought up to 3.0 or better. In the semester following the hold, the student must have a GPA of 3.0 or better. If students do not meet the GPA criteria, they may be subject to dismissal from their program or the university.

Academic Progress of Thesis and Dissertation Coursework

(SDSU Policy 2:26)

All students pursing a master's degree - thesis option or a Doctor of Philosophy degree must complete a thesis and dissertation, respectively. Each semester a student is engaged in activities in support of these objectives the students must be enrolled in the in x798 or x898 (or equivalent). The instructor, in consultation with the student, will determine the goals of the coursework for that semester. The student should be notified of the goals in writing sufficiently early in the semester to allow for completion of the goals. Each x798 or x898 credit hour will be graded with either an "S" or "U", for Satisfactory or Unsatisfactory, respectively. Written explanation of any "U" grade should be delivered to the student no later than the final day of instruction. Students receiving a "U" grade for x798 or x898 in two (2) semesters may be dismissed from the program. Recommendation for dismissal will be communicated from the instructor and Department Head to the Director of the Graduate School who will conduct the review. The review will consider the student's entire academic performance weighed against a) the necessary research, clinical, and/or scholarly abilities to complete the student's chosen graduate degree and (or) b) the rate of progress toward degree completion.

Annual Evaluations

(SDSU Policy 2:26)

Thesis students and doctoral students shall be provided written progress evaluations on an annual basis. The Annual Evaluation should address progress toward completion of formal course work and the thesis or dissertation project.

Attendance Policy

(SDSU Policy 2:5, SDSU Policy 2:12)

Policy

a. Teaching and learning is a reciprocal process involving faculty and students. Faculty members have an obligation of holding classes on a regular basis and students have an expectation to attend and participate in classes on a regular basis. Faculty members determine the specific attendance policy for courses under their direct supervision and instruction. Attendance procedures must be stated in written form, in the course syllabus, and distributed or posted electronically to students at the beginning of each course. If attendance is required and will impact grading, this expectation shall be included in the syllabus.
b. Any exceptions to the faculty member's written attendance policy due to verified medical reasons, death of a family member or significant other, or verified extenuating circumstances judged acceptable by the instructor or the Office of Academic Affairs, will be honored. Absences for vacations, breaks, or personal interviews do not constitute a valid reason for absence.
c. Faculty and administration will honor officially approved absences where individuals are absent in the interest of officially representing the University. Appropriate sanctioned activities include: Collegiate club sports and competitions; Conferences and workshops recognized by the University not related to academics; Commitments on behalf of the University (Students' Association, Band, Choir, etc.); Intercollegiate athletics; and Professional activities recognized by the University related to academics (professional conference attendance, etc.)
d. Students with official excused absences will be given appropriate make up work or instructor-determined equivalent opportunities for obtaining grades as students who were in attendance. Students with official excused absences are not to be penalized in course progress or evaluation. However, should excused absences be excessive, the faculty member may recommend withdrawal from the course(s) or award an incomplete grade.
e. Attendance policies apply in the online classroom. Faculty members determine the specific attendance policy for courses under their direct supervision and instruction. Attendance procedures must be stated in written form and made available to students on the first day of the course. Common strategies for demonstrating "attendance" in an online course include login requirements per week, an identified number of discussion postings per week, consistent contact with peers and instructor, and/or other assignments as determined by the instructor. Also, students are expected to login to their class on the first day of the semester.
f. Student-Athlete Class Attendance
    i. No student-athlete may be absent from more than ten (10) class sessions (including required laboratory sessions) of a given course in a semester for official University travel for competition.
    ii. Athletic excused absences will not be approved during final examination period with the exception of required conference or NCAA activities.
    iii. In the interest of safety for student-athletes and staff, missed class-time resulting from travel delays associated with inclement weather will be excused.

Procedures

a. If a student has an accident, falls ill, or suffers some other emergency over which they have no control, the student needs to gather whatever documentation is available (e.g., copies of repair or towing bills, accident reports, or statements from health care provider) to show the instructor. Such exceptions must be communicated and negotiated between the student and faculty member prior to the absence whenever possible.
b. Requests for excused absences due to approved University-sponsored/recognized trips must be submitted and approved one (1) week prior to the trip or event. Students must present the completed approved Trip Absence Card to the faculty member prior to the trip or event to have an official excused absence. Faculty members are not required to honor incomplete or late cards. Absences for trips or activities will not be approved during finals week.
c. Student-athletes will provide notification via the Athletics Trip Absence Card or a letter to their instructors outlining expected absences. This letter will include the opponent/host, competition location, and departure/return times. Student-athletes will print and hand-deliver the letter to each instructor, preferably during the first week of class, and will email a copy of the letter to their instructors for all courses.
d. Arrangements regarding attendance should be negotiated with faculty members. If this is not possible, the students should go first to the department head/school director, and if necessary, next to the dean. The student may contact the Office of Academic Affairs if conflict cannot be resolved at these levels.
e. Waivers to the above rules, as they pertain to student athletes, require the approval of the Intercollegiate Athletics Board or its designee at the time of scheduling or as soon thereafter as is reasonably possible (if circumstances dictate the need for finalizing a contract or schedule prior to gaining Intercollegiate Athletics Board approval).

Awarding of Academic Degrees

(SDBOR Policy 2.6.2)

The Board approves the awarding of academic degrees after receiving the university president's recommendation on behalf of the university. In recommending that the Board approve the award of a degree to an individual, the President certifies that the student has satisfied, or is expected to satisfy, the

applicable degree requirements in Board Policy or in curricular requests approved by the Board.

- Board approval is contingent upon the student's completion of all of the degree requirements. A degree may be awarded only after the student has completed the degree requirements.
- Approval of institutional recommendations by the Board shall not be to waive any degree requirement for an individual student.
- Recommendations for awarding degrees shall be submitted to the Board through its Executive Director and Chief Executive Officer and shall appear on the agenda of a regularly scheduled Board meeting.
  - Universities are authorized to hold commencement exercises prior to Board approval of institutional recommendations.
  - The recommendations shall be submitted in a uniform format determined by the Board.
  - Recommendations shall be submitted to the Board through its Executive Director and Chief Executive Officer according to the following schedule:
    - Recommendations for May commencement exercises or graduation shall be provided to the Board at its regularly scheduled May meeting.
    - Recommendations for August commencement exercises or graduation shall be provided to the Board at its regularly scheduled August meeting.
    - Recommendations for December commencement exercises or graduation shall be provided to the Board at its regularly scheduled December meeting.

Catalog of Graduation

(SDBOR Policy 2.6.2)

- The catalog of graduation begins with the summer term and ends with the subsequent spring term.
- Every student is required to have a catalog of graduation. New and transfer students are assigned the catalog in effect at the time of their initial enrollment at the university from which they are seeking a degree. Students may elect a catalog of graduation that is later than their initial catalog but may not elect a catalog of graduation that is earlier than their initial catalog.
- In order to receive a degree, a student must meet the program requirements listed in his/her catalog of graduation.
- Students who discontinue enrollment at any Regental university for more than two consecutive semesters are assigned the catalog in effect at the time of their re-enrollment as their catalog of graduation.
- Students are considered to be in continuous enrollment for purposes of the catalog of graduation so long as any break in enrollment at any Regental university is for two or fewer consecutive semesters (excluding summer) and students maintain their degree seeking status at the same Regental university.
- Students who change their degree seeking status from one Regental university to another Regental university are assigned the catalog of graduation that corresponds to the term they are admitted to their new degree granting university.
- Students who are not currently enrolled and who petition to graduate based on coursework previously completed at a Regental university are assigned the catalog in effect during the term they wish to graduate.

Commitment to Freedom of Expression

(SDBOR Policy 1.6.2)

South Dakota State University is committed to the principles of expression protected by the First Amendment to the United States Constitution. Those principles include a commitment to freedom in learning, academic freedom, freedom of expression, and freedom of association. In addition, the university is committed to fostering a learning environment that exposes students to and encourages exploration of a variety of ideological and political perspectives. Any complaints about violations of this commitment can be made to the Title IX/EO Coordinator.

Complaints and Concerns

South Dakota State University's primary objective is to assist students meet their academic goals through a positive and rigorous academic experience. In the case that a student has a concern, the university's procedures should be followed to address these concerns and/or complaints. We strive to resolve these issues at the university level quickly and fairly.

Academic Concern and/or Complaint

Where minor concerns arise, we ask students to raise these concerns with the instructor or appropriate staff member with the goal of resolving the issue at this level. If the concern is not resolved at this level, we recommend visiting with the appropriate department head, school director, and dean as needed.

If a complaint cannot be handled through these channels, the students may address the concern/complaint formally through the Academic Affairs office.

Academic Affairs
South Dakota State University
Morrill Hall (SAD) 230
Brookings, SD 57007
Phone: 605-688-4173

Academic Appeals Policy

Non-Academic Concern and/or Complaint

South Dakota State University strives to provide a safe and secure environment of integrity for students, employees, program participants, and visitors. If your concern requires immediate assistance, please dial 911 or contact the University Police Department at 605-688-5117 (111 from any campus phone).

For non-emergency concerns or complaints, you may make an online report, or you may call the university's toll-free hotline at 844-880-0004. The online report and hotline are provided through an electronic reporting system, and you may choose to remain anonymous when providing information. In addition to the electronic reporting system, you may make specific reports as set forth on the university's Report It webpage.

State Regulatory Information

Any person may file a complaint with the Executive Director of the South Dakota Board of Regents to obtain a review and appropriate action on allegations that an institution governed by the Board:

- Violated South Dakota consumer protection laws.
- Engaged in fraud or false advertising.
- Violated South Dakota laws relating to the licensure of postsecondary institutions or programs.
- Failed to provide an educational program meeting contemporary standards for content and rigor.
- Failed to assign qualified instructors.
- Violated one or more accreditation requirements.

Where the institution has not already considered and acted upon the complaint, the Executive Director will refer the matter to the institutional president for review and action. If the complainant challenges an institutional disposition of the complaint, the Executive Director will provide for an independent review and disposition of the allegations. The Executive Director may be contacted at:

The Office of the Executive Director of the South Dakota Board of Regents
306 East Capitol Avenue, Suite 200
Pierre, SD 57501-2545
Phone: 605-773-3455

Consumer Protection

Allegations involving violation of consumer protection laws may also be filed with:

Office of Attorney General
Division of Consumer Protection
1302 E Hwy 14 Ste 3
Pierre, SD 57501
Phone: 605-773-4400, 1-800-300-1986 (in-state only)
Fax: 605-773-7163
Email: consumerhelp@state.sd.us
Web: online complaint form

Out-of-State Distance Education Students

Pursuant to the United States Department of Education's Program Integrity Rule, South Dakota State University is required to provide all prospective and current students with the contact information of the state agency or agencies that handle complaints against postsecondary education institutions offering distance learning or correspondence education within that state.

For students residing in a SARA state, the complaint must be brought to the institution's home state SARA portal entity. Students may submit complaints to the SD-SARA Portal Entity.

For students in California, please contact the appropriate entity listed below.

- California Bureau of Private Postsecondary Education - Filing a Complaint

SDSU's Accreditor Complaint Procedure

SDSU is accredited by the Higher Learning Commission (HLC), an independent corporation that was founded in 1895 as one of six regional institutional accreditors in the United States. SDSU's institutional accreditation information is available along with program specific accreditation.

Information regarding filing a complaint with the Higher Learning Commission.

Courses/Credits

Schedule Adjustments

(SDBOR Policy 2.1.2, SDBOR Policy 2.8.1, SDBOR Policy 5.7)

Drop/Add Period

The drop/add period is the time period during which students may adjust their academic schedule for the term without financial or academic consequences. The last day of the drop/add period for a course is designated as the census date for that course and is the official date for enrollment reporting. The end of the drop/add period for standard and non-standard courses offered in a semester shall be the date the first 10 percent of the term ends or the day following the first class meeting, whichever is later. When calculating 10% of the term, breaks of five or more days are not included when counting the total number of days but Saturdays, Sundays, and holidays are. Student registrations can only be added to courses after the end of the drop/add period by approval of the chief academic officer (or designee) of the university.

Last Day to Drop

For standard classes, the last day to receive a grade of "W" is determined by calculating 70 percent of the class meeting days in the term, counting from the first day of classes in the term and rounding up if the calculation produces a fractional value greater than or equal to 0.5.

For any non-standard course, the last day to receive a grade of "W" is based on the number of class meeting days for the course, using the method described above.

Similar proportional dates would be established by the Registrar's Office for summer, interim and other courses taught outside of the normal nine-month academic year.

Students may not drop a course or withdraw from the System after the time period specified above.

If extenuating circumstances (i.e., illness) have prevented class participation, a petition for an individual drop may be filed.

Add/Drop Procedures

Dropping or adding courses should be discussed with one's academic advisor. Courses can be dropped on Self-Service or in the Registrar's Office.

Students should not discontinue enrollment in a class without processing discontinuance via the official drop procedure. An "F" or "U" will be recorded for an unofficial drop.

Grades for Dropped Courses

Graduate students who drop a course shall receive a withdrawal grade if that action occurs anytime between the day after the census day for that course and the day that corresponds with the completion of 70 percent of the class days for that course.

Auditing a Course

Registration as an auditor in a course may be permitted. No credit is given. The audit fee is the established tuition and fee rate. **Registration for audit may be accomplished only after registration day by presenting an Audit/Satisfactory/Unsatisfactory form to the Registrar's Office, Enrollment Services Center.**

Auditing courses by graduate students will be a matter of record (recorded on their academic transcript). An AU grade is given for Audit. This grade does not calculate into the semester or cumulative grade point average. Audit courses are counted as part of the 12 hour rule for overloads. **Audit courses are not counted in calculating undergraduate or graduate full-time student status.**

Cancellation of Courses

In general, entry level graduate courses (500- or 600-level courses) will not be offered to fewer than seven (7) students and graduate only (700- or 800-level courses) will not be offered to fewer than four (4) students unless there is some special reason for doing so. Instructors will cancel courses with low enrollment or for other reasons only with the approval of the dean of the academic college concerned.

Repeated Courses

(SDBOR Policy 2.4.2)

All courses taken appear on the student's academic record, but when a course is repeated, only the most recent grade is calculated into the cumulative GPA. This policy applies to both undergraduate and graduate coursework. Relative to number of repeats allowed:

1. A student may enroll in a graduate course (for which credit is granted only once) no more than two times without permission of the Director of the Graduate School.
2. A student will be allowed unlimited enrollments in a graduate course for which credit toward graduation may be received more than once. An institution may limit the number of credit hours for courses that may be taken more than once that apply toward the requirements for a major.

Please notify the Registrar's Office, Enrollment Services Center, when a course, whether failed or passed, is repeated.

Transfer of Credits

(SDSU Policy 2:17, SDBOR Policy 2.2.2.1)

Graduate credits earned at other institutions may be applied toward an advanced degree if they were awarded a grade of at least "B" (3.0), if they are approved by the advisor or advisory committee and the Graduate School, and if they are not part of a conferred degree. Transfer credit is limited to graduate credit as defined by the institution issuing the transcript. In order to be accepted by the Graduate School, the offering institution must accept the credits toward their graduate program without restriction at the graduate level. Dual-numbered courses offered primarily for upper-level undergraduate credit are not transferable as graduate credit. Requests for transfer of credits are usually made at the time a plan of study is approved and must be supported by an official transcript submitted to the Graduate School. A minimum of sixty (60) percent of all credits in the program must be earned at SDSU unless the program is part of an approved joint or cooperative degree. Credits earned at another institution as a part of an approved joint or cooperative degree program will not count as transfer credits for the purposes of this policy.

Undergraduate Students Taking Graduate Courses

(SDSU Policy 2:22, SDBOR Policy 2.4.2, SDBOR Policy 2.8.1)

Undergraduate students who have completed a minimum of 90 credit hours may request to enroll in 500- and 600-level courses. Students will pay graduate tuition and the courses will be recorded on a graduate transcript. A maximum of 12 graduate credits may apply to an undergraduate degree. SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements designates standards concerning the use of graduate credit to fulfill undergraduate degree requirements as allowed by SDBOR Policy 2.4.2.

Withdrawal

(SDSU Policy 5:28, SDBOR Policy 2.1.1, SDBOR Policy 2.1.2, SDBOR Policy 2.9.2, SDBOR Policy 5.5, SDBOR Policy 5.7)

Those finding it necessary to withdraw from the university are urged to consult with a faculty advisor to work out the best plan possible and then contact the Registrar's Office, Enrollment Services Center to process a withdrawal. Those who leave the university without processing an official withdrawal will be reported as having failed the semester's work. Grades transcripted are based on the withdrawal date. A student may withdraw from the university until 70% of instruction has been completed (contact the Registrar's Office for date information). After that date, if extenuating circumstances (i.e., illness) have prevented class participation, a petition for withdrawal may be filed through the Registrar's Office.

A student is considered withdrawn during a term if classes have begun and:

1. The student has registered for at least one course and the student has initiated withdrawal from all Regental courses in which the student was actively enrolled at the time of withdrawal, including courses in progress as well as those that have not yet begun, or;
2. The Home Institution has completed withdrawal procedures for administrative reasons including, without limitation, non-payment of tuition and fees or disciplinary sanctions.
3. Students enrolled in two or more Regental universities pursuant to financial aid consortia will be eligible for refunds as set forth herein only if they withdraw, drop out or are expelled from all classes at all Regental universities for which they have enrolled.

Students who withdraw or are administratively withdrawn, suspended or expelled from the Regental system within the drop/add period receive a 100 percent refund

of tuition and per credit hour fees. Students who withdraw or are administratively withdrawn, suspended or expelled from the Regental system after the date the first 10 percent of the term ends for the period of enrollment for which they are assessed may be entitled to a refund as set forth in SDBOR Policy 5.7.

Grades for Withdrawals from the Regental System (see "Withdrawals" for additional information)

Students who completely withdraw from the Regental system from the first day of a class(es) through census date of the class(es) will have a comment on the transcript stating Withdrawal and the date of the withdrawal. Graduate students who withdraw from the System shall receive a grade of "W" if that action occurs anytime between the day after the census day for that course and the day that corresponds with the completion of 70 percent of the class days for that course.

A notation of the date of withdrawal will be included on the student's transcript if he/she withdraws from the system.

Equal Access and Opportunity, Non-Discrimination, and Title IX

(SDSU Policy 4:3, SDSU Policy 4:4, SDSU Policy 4:5, SDSU Policy 4:6, SDBOR Policy 1.4.1, SDBOR Policy 1.4.2, SDBOR Policy 1.4.3, SDBOR Policy 1.4.4)

South Dakota State University has a well-established commitment to maintaining a campus environment free from discrimination and harassment, as articulated by federal and state law, and university policy.

Equal Access and Opportunity and Non-Discrimination Policy

Equal Access and Opportunity

The institutions under the jurisdiction of the Board of Regents shall offer equal opportunities in employment and for access to and participation in educational, extension and other institutional services to all persons qualified by academic preparation, experience, and ability for the various levels of employment or academic program or other institutional services. The Board of Regents will not tolerate discrimination or harassment based on or related to a person's race, color, creed, religion, sex, ancestry, disability, national origin, or any other legally protected category, class, or characteristic recognized under applicable law.

Non-Discrimination

The Board reaffirms its commitment to non-discrimination and providing equal access and opportunity in accordance with state and federal law. Redress for alleged violations of those laws may be pursued at law or through the procedures established by the provisions of SDBOR Policy 1.4.3 (see also SDSU Policy 4:6).

Responsibilities of Chief Executive Officers

The chief executive officers of the respective institutions shall be responsible for assuring that the Board's equal access and opportunity policies are communicated effectively to members of the institutional community and the public at large. Pursuant to BOR Policy 1.4.3, each institution will designate an EEO coordinator to monitor compliance with federal, state, or local laws and regulations.

The University offers equal opportunities in employment and for access to and participation in education, extension, and other services at the university to all persons qualified by academic preparation, experience, and ability for the various levels of employment or academic program or other university service. The University will not tolerate discrimination or harassment based on or related to a person's race, color, creed, religion, sex, ancestry, disability, national origin, or any other legally protected category, class, or characteristic recognized under applicable law.

SDSU, in conjunction with state and federal law and applicable SDBOR and university policies, is committed to the objectives of equal access and opportunity and nondiscrimination. Redress for alleged violations of those laws may be pursued at law, or through the procedures established in SDSU Policy 4:4 or SDSU Policy 4:6 through the university Title IX/EO Coordinator.

Michelle Johnson, Ed.D., Title IX/EO Coordinator
South Dakota State University
Human Resources, Morrill Hall Room 100
Brookings, SD 57007
605-688-4128

Harassment Policy

Harassment is a particularly harmful and illegal form of discrimination that breaks down trust within the SDSU community and impedes the ability of students, employees, and others to participate in an environment that allows them to achieve their fullest potential. Furthermore, harassment is a violation of the expectation that every individual at SDSU deserves to be treated fairly, with respect for their dignity as a person. Harassment consists of unwelcomed conduct (based on a protected category) that is severe, pervasive, and objectively offensive to the degree that denies a person's ability to participate in or realize the benefits of a University activity or resource.

Hazing and Sexual Harassment Policy

State and federal laws and policies strictly prohibit hazing and sexual harassment, including sexual assault, domestic violence, dating violence, and stalking. Such misconduct is not permitted or tolerated at SDSU or during university-sponsored events or activities. SDSU Policy 4:4 and SDSU Policy 4:5 set forth standards regarding reports of hazing or sexual harassment and the consequences of engaging in such misconduct at the university.

Non-Retaliation/Privacy

Complainants, respondents, witnesses, and other persons who have assisted, testified, or participated in any manner in any phase of a harassment or discrimination investigation will be protected against retaliation. SDSU's policy and applicable Board of Regents, state and federal regulations prohibit retaliation, coercion, harassment, interference and/or intimidation, or any other adverse action taken as a direct result of a complaint being brought forth.

All concerns are responded to and/or investigated in a highly sensitive manner. The privacy of the parties involved is protected. The process is neutral, impartial and fair.

What You Can Do To Address Harassment or Discrimination

- If safe, approach the person you feel has discriminated against or has harassed you and communicate your concern directly, in person or in writing. Ask them to stop the concerning behavior or comments immediately.
- Report harassment or discrimination to the Title IX/EO Coordinator (605-688-4128).

Reporting Complaints

Concerns should be reported directly to the Title IX/EO Coordinator.

Michelle Johnson, Ed.D., Title IX/EO Coordinator
Human Resources, Morrill Hall Room 100
Brookings, SD 57007
605-688-4128

SDSU has adopted a Compliance Hotline that offers two additional ways to report concerns, including the option to report anonymously, call 1-844-880-0004 or visit the web reporting website. If a student or employee alleges harassment or discrimination, please encourage them to report the issue or you can report on their behalf. SDSU has a legal obligation to respond to all allegations, and requests that all concerns be brought forth. SDSU has many resources and wants to support the entire university community.

The complaint process is subject to the SDSU policies listed below:

- SDSU Policy 4:3 Equal Access and Opportunity and Non-Discrimination
- SDSU Policy 4:4 Sexual Harassment
- SDSU Policy 4:5 Prevention of Dating Violence, Domestic Violence, Sexual Assault, Stalking, and Hazing
- SDSU Policy 4:6 Human Rights Complaints

What happens if a violation of the policy occurs?

The university will not tolerate discrimination, harassment, or retaliation that violates SDBOR or university policy. Where such violations are investigated and found to have indeed occurred, the university will take steps to end it immediately. An individual found to have engaged in discrimination, harassment, or retaliation will be subject to appropriate discipline, depending on the severity of the misconduct. Sanctions for employees include but are not limited to formal reprimands, suspensions without pay, reductions in responsibilities, and termination. Sanctions for students include but are not limited to disciplinary probation, suspension, and expulsion. SDSU will provide all involved parties with supportive measures to alleviate the negative effects of the harassment or discrimination allegations. Such measures may be academic, residential, employment, financial and/or transportation in nature.

For More Information

For more information on the policies established to promote equal opportunity and eliminate discrimination and harassment at SDSU visit the website.

Family Education Rights and Privacy Act of 1974

(SDSU Policy 3:2, SDBOR Policy 3.3.1, SDBOR Policy 3.3.2)

FERPA Rights

The Family Educational Rights and Privacy Act (FERPA) affords eligible students certain rights with respect to their education records. (An "eligible student" under FERPA is a student who is 18 years of age or older or who attends a postsecondary institution at any age.) These rights include:

1. The right to inspect and review the student's education records within 45 days of the day the university receives a request for access. A student should submit to the registrar, dean, head of the academic department or other appropriate official a written request that identifies the record(s) the student wishes to inspect. The university official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the university official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.
2. The right to request the amendment of the student's education records that the student believes are inaccurate, misleading or otherwise in violation of the student's privacy rights under the Family Educational Rights and Privacy Act. A student who wishes to ask the university to amend a record should write the university official responsible for the record, clearly identify the part of the record the student wants changed and specify why it should be changed. If the university decides not to amend the record as requested, the university will notify the student in writing of the decision and the student's right to a hearing regarding the request for amendment. Procedures will be maintained by the Registrar's Office. Academic challenges related to grades must be processed through SDSU Policy 2:4.
3. The right to provide written consent before the university discloses personally identifiable information from the student's education records, except to the extent that the Family Educational Rights and Privacy Act authorizes disclosure without consent. The university discloses education records without a student's prior written consent under the Family Educational Rights and Privacy Act exception for disclosure to school officials with legitimate educational interests. A school official is a person employed by the university in an administrative, supervisory, academic or research or support staff position (including law enforcement unit personnel and health staff); a person or company with whom the university has contracted as its agent to provide a service instead of using university employees or officials (such as an attorney, auditor or collection agent); a person serving on the Board of Trustees; or a student serving on an official committee, such as a disciplinary or grievance committee, or assisting another school official in performing his or her tasks. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibilities for the university.
4. The right to file a complaint with the U.S. Department of Education concerning alleged failures by the university to comply with the requirements of the Family Educational Rights and Privacy Act, the student may also attempt to resolve the issue through the Registrar's Office. The Student Privacy Policy Office administers the Family Educational Rights and Privacy Act.

Directory Information

The Federal Privacy Act (FERPA) defines some information as Directory Information. SDSU allows the release of the following Directory Information concerning a student upon request, without the consent of the student.

- student's name
- student class level (undergraduate or graduate)
- degrees received
- major and minor programs of study
- hometown
- full-time/part-time status
- honors and awards
- graduation date
- dates of attendance

Final Examinations

(SDSU Policy 2:1)

Policy

- Among the tasks of instruction is that of evaluation of a student's performance. Each course has its own particular parameters, and the evaluation procedure in any one course is not necessarily the same as that in another course. However, the most commonly used evaluation technique is that of written examinations or papers periodically due during the course, and a final examination at the end of the course. The final examination procedure has become so universal and accepted that a final examination period is set aside at the end of the semester in most colleges and universities. The Carnegie credit hour is calculated by contact hours with 15 contact hours equating to one (1) credit hour. Finals week is considered an integral part of the 17- week academic semester and critical to the credit hour calculation.
- It is the policy of the University to adhere to the following:
  - The final examination schedule will be posted. Courses offered for two (2) or more credits will have an examination time determined by the final examination schedule.
  - Multiple section final examinations will be scheduled at 7:00 a.m. through a request process from the instructor to the Registrar's office.
  - Final exams for evening courses (any course that begins at 5:00 p.m. or later) must be scheduled at the regularly scheduled time (of the course) during finals week.
  - Courses of one (1) credit or laboratory only will have the final examination or alternative learning experience during the last week of regular classes before final examination week.
  - Every course, except as noted in sections ii, iii, and iv above, is required to follow the final examination schedule.
  - Five (5) days are to be scheduled for final examinations at the end of each semester, fall and spring. Due to the variety of summer sessions and part of term courses, the final day of the summer term will be reserved for the final examination.
  - A block of two (2) hours will be available for administering individual final examinations. Within the final examination time period, instructors may reduce the time limit of an examination by prior announcement.
  - Final examinations are an integral part of the instructional program and should be given in almost all courses. Specific course types may utilize an alternative learning experience instead of a final examination; this includes capstone courses, seminars, colloquia, independent study, clinical courses, and internships and other experiential learning opportunities. Faculty teaching these courses must still provide a meaningful final assessment appropriate to the course structure and learning objectives. The discipline is responsible for defining appropriate alternative learning experiences. Use of an alternative learning experience does not preclude the requirement to hold class during the final examination week. Any additional exceptions must be approved in advance by the department head/school director and college dean.
  - Take home final examinations are permissible but the course must still meet during final examination week for an alternative learning experience. Faculty using online examinations in face-to-face courses must administer the exam according to the final examination schedule.
  - Online and hybrid courses must be held to the same standard for final examinations and can only be administered during final examination week. Online asynchronous courses may not require students to take an in-classroom or synchronous final examination.
  - If a final examination is used, it should not be given early. The published final examination schedule must be followed and the final examination in a course should be given as scheduled and not at other times, even if the faculty member and all students in a course agree to such a change. This is true even if the final examination is an alternative learning experience. It is understood that some culminating learning assessment may be administered during the last week of classes. This does not preclude the requirement however, for these classes to meet during finals week.
  - The week of classes preceding the scheduled final examination period should be used primarily for continued instruction and may include the introduction of new material. No final examinations are to be given during the seven (7) days preceding the start of the examination period (excluding one (1) credit courses). However, laboratory practicums, seminar presentations, etc. may be scheduled in that week.
  - Individual students may petition in writing for a variance from these policies, provided the instructor is satisfied that the exception is based on good and sufficient reasons, and that such an exception for an early or late examination will not prejudice the interests of other students in the course. Reasons for individual students missing a scheduled examination

will be handled by the department. Each department will decide what will, or will not, be an acceptable excuse and deal with individual hardship cases. In the event of a department approved excuse, the instructor will decide the procedure necessary to complete the course requirement. Instructors must have the consent of the department head or school director in excusing the student. Note that following the Class Attendance Policy university excused absences for trips or activities will not be approved during finals week.

- When students have four (4) or more final examinations on the same day, they are entitled to arrange an alternative examination time for an examination or examinations scheduled on that day. Such arrangements must be made no later than the end of the 12th week of the semester. Students are expected to provide evidence to the Registrar's Office that they have four (4) or more examinations to qualify for exceptions.

- This policy applies to all undergraduate and graduate students, including seniors. Graduating seniors are not exempted from final examinations.

Procedures

- Each instructor, department head/school director, and dean is responsible for enforcing the above policies. The University Attendance Policy will be used to establish acceptable excuses for missing and retaking a final examination.
- Any instructor wishing to request a waiver from administering a final examination must do so by submitting a request to the department head/school director for approval. The department head/school director will then forward such requests to the college dean. A course need only be approved once; however, if substantive modifications are made to a course, it should be resubmitted for approval.

Grades

Graduate Academic Standards/Grades

Cumulative 3.0 (B) Average

The student must maintain a 3.0 (B) cumulative grade point average for courses in the graduate plan of study. No credit is given toward a graduate degree for any grade below "C" in 500-, 600-, 700- or 800-level courses. Students must have a cumulative plan of study GPA of 3.0 in order to graduate.

Dissertation/Thesis/Research or Design Paper Credits

Graduate students usually register for dissertation/thesis/research or design paper credit during several semesters. A grade of satisfactory (S), unsatisfactory (U), or (NP) normal progress may be assigned during the semester of registration, based on progress made. Credits receiving "U" will not be credited toward the plan of study.

Seminars

A letter grade or a grade of Satisfactory (S) or Unsatisfactory (U) may be assigned at the discretion of the instructor.

Incomplete Grades

When a graduate student is given an Incomplete grade (I) for any course in the student's plan of study, the instructor may indicate in writing to the student what additional work must be completed and may establish a date at which such work must be completed. If the work is not completed in either the manner or time prescribed, the instructor may change the Incomplete grade to whatever grade is justified as an evaluation of the student's work or may allow the grade to remain Incomplete. Incomplete grades given without this procedure will remain as Incomplete on the student's record unless changed because of completion of the remaining work in the course. Incomplete coursework must be completed within one calendar year; extensions may be granted by the Director of the Graduate School.

Repeated Courses

All courses taken appear on the student's academic record, but when a course is repeated, only the most recent grade is calculated into the cumulative GPA. **Students should notify the Registrar's Office, when a course, whether failed or passed, is repeated.**

Grading

(SDBOR Policy 2.8.1)

Midterm grades are based on institutional requirements. Final grades will be assigned to the Graduate Academic Level and to all courses and sections with course numbers of 500 or greater. Plus and minus grades are not used.

Letter Grade	Descriptor	Grade Point Value
A	Exceptional	4.00 grade points per semester hour
B	Good	3.00 grade points per semester hour
C	Average	2.00 grade points per semester hour
D	Unsatisfactory	1.00 grade points per semester hour
F	Failure	0.00 grade points per semester hour
S	Satisfactory	Does not calculate into any GPA
U	Unsatisfactory	Does not calculate into any GPA
W	Withdrawal	Does not calculate into any GPA, no credit granted
AU	Audit	Does not calculate into any GPA
I	Incomplete	Does not calculate into any GPA
IP	In Progress	Does not calculate into any GPA
NG	No Grade	0 credit tracking course
NP	Normal Progress	Does not calculate into any GPA
NR	Grade not Reported by Instructor	Does not calculate into any GPA
EX	Credit by Exam	Does not calculate into any GPA
CR	Credit	Does not calculate into any GPA

AU: An audit (AU) grade may be granted only when the student has elected the AU option on or prior to the census date of the term.

CR: A credit (CR) grade may be granted only for non-course credit that is not related to an examination or to equating transfer grades to the BOR grading system. This grade is not used for any Regental university course.

EX: An examination for credit (EX) grade may be granted only for non-course credit validation obtained through a validation process. This grade is not used for any Regental university course.

I: An incomplete (I) grade may be granted at the graduate level only when all of the following conditions apply:

- A student has encountered extenuating circumstances that do not permit him/her to complete the course.
- The student must be earning a passing grade at the time the Incomplete is necessitated. Anticipated course failure is not a justification for an Incomplete.
- The student does not have to repeat the course to meet the requirements.
- The instructor must agree to grant an Incomplete grade.
- The instructor and student must agree on a plan to complete the coursework.
- The coursework must be completed within one calendar year; extensions may be granted by the Director of the Graduate School.
- If the student completes the course within the specified time, the grades that may be assigned are A, B, C, D, F, S, or U.
- If the student does not complete the course within the specified time, the Incomplete grade remains on the transcript.

IP: An in progress (IP) grade may be granted only when all of the following conditions apply:

- The requirements for the course (for every student enrolled in the course) extend beyond the current term.
- The extension beyond the current term must be defined before the class begins.
- The instructor must request permission to award IP grades for a course from his/her Department Head and Dean, and then approval must be obtained from the Chief Academic Affairs Officer.
- A definite date for completion of the course must be established in the course syllabus.

NG: A grade of NG will be used only with those course sections that are designated as Tracking/Program Sustaining (Q) and those that are assigned the code for Master's Research Problems/Projects Sustaining, Thesis Sustaining, or Dissertation Sustaining (U).

NP: A normal progress (NP) grade may be granted by an instructor when the instructor determines that a graduate student is making normal progress in a graduate Thesis/Dissertation course. If a graduate student does not enroll for a period of one calendar year, the NP grade may change to I (Incomplete) upon approval by the Director of the Graduate School. The NP grade calculates into attempted credits but does not calculate into completed credits or grade point averages.

S/U: A Satisfactory/Unsatisfactory (S/U) grade may be granted only when the entire course requires the S/U grade or the student has elected the S/U option on or prior to the census date of the term.

With the exception of an "I" that has not been completed within the specified time, any grade reported to the Registrar may be changed by recommendation of the instructor and college dean with approval of the Vice Provost for Graduate Education and Extended Studies.

Any graduating senior or graduating graduate student who receives an Incomplete or In Progress grade in the final semester in a course required for graduation, or who has not removed an outstanding Incomplete or In Progress from a previous semester in a course required for graduation by the date grades are due for the semester, will not be permitted to graduate that semester. He or she will be required to apply for graduation in a subsequent semester. Emergency situations require the filing of a petition by the student to his/her Academic Dean for approval prior to the final grading deadline for the final semester.

Grades of I (Incomplete), NP (Normal Progress), IP (In Progress) and NR (Not Reported) awarded to thesis/dissertation coursework will be changed to S (Satisfactory) upon completion of all other degree requirements. The change of grade will be conducted without specific consent of the instructor. Completion of course work with the 798 or 898 suffix awarded a U (Unsatisfactory) must be changed by standard processes.

Once a student has graduated and the degree has been recorded, the record is considered officially closed and grades can no longer be changed.

Graduation

Graduation Application

The student must submit a graduation application on MyState by the date specified by the Graduate School for the term in which completion of the advanced degree is expected. Failure to submit this application will result in a delay in graduation. Students who submit an application but fail to graduate will be assessed a $50 charge and a registration hold will be placed on their account. The registration hold will be removed once the charge is paid.

Commencement Attendance

All students are encouraged to participate in the spring commencement ceremony; however, attendance is optional. Graduate students who have not completed all degree requirements for graduation may participate in commencement; however, they will need to RSVP via MyState approximately 6 weeks prior to commencement. Graduate students will have two opportunities to participate in commencement: 1) the next regularly scheduled ceremony following completion of the degree or 2) the second regularly scheduled ceremony following completion of the degree. Students will only be allowed to attend one commencement ceremony per completed degree. Attendance at commencement or inclusion in the commencement program does not, in itself, constitute completing or receiving a graduate degree.

Diplomas are mailed approximately three months after the degree is awarded.

See the graduation website for more information regarding graduation and commencement guidelines.

Graduation Dates

(SDBOR Policy 2.6.2)

- The official date of graduation for the term is the last date of the term. For the Fall and Spring terms, this date is the last date of final examinations. For the Summer term, it is the last date of the full summer term. This date of graduation will be recorded both on the academic transcript and on the diploma.
- Commencement ceremonies may be held prior to the official graduation date or after the official graduation date.
- A student's official date of graduation shall be the official date of graduation for the term in which the student successfully completes all requirements.
- The final graduation verification date for each term will be two days prior to the Clearinghouse certification date.
    - The institution's Vice President for Academic Affairs may make an exception to the final graduation verification date for student teachers who complete their student teaching experience on a date after the verification deadline.
    - The Medical School is exempted from the final graduation verification date.
    - Other than the exceptions noted above for student teachers and the Medical School, a student's date of graduation will not be backdated. If the student does not meet graduation requirements prior to the verification deadline, the student must apply for graduation in a future term.

Postdoctoral Study

Postdoctoral students or eminent scholars who desire temporary privileges of the research facilities, staff counsel, library or seminars at the institution and who are not candidates for a degree, must obtain approval of the Department Head, Dean and/or Director concerned.

Students Called to Active Military Service

(SDBOR Policy 2.1.2, SDBOR Policy 5.7)

Students who belong to a military unit called for duty or who are drafted and not eligible for deferment and who are required to withdraw from state supported institutions before completing an academic program to which they have been duly admitted will be eligible to resume work on the program after their release from active duty. SDBOR Policy 5.7 sets forth Board policies concerning special tuition refunds and related policies that take effect when students are required to report for active duty part-way through an academic term.

Student Conduct Code

(SDSU Policy 3:1)

South Dakota State University has established standards for expected and acceptable behavior for members of its campus community. Students are expected to be familiar with these standards and related policies so that they know their responsibilities (what they may be held accountable for) and to protect their rights (what they may hold others accountable for).

Academic institutions exist for the transmission of knowledge, the pursuit of truth, the development of students, and the general support for the well-being of society. Free inquiry and expression are indispensable to the attainment of these goals. Freedom to teach and freedom to learn are inseparable facets of academic freedom. The freedom to learn depends upon appropriate opportunities and conditions in the classroom, on campus and in the community. Students are expected to exercise this freedom with responsibility.

The Student Conduct Code is the basic guideline reflecting university-student relations. The Code defines student behavior, expectations and related university conduct procedures. Refer to SDSU Policy 3:1 for the Student Conduct Code policies and procedures.

Student Complaints - Institutional Record

To comply with federal regulations, the Higher Learning Commission expects SDSU and affiliated institutions to make available an account of the student complaints it has received, its processing of those complaints, and how that processing comports with the institution's policies and procedures on the handling of grievances or complaints. (HLC Policy Number: FDCR.A.10.030) Records will be kept with Academic Affairs, Student Affairs, Human Resources and departments responsible for student support and accountability.

The complaint process is subject to the South Dakota Board of Regents policies, and will follow the institutional policies listed below:

- SDSU Policy 2:4 Student Academic Misconduct and Academic Appeals
- SDSU Policy 3:1 Student Code of Conduct
- SDSU Policy 4:3 Equal Access and Opportunity and Non-Discrimination
- SDSU Policy 4:4 Sexual Harassment
- SDSU Policy 4:5 Prevention of Dating Violence, Domestic Violence, Sexual Assault, Stalking, and Hazing
- SDSU Policy 4:6 Human Rights Complaints

SDSU's main objective is to help students meet their academic goals through a positive and rigorous academic experience. In addition to the above-referenced policies, SDSU maintains a webpage outlining the various processes for students with concerns and complaints, whether academic or non-academic.

Student Email

(SDSU Policy 3:8)

Email messages sent by SDSU to students through university-assigned, jacks email addresses will constitute an official means of communication. It is the student's responsibility and obligation to access official university email messages in a timely manner. Students will be responsible for maintaining and managing their university email accounts to ensure timely response to notifications and that storage space allotment is not exceeded. As other email accounts may be blocked by the SDSU firewall, SDSU is only able to monitor student emails coming from university-assigned email accounts.

Inappropriate use of the university student email system will be considered a violation of policy, and students who so violate will be disciplined in accordance with the Student Conduct Code. Student violators may also be subject to revocation or limitation of email privileges as well as referral to appropriate external authorities.

Student Recording of Classroom Lectures, Distribution of Course Materials, and Copyright Violations

(SDSU Policy 2:16, SDSU Policy 7:3, SDSU Policy 9:4)

Recording of Classroom Lectures and Distribution of Course Materials policy prohibits or restricts the recording of classroom lectures or redistribution of classroom materials in order to respect the integrity and effectiveness of the classroom experience, protect students' and faculty members' privacy, respect faculty and university rights in instructional materials, and to comply with copyright laws, including the Digital Millennium Copyright Act of 1998 ("DMCA"). Students are encouraged to report instances of copyright infringement in good faith to the Office of Student Conduct (for students) and SDSU Human Resources (for SDSU employees).

Student Responsibility

Before a degree is granted, the student must meet all the requirements of the advisory committee, the graduate program, and the Graduate School. Students should note that graduate studies represent advanced work and research in a discipline or interdisciplinary area and should be more than a compilation of course work. Students are responsible for conforming to all published academic policies and degree requirements. They are likewise responsible for the regulations concerning the degree they plan to obtain and any special requirements within the program or academic unit. In addition, it is the student's responsibility to conform to the university's policies regarding the standard of work necessary to maintain enrollment in the Graduate School. The university makes every effort to provide accurate advising information. However, it is the student's responsibility to make certain that he/she has fulfilled all graduation requirements.

Students with Disabilities

(SDSU Policy 4:13)

South Dakota State University (SDSU) reaffirms that it is committed to a policy of non-discrimination on the basis of physical or mental disability/impairment in the offering of all benefits, services, educational, and employment opportunities.

The Director of Student Accessibility and Accommodations Specialists work with students with documented disabilities as defined by the Americans with Disabilities Amendment Act to ensure access to the University's programs, services, and activities. For information, please email the Office of Student Accessibility or call 605-688-4504.

The University ADA Coordinator, or successor, serves as the principal planning and compliance coordinator for university programs, policies, and procedures to facilitate university compliance under the ADA, Section 504 of the Rehabilitation Act, applicable state law and SDBOR and university policies for persons with disabilities.

The ADA Coordinator is designated as the SDSU 'Responsible Employee' to coordinate institutional compliance and is dedicated to ensuring that SDSU provides an accessible and welcoming environment.

Study Abroad and Travel Warnings

(SDSU Policy 2:11)

SDSU Policy 2:11 (Study Abroad and Travel Warnings) addresses the procedures to be followed when the U.S. Department of State or federal government or state agency with authority over aspects of travel issue travel warnings for a country or location in which SDSU undergraduate or graduate students are studying or are planning to study, or where the federal government otherwise takes actions to curtail or prevent international travel.

Textbook Policy

(SDSU Policy 2:10)

The SDSU Textbook policy and related procedures set forth the requirements for selecting and ordering textbooks and course materials and for making all materials available to students in a timely manner. Refer to SDSU Policy 2:10 for the Textbook policy and procedure.



Master's Degree Requirements

Admission Requirements

The application must include the application fee, all post-secondary transcripts, degree certificate, and other materials as required by specific programs before processing of the application will begin. Graduate and International Admissions employs a rolling deadline, however, it is recommended that students submit Fall applications no later than April 15th and Spring applications no later than October 15th. **Students should check with their program of interest for specific admission deadlines.** Master's degree applicants must have an approved Bachelor's degree from an accredited institution (except in approved/accelerated programs). Domestic, international or non-degree seeking students may submit an application online.

Advisory Committee (Thesis Option)

All students are required to have a major advisor. As soon as possible, but no later than the completion of fifty (50) percent of the credits toward graduation, any thesis student will request to the major advisor and the Graduate School (by submission of the committee approval request form) members of an advisory committee. The advisory committee must be composed of a minimum of three (3) members. Non-Thesis students may also form an advisory committee; however, it is not a requirement. The committee must include:

- *Committee Chair* – must hold full graduate faculty status at SDSU to chair master's thesis committees. Those who hold associate graduate faculty status may chair master's thesis committees with Department Head/Director approval. This member assists the student in developing a suitable graduate program, provides continuing guidance and counsel, evaluates student progress, informs the student as to who will provide primary research supervision, serves as a contact for the committee, and ensures the completion of the degree requirements to the Graduate School.
- *Additional member(s) with expertise within the discipline* - must hold either full graduate faculty or associate graduate faculty status at SDSU. Additional members assist the student in developing a suitable graduate program, provide continuing guidance and counsel, evaluate student progress, and assist with the completion of the degree requirements. Additional members may serve as co-chairs.
- *Graduate Faculty Representative* - graduate faculty member from within a distant, broadly-defined discipline. This member represents the Graduate Council to ensure the supervision of the student is carried out with sufficient integrity. This member ensures that minimal academic standards are maintained and acts as an advocate and counselor for the student. For votes regarding the final oral defense, the graduate faculty representative must vote in the affirmative for the vote to carry.

Professional doctorate degree holders with full graduate faculty status may only serve as chair for a committee for the degree which they hold.

Adjunct faculty members or University employees holding a master's degree who fail to qualify as associate graduate faculty member may serve on graduate student committees. Such committees must contain the minimum number of full/associate graduate faculty in addition to the master's degree holder. A committee may only include one master's degree holder. The master's degree holder is not considered as having associate graduate faculty status and cannot serve as co-chair.

The advisory committee is responsible for approving the content and scope of final examinations. The committee must evaluate the student's performance for the final oral exam and all other degree requirements taken under the auspices of -798 coursework (including those internal to the program).

All committee members must be available for regular meetings with the student and/or committee. Each committee member has voting privileges. Only committee members may vote on business before the committee. For activities requiring committee votes, the chair must ensure due diligence for accommodating all members of the committee. The graduate faculty representative and all but one (1) of the graduate committee must vote in the affirmative to pass the student.

The Department Head/Director is responsible for informing the Graduate School if and when a committee member can no longer fulfill her/his duties consistent with the policies of the University.

Plan of Study/Credit Requirements

The major advisor and the student will develop a plan of study. The plan of study must be submitted using the plan of study form and approved by the major advisor and the Graduate School prior to completion of 50 percent of the credits toward graduation. Delay in submitting a plan of study may result in disapproval of courses taken prior to approval and/or registration restrictions. Changes in the approved plan of study must be requested using the change in plan of study form. While devising the plan of study, please refer to specific academic program requirements in the Academic Programs section of the graduate catalog in addition to the following information.

Plan of Study Total Credits Required

All master's level programs will require a minimum of 30 credits to meet degree requirements. Requirements may vary by graduate program.

Graduate Credit Requirement

(SDSU Policy 2:17)

Credit applied toward graduate credentials should be at the 500-level and above. At least fifty (50) percent of the credits on a plan of study must be in courses 600-series or above. Please refer to SDSU Policy 2:17 Credit Requirements for Graduate Credential Programs for more information.

Annual Evaluation

A formal review of the progress of degree completion, including performance in coursework and completion of thesis goals should take place annually and be standard in format and timing for all students within a program. The review will include a written evaluation portion, including one opportunity for the student to rebut, followed by a meeting for a discussion. The written portion should take place using a program-standard format and include a synopsis of progress made the previous year, as well as guidance for the upcoming year.

Examinations

Master's programs require completion of a capstone component. The capstone component must be conducted under the supervision of no fewer than two

graduate faculty and approved through normal curriculum processes. Capstone components must be associated with graduate coursework.

The capstone component for the thesis option is the final oral exam. The capstone component for the non-thesis option may include a research paper, oral exam, portfolio of the student's work or other suitable exercise determined by the issuing department.

Final Oral Exam – Thesis Option

The student arranges with his/her advisory committee the time and location for the final oral examination. The student will submit the final oral exam form to the Graduate School no less than two (2) weeks prior to the examination date. A final oral examination will be administered by the advisory committee, covering the student's plan of study and thesis. The graduate faculty representative and all but one (1) of the graduate committee must vote to pass the student. The final oral exam must be completed three (3) weeks prior to the end of the semester in order to graduate. Non-thesis option students may also choose to complete a final oral exam, but are not required to do so.

Remediation Opportunity: Students who fail an academic exercise will be afforded a remediation opportunity. The student should 1) be provided feedback regarding the deficiencies of his/her performance; 2) be provided resources useful to remediate his/her deficiencies; and 3) be allowed an appropriate length of time to prepare for the next attempt.

Thesis, Research Paper, or Design Paper

Research Paper/Design Paper Requirements

Students following the non-thesis track and are completing a research paper/project as part of their degree requirements must complete at least two (2) credits for a research problem/design paper in the major field and present a written report. The content, style, and format of the report must meet the requirements of the program. The research report or design paper must be approved by the advisor and filed in the major department.

Thesis Requirements

A thesis must meet the requirements of the program and the Graduate School and must be submitted by each student completing a thesis option master's degree. The thesis must represent a scholarly contribution to research knowledge in the major field. A research area for the thesis topic should be chosen after consultation with the major advisor as early in the student's program as possible. The thesis accounts for five (5) to ten (10) credits of x798.

Thesis Formatting and Deposition

All theses must be submitted for appropriate format checking and deposition with the library. Instructions are found on the Graduate School website.

Use of Human Subjects or Vertebrate Animals in Research

After receiving approval of the research proposal students must also seek approval for the use of human subjects or vertebrate animals in research, when applicable, from the appropriate committee. These approvals must be secured before beginning the study. For more information, visit the Research Compliance website or contact the SDSU Research Compliance Coordinator in the Office of Research and Sponsored Programs.

Credit Sharing between Graduate Credentials

(SDSU Policy 2:17)

Credit can be used for the satisfaction of more than one graduate credential (graduate certificate, master's degree) issued by SDSU and may be paired to share credit. Each graduate credential may be paired with itself or any other graduate credential. For example, two master's degrees may be paired or a master's degree and a graduate certificate. A master's degree may not be paired with a 60-credit doctoral degree (master's required) within the same discipline.

The allowable credit shared between graduate credentials is 12 credits. A single graduate certificate may be shared, in entirety, with credits for a master's degree. Once a graduate credential participates in a credit pairing, the graduate credential may not be paired with a third credential with the exception of a certificate. Validated credit or course credit with an x798 or x788 suffix may not be shared between graduate credentials.

Time Limitation

Obsolete Program

If the requirements for the master's degree are not completed within six (6) years from the program start date, the request for extension of the graduate program form must be submitted to the Graduate School. The request will be reviewed and a decision as to whether the student may continue in the program will be made by the Director of the Graduate School.

Obsolete Coursework

Courses completed more than six (6) years prior to completion of the requirements of the master's degree are regarded as obsolete coursework. Such courses may be used in the master's degree program if validated. Validation is allowed at the discretion of the advisory committee and department involved and can be accomplished by passing validation requirements in the subject matter area and submitting the validation form to the Graduate School. Validated coursework cannot exceed fifty (50) percent of the total coursework (excluding thesis and research paper credits) listed on the plan of study and must be certified by the advisory committee. Course validation will be subject to a processing fee. Only courses taken at SDSU may be validated.

Master's Degree Checklist

Requirements	Timeline
Designation of Major Advisor	Upon acceptance into Graduate School.
Designation of Advisory Committee - Thesis Option	During first semester of graduate work graduate faculty representative will be assigned by the Graduate School.
Plan of Study	During the first semester of graduate work or before 50% of coursework is complete. Must be approved by major advisor and submitted to Graduate School.
Graduation Application	During final semester, by deadline.*
Final Oral Exam - Thesis Option	During final semester, by deadline.* Final oral exam form must be submitted **two (2) weeks** prior to exam date.
Capstone Component	During final semester, by deadline.*
Final Submission of Thesis (Thesis Option Only)	Final submission due by deadline.* Signed acceptance page, copyright form and library fee must also be submitted.

*The Graduate School sets deadlines for graduation each semester. Please also consult with your department for other program specific requirements and deadlines. All forms are available on the Graduate School forms website.



Doctor of Nursing Practice Degree Requirements

Admission Requirements

Application Process

1. SDSU Graduate School Application

The application file must be complete with the application form and application fee. Transcripts are not sent to the Graduate and International Admission office as those documents will be accessed through the NursingCAS application. A completed application must be filed with Graduate and International Admissions in conjunction with the NursingCAS application. Applications for domestic, international or non-degree seeking students are found online.

2. SDSU Graduate Nursing Program Application via NursingCAS

Application to the DNP program option is available at NursingCAS beginning early September. Please refer to the NursingCAS application directions to complete an application.

Application Timeline

Applications will be accepted beginning September for all graduate programs. Refer to the Graduate Nursing Program website for specific deadlines.

Additional Admission Requirements by Program Type

Bachelor's to Doctor of Nursing Practice Programs

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the Bachelor's to Doctor of Nursing Practice must have:

- Current, unencumbered licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to taking Advanced Physical Assessment (Lifespan).
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Interview assessment reviewed by graduate faculty.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Post Master's to Doctor of Nursing Practice Programs

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the Post Master's to Doctor of Nursing Practice must have:

- Current, unencumbered licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Interview assessment reviewed by graduate faculty.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree in nursing (from an ACEN or CCNE accredited program) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- A degree deemed equivalent (by the World Education Service) to a Master's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Additional Requirements by program:

Nursing (D.N.P.) - NP, CRNA, CNS, and CNM

- National certification and licensure as a NP, CRNA, CNM, or CNS.

Family Nurse Practitioner Specialization and Psychiatric Mental Health Nurse Practitioner Specialization

- Students who have not previously completed Advanced Physical Assessment (Lifespan), Advanced Pathophysiology (Lifespan), Advanced Pharmacology / Pharmacotherapeutics (Lifespan) or equivalent coursework will be required to complete those courses as part of this program. All previous coursework will need to be evaluated for equivalency and approved by the Associate Dean for Graduate Nursing.

Advisory Committee

All graduate students are required to have a major faculty advisor. As soon as possible, but no later than the completion of fifty (50) percent of the credits toward graduation, the major advisor will recommend to the Director of the Graduate School (by submission of the committee approval request form) members of an advisory committee. The advisory committee must be composed of a minimum of four (4) members. The committee must include:

- *Committee Chair* – must hold full Graduate Faculty status at SDSU and hold same degree as the plan of study the student is enrolled. This member assists the student in developing a suitable graduate program, provides continuing guidance and counsel, evaluates student progress, informs the student as to who will provide primary project supervision, serves as a contact for the committee and ensures the completion of the degree requirements to the Graduate School.
- *Two (2) additional members with expertise within the discipline* – must hold either full Graduate Faculty or Associate Graduate Faculty status at SDSU. Additional members assist the student in developing a suitable graduate program, provide continuing guidance and counsel, evaluate student progress, and assist with the completion of the degree requirements. Additional members may serve as co-chairs.
- *Graduate Faculty Representative* – graduate faculty member from within a distant, broadly-defined discipline. This member represents the Graduate Council to ensure the supervision of the student is carried out with sufficient integrity. This member ensures that minimal academic standards are maintained and acts as an advocate and counselor for the student. For votes regarding the final oral defense, the Graduate Faculty representative must vote in the affirmative for the vote to carry.

Professional doctorate degree holders with full Graduate Faculty status may only serve as chair for a committee for the degree which they hold.

Adjunct faculty members or University employees holding a master's degree who fail to qualify as Associate Graduate Faculty member may serve on graduate student committees. Such committees must contain the minimum number of Full/Associate Graduate Faculty in addition to the master's degree holder. A committee may only include one master's degree holder. Addition of the master's degree holder does not alter the maximum number of committee members allowed. The master's degree holder is not considered as having Associate Graduate Faculty status and cannot serve as co-chair.

The advisory committee is responsible for approving the content and scope of final examinations. The committee must evaluate the student's performance for the comprehensive exams and final defense and all other degree requirements.

All committee members must be available for regular meetings with the student and/or committee. Each committee member has voting privileges. Only committee members may vote on business before the committee. For activities requiring committee votes, the chair must ensure due diligence for accommodating all members of the committee. The Graduate Faculty representative and all but one (1) of the graduate committee must vote in the affirmative to pass the student.

The Department Head is responsible for informing the Graduate School if and when a committee member can no longer discharge her/his duties consistent with the policies of the University.

Plan of Study/Credit Requirements

(SDSU Policy 2:17)

The plan of study must be submitted using the doctoral plan of study form and approved by the advisory committee and the Graduate School prior to completion of 50 percent of the credits toward graduation. Delay in submitting a plan of study may result in disapproval of courses taken prior to approval and/or registration restrictions. Changes in the approved plan of study must be requested using the change in plan of study form. While devising the plan of study, please refer to specific academic program requirements in the Academic Programs section of the catalog in addition to the following information.

Total Credits Required

Options	Credit Hours
Bachelor's to D.N.P.	
Clinical Nurse Leader	64
Family Nurse Practitioner	78
Psychiatric Mental Health Nurse Practitioner	78
Post Master's to D.N.P.	31-40
Clinical Nurse Leader	28
Family Nurse Practitioner	57
Psychiatric Mental Health Nurse Practitioner	45-57

Graduate Credit Requirement - Credit applied toward graduate credentials should be at the 500-level and above. At least fifty (50) percent of the credits on a plan of study must be in courses 600-series or above. Please refer to SDSU Policy 2:17 Credit Requirements for Graduate Credential Programs for more information.

Examinations

Project Proposal Defense

The student arranges with his/her advisory committee the time and location for the DNP Project Proposal Defense. At this time, the student will defend the project topic, evidence-based research and guidelines to support the intervention, and methodology to monitor effectiveness of the health policy change or intervention. The student will discuss the proposed statistical tests to evaluate outcomes of the intervention. The DNP Project Proposal Defense must occur in a different semester than the final oral and project defense.

Final Oral Exam

The student arranges with his/her advisory committee the time and location for the final oral examination. The student will submit the final oral exam form to the Graduate School no less than two (2) weeks prior to the examination date. A final oral examination will be administered by the advisory committee, covering the student's plan of study and DNP Project. This examination must be comprehensive, testing the student's ability to analyze, integrate, and apply knowledge from the discipline. The graduate faculty representative and all but one (1) of the graduate committee must vote to pass the student. The final oral exam must be completed three (3) weeks prior to the end of the semester in order to graduate.

Time Limitation

Obsolete Program

If the Doctor of Nursing Practice degree is not completed within eight (8) years from the program start date, the request for an extension of the graduate program form must be submitted to the Graduate School. The request will be reviewed and a decision as to whether the student may continue in the program will be made by the Graduate School Director.

Obsolete Coursework

Courses taken more than eight (8) years before completion of the program are regarded as obsolete coursework. Obsolete courses may be used in the DNP degree program if validated. Validation is allowed at the discretion of the advisory committee and department involved and can be accomplished by passing validation requirements in the subject matter area and submitting the validation form to the Graduate School. Validated coursework cannot exceed fifty (50) percent of the total coursework listed on the plan of study and must be certified by the advisory committee. Course validation may be subject to a processing fee. Only courses taken at SDSU may be validated.

Doctor of Nursing Practice Checklist

Requirements	Timeline
Designation of Major Advisor	During the semester of NURS 850. For DNP-CNL students: during the semester of NURS 800.
Designation of Advisory Committee	As soon as possible, but no later than the completion of fifty (50) percent of the credits toward graduation, the major advisor will recommend to the Director of the Graduate School members of an advisory committee.
Plan of Study	During the first semester of graduate work or before 50% of coursework is complete. Must be approved by all Advisory Committee members and submitted to Graduate School.
DNP Project Proposal Defense	During NURS 880 and with permission of the Major Advisor. For DNP-CNL students: during NURS 870 and with permission of the Major Advisor.
Graduation Application	During final semester, by deadline.*
Final Oral Exam	Final oral exam follows completion of DNP project. The final oral exam must follow Graduate School deadlines.

* The Graduate School sets deadlines for graduation each semester. Please also consult with your Department for other program specific requirements and deadlines. All forms are available on the Graduate School Forms page.



Doctor of Pharmacy Degree Requirements

Program Application Requirements

Preparation for the Major

A sound, foundational education in science and mathematics courses is an essential part of preparation for the study of pharmacy. Good written and verbal communication skills are important. Students planning to transfer from another college or university should consult with the College of Pharmacy and Allied Health Professions early in their academic careers to plan coursework that will transfer to the College of Pharmacy and Allied Health Professions. For more information, visit the website.

Application Process

All students seeking admission to the 4-year professional program leading to the Doctor of Pharmacy degree must submit an application for the professional program. Applications are available from the College of Pharmacy and Allied Health Professions website. The deadline for applying for admission for the fall semester is February 1. Limitations in the size of the physical facilities, the number of faculty and the number of advanced pharmacy practice experience sites make it necessary to limit the class size in the professional program. Each student admitted into the professional program is required to authorize and pay for a criminal background check. The background check report is automatically sent to the student and to the College and must be approved by the Admissions Committee.

Selection is competitive and based upon several factors including pre-pharmacy coursework, written and oral communication skills, knowledge of the profession, residency status and other factors. Any student who anticipates successful completion of the pre-pharmacy requirements prior to fall semester is eligible to apply.

Notification of acceptance into the professional program will be made by March 15 for students that apply by the February 1 deadline. Students admitted to the professional program must submit a non-refundable deposit to secure their position for the fall semester. That deposit will be applied to student's account in the fall semester.

Early Assurance Pathway

Admission to the Pharm.D. Program by Early Assurance will require a student to:

- Submit an undergraduate admission application to SDSU
- Meet SDSU Freshmen Admission Requirements
- Submit an application for Early Assurance during senior year of high school
- Successfully complete an interview prior to the start of the Freshman year.

Progression into the 4-year core Pharm.D. curriculum will require:

- Overall cumulative GPA > 3.0
- By the end of the fall semester that proceeds the beginning of the desired Pharm.D. start date, students must have completed 7 of the 10 required math and science courses with a grade point average of at least 2.7 and no grade lower than C. Required courses are general chemistry, organic chemistry, general biology, calculus, microbiology, anatomy, physiology, statistics, and seminar pre-pharmacy coursework. Refer to the Additional Admissions Requirements section below for a list of courses.
- In their fourth semester, successful candidates must earn a grade of 'C' or better in the remaining required math and science courses and successfully pass an impromptu writing assessment.
    - Any student who is unable to meet the grade requirements listed above will lose their place in the professional program. Students who lose their place in this manner may re-take courses to try to meet the academic requirements and re-apply through the traditional 4-year Pharm.D. application process.

Traditional Pathway

Applicants to the Doctor of Pharmacy (Pharm.D.) program will submit:

- The completed application
- Official transcripts
- Contact information for two references
- A short essay on the topic of "Why I want to obtain a Doctor of Pharmacy Degree at SDSU"
- A completed shadowing form
- Documentation of ACT or SAT scores is optional

The program requires an interview with the Pharmacy Admissions Committee before we make the final selections for the new Fall class. Those selected are required to send a non-refundable deposit to secure enrollment for the fall semester. Students must pass a criminal background check before final approval for admission into the professional program.

Curriculum/Plan of Study

The curriculum is divided into a 2-year pre-pharmacy and a 4-year Pharm.D. professional program phase. The pre-pharmacy courses provide a solid knowledge base and ability to use critical thought processes in the biological and physical sciences.

The four years of the Pharm.D. professional program incorporate a solid foundation of pharmaceutical science courses as well as a comprehensive sequence of therapeutics and professional practice courses. Students earn a B.S. in Pharmaceutical Sciences after successful completion of the first two years of the Pharm.D. professional program. The application of drug knowledge, basic science, and critical thinking to resolve problems of drug distribution and patient care are emphasized throughout the curriculum. In their first three years of the Pharm.D. program, students gain initial practice experience through introductory pharmacy practice experiences in settings such as community and hospital pharmacies. In the final year of the Pharm.D. program, students have an opportunity to apply knowledge and pharmacy care principles to pharmacy practice situations in a series of advanced pharmacy practice experiences in a variety of patient care settings which include patient care areas of hospitals, nursing homes, community pharmacies, hospital pharmacies, Indian Health Service facilities and clinic pharmacies. Students will work side-by-side with licensed pharmacists and other healthcare professionals; examples include physicians, nurses, respiratory therapists, social workers, and medical laboratory personnel.

College of Pharmacy and Allied Health Professions Regulations

Students in the College of Pharmacy and Allied Health Professions are governed by the regulations which apply to all students at SDSU but are also governed by requirements established by the College. These requirements are presented in detail in the Pharmacy Student Handbook and include:

Progression

Progression standards for students in the Pharm.D. program are set to ensure graduates are prepared to provide pharmacy services to the public. The integrated curriculum relies on information and skills garnered in previous courses. Therefore, students' success depends on achieving a minimum level of performance in each course. Minimum level of performance is defined as a grade of C or better based on University Catalog grade definitions. A grade of D is defined in terms of "insufficient" and "inadequate" according to the University Catalog. A grade of F is defined in terms of "failure." D, F, and U (unsatisfactory) grades do not represent a minimum level of performance needed to develop skills, abilities, and knowledge of a general practitioner.

Refused Status

A student will be placed on refused status if the student:

a. Earns a D, F, or U in a pharmacy course.
b. Does not complete the Pharm.D. program within six years of starting the professional program.

Class Standing Requirements

Standing - In order for students to enroll in the fall semester of the pharmacy program, students must meet the class standing requirement. These are defined as follows (note: "completion" means a passing grade in each pharmacy course and maintaining semester and cumulative PHA GPA requirements):

- P1 Year Standing - The student must have been admitted into the professional program.
- P2 Year Standing - Completion of all PHA 300 level required courses and PHA 119/101 and PHA 219.
- P3 Year Standing - Completion of all PHA 400 level required courses. PHA 610, a bachelor's degree, and all capstone activities are required to begin the fall semester. Completion of all required PHA 700, non-advanced pharmacy practice experience courses are required to progress to the subsequent semester.
- P4 Year Standing - Completion of all PHA 600-700 level required, non-advanced pharmacy practice experience courses, and 300 hours of IPPE.



Doctor of Philosophy Degree Requirements

Admission Requirements

The application must include the application fee, all post-secondary transcripts, degree certificates, and other materials as required by specific programs before processing of the application will begin. The Graduate and International Admissions office employs a rolling deadline, however, it is recommended that students submit Fall applications no later than April 15th and Spring applications no later than October 15th. **Students should check with their program of interest for specific admission deadlines.** Applicants for the Doctor of Philosophy degree, 60-credit plan, must have a Master's degree. This degree must be awarded from an approved, accredited institution. Domestic, international or non-degree seeking students may submit an application online.

Advisory Committee

All graduate students are required to have a major advisor. As soon as possible, but no later than the completion of fifty (50) percent of the credits toward graduation, the student will request to the major advisor and the Graduate School (by submission of the committee approval request form) members of an advisory committee. The advisory committee must be composed of a minimum of four (4) members. The committee must include:

- *Committee Chair* – must hold full graduate faculty status at SDSU. This member assists the student in developing a suitable graduate program, provides continuing guidance and counsel, evaluates student progress, informs the student as to who will provide primary research supervision, serves as a contact for the committee and ensures the completion of the degree requirements to the Graduate School.
- *Two (2) additional members with expertise within the discipline* – must hold either full graduate faculty or associate graduate faculty status at SDSU. Additional members assist the student in developing a suitable graduate program, provide continuing guidance and counsel, evaluate student progress, and assist with the completion of the degree requirements. Additional members may serve as co-chairs.
- *Graduate Faculty Representative* – graduate faculty member from within a distant, broadly-defined discipline. This member represents the Graduate Council to ensure the supervision of the student is carried out with sufficient integrity. This member ensures that minimal academic standards are maintained and acts as an advocate and counselor for the student. For votes regarding the final oral defense, the graduate faculty representative must vote in the affirmative for the vote to carry.

Professional doctorate degree holders with full graduate faculty status may only serve as chair for a committee for the degree which they hold.

Adjunct faculty members or University employees holding a master's degree who fail to qualify as associate graduate faculty member may serve on graduate student committees. Such committees must contain the minimum number of full/associate graduate faculty in addition to the master's degree holder. A committee may only include one master's degree holder. The master's degree holder is not considered as having associate graduate faculty status and cannot serve as co-chair.

The advisory committee is responsible for approving the content and scope of comprehensive and final examinations, both written and oral. The committee must evaluate the student's performance for the comprehensive exams and final defense and all other degree requirements taken under the auspices of -898 coursework (including those internal to the program).

All committee members must be available for regular meetings with the student and/or committee. Each committee member has voting privileges. Only committee members may vote on business before the committee. For activities requiring committee votes, the chair must ensure due diligence for accommodating all members of the committee. The graduate faculty representative and all but one (1) of the graduate committee must vote in the affirmative to pass the student.

The Department Head/Director is responsible for informing the Graduate School if and when a committee member can no longer fulfill her/his duties consistent with the policies of the University.

Plan of Study/Credit Requirements

(SDSU Policy 2:17)

After the advisory committee is formed, the major advisor and the student will develop a plan of study and consider a research area for the dissertation. The plan of study must be submitted using the plan of study form and approved by the advisory committee and the Graduate School prior to completion of 50 percent of the credits toward graduation. Delay in submitting a plan of study may result in disapproval of courses taken prior to approval and/or registration restrictions. Students cannot take the comprehensive written examination prior to approval of the plan of study. Changes in the approved plan of study must be requested using the change in plan of study form. While devising the plan of study, please refer to specific academic program requirements in the Academic Programs section of the graduate catalog in addition to the following information.

Total Credits Required

Doctoral programs typically require completion of no fewer than 72 credits. Up to 30 credits from a completed master's degree may be applied to a doctoral program at the discretion of the Graduate Student Advisory Committee. A 60-credit program may be completed provided the student has first completed a master's degree in a similar discipline.

Where consideration is given to a master's degree, it must be in the area of the program or a related area, be an academic program from an accredited institution, and be declared at the time the plan of study is submitted. The advisory committee may require more credits if the extra requirements are in the best interest of the student.

Graduate Credit Requirement

Credit applied toward graduate credentials should be at the 500-level and above. At least fifty (50) percent of the credits on a plan of study must be in courses 600-series or above. Please refer to SDSU Policy 2:17 Credit Requirements for Graduate Credential Programs for more information.

Examinations

Annual Evaluation

A formal review of the progress of degree completion, including performance in coursework and completion of dissertation goals should take place annually and be standard in format and timing for all students within a program. The review will include a written evaluation portion, including one opportunity for the student to rebut, followed by a meeting for a discussion. The written portion should take place using a program-standard format and include a synopsis of progress made the previous year, as well as guidance for the upcoming year.

Comprehensive Written and Oral Examinations

Comprehensive examinations are generally administered after coursework on the plan of study has been substantially completed. The comprehensive written examination is followed, upon satisfactory completion, by an oral examination. These examinations are to test the student's breadth of knowledge and his/her ability to integrate this knowledge.

The student arranges with his/her committee the time and location for the comprehensive written and oral examinations. Copies of the written examinations must be kept on file in the major department. Upon successful completion of the comprehensive written examination, the student will arrange with his/her advisor and committee members to take the comprehensive oral examination. The comprehensive oral exam form must be submitted to the Graduate School at least two (2) weeks prior to the exam date. The submission of this form initiates the necessary paperwork to be provided by the Graduate School to the student and committee members. The comprehensive examinations must be completed at least three (3) months before the final oral examination. Upon satisfactory completion of the comprehensive examinations, the student is formally admitted to candidacy for the Ph.D. degree. If the student does not receive the Ph.D. degree within three (3) years after becoming a candidate, comprehensive examinations must be repeated.

Final Oral Exam

The student arranges with his/her advisory committee the time and location for the final oral examination. The student will submit the final oral exam form to the Graduate School no less than two (2) weeks prior to the examination date. While the advisory committee determines the character and length of the examination, sufficient time should be devoted to the dissertation, including literature review, to evaluate the ability of the student to defend the research. In addition, questions to test the student's general knowledge, judgment and critical thinking powers are usually asked. The graduate faculty representative and all but one (1) of the graduate committee must vote to pass the student. The final oral examination cannot be taken earlier than three (3) months following successful completion of the comprehensive examinations and must be completed three (3) weeks prior to the end of the semester in order to graduate.

Remediation Opportunity: Students who fail an academic exercise will be afforded a remediation opportunity. The student should 1) be provided feedback regarding the deficiencies of his/her performance; 2) be provided resources useful to remediate his/her deficiencies; and 3) be allowed an appropriate length of time to prepare for the next attempt.

Dissertation

Proposal

The student in consultation with the major advisor and/or dissertation advisor shall prepare a written dissertation proposal for approval by the advisory committee.

Requirements

The dissertation should represent at least one (1) academic year of full-time research (no fewer than 18 credits). Of no specific length, the dissertation should advance or modify knowledge in the discipline and demonstrate the candidate's mastery of the subject. The dissertation should meet discipline standards as required by the program.

Dissertation Formatting and Deposition

All dissertations must be submitted to the Graduate School for appropriate format checking and deposition with the library. Instructions are found on the Graduate School website.

Use of Human Subjects or Vertebrate Animals in Research

After receiving approval of the research proposal students must also seek approval for the use of human subjects or vertebrate animals in research, when applicable, from the appropriate committee. These approvals must be secured before beginning the study. For more information, visit the Research Compliance website or contact the SDSU Research Compliance Coordinator in the Office of Research and Sponsored Programs.

Credit Sharing between Graduate Credentials

(SDSU Policy 2:17)

Credit can be used for the satisfaction of more than one graduate credential (graduate certificate, doctoral degree) issued by SDSU and may be paired to share credit. Each graduate credential may be paired with itself or any other graduate credential. A doctoral degree using the 60-credit plan may not be paired with a master's degree within the same discipline.

The allowable credit shared between graduate credentials is 12 credits. A single graduate certificate may be shared, in entirety, with credits for a doctoral degree. Once a graduate credential participates in a credit pairing, the graduate credential may not be paired with a third credential, with the exception of a certificate. Validated credit or course credit with an x898 suffix may not be shared between graduate credentials.

Time Limitation

Obsolete Program

If the Doctor of Philosophy degree is not completed within eight (8) years from the program start date, the request for an extension of the graduate program form must be submitted to the Graduate School. The request will be reviewed and a decision as to whether the student may continue in the program will be made by the Director of the Graduate School.

Obsolete Coursework

Courses taken more than eight (8) years before completion of the doctorate are regarded as obsolete coursework. Obsolete courses may be used in the doctoral degree program if validated. Validation is allowed at the discretion of the advisory committee and department involved and can be accomplished by passing validation requirements in the subject matter area and submitting the validation form to the Graduate School. Validated coursework cannot exceed fifty (50) percent of the total coursework (excluding dissertation credits) listed on the plan of study and must be certified by the advisory committee. Course validation will be subject to a processing fee. Only courses taken at SDSU may be validated.

Doctor of Philosophy Checklist

Requirements	Timeline
Designation of Major Advisor	Upon acceptance into Graduate School.
Designation of Advisory Committee	During first semester of graduate work, graduate faculty representative will be assigned by the Graduate School.
Plan of Study	During the first semester of graduate work or before 50% of coursework is complete. Must be approved by all advisory committee members and submitted to Graduate School.
Comprehensive Written Exam	Per Department procedures, near completion of coursework.
Comprehensive Oral Exam	Scheduled upon successful completion of written exam. Comprehensive oral exam form due to Graduate School **two (2) weeks** prior to exam date. Must be taken three (3) months prior to final oral exam.
Graduation Application	During final semester, by deadline.*
Final Oral Exam (Dissertation Defense)	During final semester, by deadline.* Final oral exam form must be submitted **two (2) weeks** prior to exam date.
Final Submission of Dissertation	Final submission due by deadline.* Signed acceptance page, copyright form and library fee must also be submitted.

The Graduate School sets deadlines for graduation each semester. Please also consult with your department for other program specific requirements and deadlines. All forms are available on the Graduate School forms website.



Colleges

College of Agriculture, Food and Environmental Sciences

Joseph Cassady, South Dakota Corn Utilization Council Endowed Dean
College of Agriculture, Food and Environmental Sciences
Berg Agricultural Hall 159, Box 2207
605-688-4148

James Connors, Associate Dean and Director of Academic Programs
Berg Agricultural Hall 162
605-688-5133

Lisa Lunn, Associate Dean and Director for the Professional Program in Veterinary Medicine
Animal Disease Research 103
605-688-6645

Rosie Nold, Assistant Dean and Director of Global Agricultural Leadership
Berg Agricultural Hall 147
605-688-4940

The College of Agriculture, Food and Environmental Sciences has a three-fold mission to teach, conduct research, and use extension programs to serve people in South Dakota, the nation, and the world.

In addition to the main campus in Brookings and adjacent farm and livestock units, the Rapid City Regional Center is an outreach facility of the college that supports teaching, research, and extension in the western part of the state. Other locations throughout the state include seven additional regional extension centers, three tribal Extension program offices, and six research farms and field stations.

Programs

College of Agriculture, Food and Environmental Sciences

Master's Degrees

- Global Agricultural Leadership (M.S.)

Department of Agricultural and Biosystems Engineering

Master's Degrees

- Agricultural and Biosystems Engineering (M.S.)

Doctoral Degrees

- Agricultural and Biosystems Engineering (Ph.D.)
- Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization

Certificates

- Precision Agriculture Certificate

Department of Agronomy, Horticulture, and Plant Science

Master's Degrees

- Plant Science (M.S.)

Doctoral Degrees

- Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Plant Science Specialization
- Plant Science (Ph.D.)

Certificates

- Precision Agriculture Certificate

Department of Animal Science

Master's Degrees

- Animal Science (M.S.)

Doctoral Degrees

- Animal Science (Ph.D.)

Certificates

- Animal Science Certificate

Department of Dairy and Food Science

Master's Degrees

- Biological Sciences (M.S.) - Dairy Science Specialization
- Biological Sciences (M.S.) - Food Science Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.) - Dairy Science Specialization
- Biological Sciences (Ph.D.) - Food Science Specialization

Department of Natural Resource Management

Master's Degrees

- Biological Sciences (M.S.) - Natural Resource Management Specialization
- Wildlife and Fisheries Sciences (M.S.) - Fisheries Sciences Specialization
- Wildlife and Fisheries Sciences (M.S.) - Wildlife Sciences Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.) - Natural Resource Management Specialization
- Wildlife and Fisheries Sciences (Ph.D.)

Certificates

- Grassland Management Certificate

Department of Veterinary and Biomedical Sciences

Master's Degrees

- Biological Sciences (M.S.) - Veterinary Microbiology Emphasis or Veterinary Pathology Emphasis
- Biological Sciences (M.S.) - Veterinary Medicine Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.)
- Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization
- Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization

Professional Doctoral Degrees

- Professional Program in Veterinary Medicine (2+2 Collaborative Program with University of Minnesota's College of Veterinary Medicine)

College of Arts, Humanities and Social Sciences

David Earnest, Dean
Jason Zimmerman, Associate Dean
College of Arts, Humanities and Social Sciences
Lincoln Hall 129, Box 2212
605-688-4723

The College of Arts, Humanities and Social Sciences is committed to educational excellence driven by experiential learning. The college pursues new knowledge and fosters innovation and creativity in numerous disciplines. The college offers high-quality programs that prepare students to be skilled industry leaders, public servants, engaged citizens and lifelong learners.

Programs

Ness School of Management and Economics

Master's Degrees

- Economics (M.S.)
- Operations Management (M.S.) - Business Analytics Specialization

Certificates

- Family Financial Planning Certificate
- Analytical Business Management Certificate
- Real Estate Certificate

School of American and Global Studies

Coursework Only

School of Communication and Journalism

Master's Degrees

- Communication and Media Studies (M.A.)
- Mass Communication (M.M.C.)

School of Design

Master's Degrees

- Architecture (M.Arch.)

School of English and Interdisciplinary Studies

Master's Degrees

- English (M.A.)
- Interdisciplinary Studies (M.S.)

School of Performing Arts

Coursework Only

School of Psychology, Sociology and Rural Studies

Master's Degrees

- Social Science (M.S.)

Doctoral Degrees

- Social Science (Ph.D.)
- Social Science (Ph.D.) - Environment and Rural Development Specialization
- Social Science (Ph.D.) - Rural Well-being Specialization

College of Education and Human Sciences

Evan Ortlieb, Dean
College of Education and Human Sciences
Wagner Hall 249, Box 2275A
605-688-6181

The College of Education and Human Sciences elevates human potential and well-being through the integration of:

- exemplary student-centered graduate and undergraduate education that prepares tomorrow's professionals;
- discovery and scholarship that is nationally and internationally recognized for addressing human and community needs; and
- engagement with individuals, families, schools, and communities that transforms knowledge and discovery into meaningful impacts.

Graduates of the College of Education and Human Sciences transform the lives of people around the world every day. They work in a wide range of work settings which span the healthcare industry, education, business, government, and non-profit or community agencies.

The professional graduate programs in the College of Education and Human Sciences prepares graduates for certification, licensure, and qualification across some of the fastest growing and most sought out careers in the nation and world. Examples include: professional counselors supporting the development of individuals, families, schools, and communities, school administrators who provide leadership in their schools; dietitians who counsel others to establish a healthy or specialized diet; financial counselors working with families to manage their resources; wellness professionals who works across the lifespan to promote good health practices for people of all ages; a gerontology specialist working with the elderly, or an athletic trainer engaging in injury prevention and career. These are but a few of the rewarding, and in demand, careers that EHS graduates pursue. We have successful marketing professionals, business leaders, healthcare professionals, and educators across the nation who reflect our mission of enhancing human potential.

Programs

School of Counseling, Human Development and Family Science

Master's Degrees

- Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization
- Counseling and Human Resource Development (M.S.) - Clinical Mental Health Counseling Specialization
- Counseling and Human Resource Development (M.S.) - College Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Marriage and Family Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Rehabilitation Counseling Specialization
- Counseling and Human Resource Development (M.S.) - School Counseling Specialization
- Human Sciences (M.S.) - Human Development and Family Science Specialization

Certificates

- Academic Advising Certificate
- Athletic Academic Advising Certificate

School of Education

Master's Degrees

- Agricultural Education (M.S.)
- Curriculum and Instruction (M.Ed.)
- Curriculum and Instruction (M.Ed.) - Career and Technical Education Specialization
- Curriculum and Instruction (M.Ed.) - Literacy Instructional Coaching Specialization
- Educational Administration (M.Ed.)

Certificates

- Literacy Instructional Coaching Certificate

School of Health and Human Sciences

Master's Degrees

- Athletic Training (M.S.)
- Nutrition and Dietetics (M.S.)
- Nutrition and Exercise Sciences (M.S.) - Exercise Science Specialization
- Nutrition and Exercise Sciences (M.S.) - Nutritional Sciences Specialization
- Sport Management (M.S.)

Doctoral Degrees

- Nutrition and Exercise Sciences (Ph.D.)

College of Natural Sciences

Senthil Subramanian, Dean
Bob Watrel, Interim Associate Dean for Academics and Student Success
College of Natural Sciences
Avera Health and Science Center 131
605-688-4420

The College of Natural Sciences provides degree programs in natural and physical sciences which are foundational to all professional, applied, and technical fields. A degree in chemistry allows students vast opportunities to explore the unknown and to address some of human society's most pressing scientific problems through the study of the composition, structure, behavior and change of atoms, molecules, and macromolecules. Biochemistry allows for the exploration and application of atomic and molecular principles to the function of life processes. A degree in the

biological sciences provides a fundamental understanding of physiological mechanisms and development, providing a framework describing the processes of life and living organisms. Geography studies Earth's environments, landscapes, peoples, and places, including natural science (physical geography), social science (human geography), and geospatial science (GIScience), to understand how human and natural complexities have changed over time and how they have come to exist in their current form. Our graduate programs not only provide advanced training in the chosen discipline but also ensure the graduates have professional and leadership skills to excel in academia, government, or industry.

Accreditations

The Department of Geography and Geospatial Sciences offers a Geospatial Intelligence graduate certificate accredited by the United States Geospatial Intelligence Foundation (USGIF).

Programs

Department of Biology and Microbiology

Master's Degrees

- Biological Sciences (M.S.)
- Biological Sciences (M.S.) - Biology Specialization
- Biological Sciences (M.S.) - Microbiology Specialization
- Human Biology (M.S.)

Doctoral Degrees

- Biological Sciences (Ph.D.)
- Biological Sciences (Ph.D.) - Biology Specialization
- Biological Sciences (Ph.D.) - Microbiology Specialization
- Biological Sciences (Ph.D.) - Molecular Biology Specialization

Certificates

- Biotechnology Certificate

Department of Chemistry, Biochemistry and Physics

Master's Degrees

- Biochemistry (M.S.)
- Chemistry (M.S.)
- Chemistry (M.S.) - Chemistry Education Specialization
- Physics (M.S.)

Doctoral Degrees

- Biochemistry (Ph.D.)
- Chemistry (Ph.D.)
- Physics (Ph.D.)

Certificates

- Applied Physics Certificate
- Chemistry Education Certificate

Department of Geography and Geospatial Sciences

Master's Degrees

- Geography (M.S.)
- Geography (M.S.) - Geographic Information Sciences Specialization

Doctoral Degrees

- Geospatial Science and Engineering (Ph.D.) - Geography Specialization
- Geospatial Science and Engineering (Ph.D.) - Remote Sensing Specialization

Certificates

- Geographic Information Sciences Certificate
- Geospatial Intelligence Certificate

College of Nursing

Mary Anne Krogh, Roberta K. Olson Endowed Dean
Heidi Mennenga, Associate Dean for Academic Programs
College of Nursing
Wagner Hall 255, Box 2275
605-688-5178

The College of Nursing strives for excellence in undergraduate and graduate education, research, scholarship, and health services to individuals, communities and populations across the life span. The college improves human health and quality of life for people in the state of South Dakota, the region, the nation and the world. The vision of the college is to be a national leader in accessible and quality undergraduate and graduate nursing education and be recognized across health disciplines, and to prospective students, alumni and nursing leaders as innovative scholars and researchers who improve human health through strategic partnerships and interprofessional collaboration that shapes new delivery models of quality health care and nursing education.

Programs

Department of Graduate Nursing

Master's Degrees

- Nursing (M.S.) - Nurse Administrator Specialization
- Nursing (M.S.) - Nurse Educator Specialization

Doctoral Degrees

- Nursing (Ph.D.)

Professional Doctoral Degrees

- Nursing (D.N.P.)
- Nursing (D.N.P.) - Clinical Nurse Leader Specialization
- Nursing (D.N.P.) - Family Nurse Practitioner Specialization
- Nursing (D.N.P.) - Psychiatric Mental Health Nurse Practitioner Specialization

Certificates

- Post-Graduate Adult-Gerontology Acute Care Nurse Practitioner Certificate
- Post-Graduate Psychiatric Mental Health Nurse Practitioner Certificate

College of Pharmacy and Allied Health Professions

Dan Hansen, Laughrey Endowed Dean
Brad Laible, Associate Dean for Academic Programs
James Clem, Associate Dean of Student Services
Sanku Mallik, Associate Dean of Research
College of Pharmacy and Allied Health Professions
Avera Health and Science Center 133, Box 2202C
605-688-6197

The mission of the SDSU College of Pharmacy and Allied Health Professions is to provide high quality, interprofessional, student-centered education; foster discovery through innovative research and scholarship; and advance the provision of health care. The College is nationally recognized for excellence in preparing students to provide high quality, patient-centered and population-based health care. Our graduate programs feature learning opportunities in the health care setting and research laboratories as well as educational experiences with students from other health care professions. Research teams of faculty and students are making progress on projects that can enhance the health and wellbeing of people around the world. The College's growing research portfolio includes oncology, unique drug delivery systems, opioid addiction, perinatal health, pharmacogenomics, ophthalmic medicine, and new models of care.

Programs

College of Pharmacy and Allied Health Professions

Professional Doctoral Degrees

- Pharmacy (Pharm.D.)

Department of Allied and Population Health

Master's Degrees

- Public Health (M.P.H.)

Certificates

- Public Health Certificate

Department of Pharmaceutical Sciences

Master's Degrees

- Pharmaceutical Sciences (M.S.)

Doctoral Degrees

- Pharmaceutical Sciences (Ph.D.)

Graduate School

Nicole Lounsbery, Director
Graduate School
Morrill Hall 130, Box 2201
605-688-4181

The South Dakota State University Graduate School advances post-baccalaureate education to meet the economic, technological, and societal needs of South Dakota, the region, and beyond. The Graduate School supports graduate student

success and fosters innovation in advanced education, research, and creative activity.

The Graduate School is an administrative unit that supports graduate student success, retention, and defines academic policies relating to graduate education. The Graduate School assists degree programs in seeking academic excellence through the enhancement of graduate student research and creative activity, the promotion of opportunity among the graduate student body and graduate faculty. The Graduate School serves as a resource for the exploration, planning, and implementation of graduate programs across SDSU's academic units.

Jerome J. Lohr College of Engineering

Sanjeev Kumar, Jerome J. Lohr Endowed Dean
Suzette Burckhard, Assistant Dean for Academic Programs
Jerome J. Lohr College of Engineering
Crothers Engineering Hall 201, Box 2219
605-688-4161

Engineering programs have been a vital part of SDSU since 1881, and graduates of the Jerome J. Lohr College of Engineering have extended the bounds of science and improved our way of life in many ways. The college has a rich history and long tradition of providing outstanding graduates who are well prepared for exciting careers in engineering, mathematics, science, and technology. The six academic departments of the college offer a broad range of programs, each with its unique features that ensure the student of both depth and breadth in their field of study. The mission of the college is to provide a rigorous, practical education for our students oriented toward problem solving; to conduct world-class research with a regional emphasis; and to provide technical assistance to existing and emerging business, industry, and government.

Programs

Jerome J. Lohr College of Engineering

Master's Degrees

- Engineering (M.Eng.)

Doctoral Degrees

- Geospatial Science and Engineering (Ph.D.) - Geography Specialization
- Geospatial Science and Engineering (Ph.D.) - Remote Sensing Specialization

Department of Agricultural and Biosystems Engineering

Master's Degrees

- Agricultural and Biosystems Engineering (M.S.)

Doctoral Degrees

- Agricultural and Biosystems Engineering (Ph.D.)
- Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization

Certificates

- Precision Agriculture Certificate

Department of Civil Engineering

Master's Degrees

- Civil Engineering (M.S.)

Doctoral Degrees

- Civil Engineering (Ph.D.)

Department of Construction and Concrete Industry Management

Master's Degrees

- Engineering (M.Eng.)

Certificates

- Surface Mount Technology Certificate

Department of Mathematics and Statistics

Master's Degrees

- Data Science (M.S.)
- Mathematics (M.S.)
- Mathematics (M.S.) - Statistics Specialization
- Statistics (M.S.)

Doctoral Degrees

- Computational Science and Statistics (Ph.D.) - Data Science Specialization
- Computational Science and Statistics (Ph.D.) - Mathematics Specialization
- Computational Science and Statistics (Ph.D.) - Statistics Specialization

Certificates

- Advanced Graduate Mathematics Certificate
- Data Science Certificate
- Graduate Mathematics Certificate

Department of Mechanical Engineering

Master's Degrees

- Mechanical Engineering (M.S.)

Doctoral Degrees

- Mechanical Engineering (Ph.D.)

McComish Department of Electrical Engineering and Computer Science

Master's Degrees

- Artificial Intelligence Engineering (M.S.)
- Computer Science (M.S.)
- Electrical Engineering (M.S.)

Doctoral Degrees

- Artificial Intelligence Engineering (Ph.D.)
- Computer Science (Ph.D.)
- Electrical Engineering (Ph.D.)

Certificates

- Power Systems Engineering Certificate

Ness School of Management and Economics

Master's Degrees

- Operations Management (M.S.)
- Operations Management (M.S.) - Supply Chain Management Specialization

Certificates

- Foundations of Operations Management Certificate



Departments and Schools

Department of Agricultural and Biosystems Engineering

Kasiviswanathan Muthukumarappan, Klingbeil Endowed Department Head and Distinguished Professor
Lin Wei, Professor and Graduate Coordinator
Department of Agricultural and Biosystems Engineering
Raven Precision Agriculture Center 136
605-688-5666

The mission of the Department of Agricultural and Biosystems Engineering is to provide professional education at the undergraduate and graduate levels for engineers and technologists who will serve agricultural, biological, and environmental industries and to conduct research and provide technological leadership in engineering design and management for the agricultural community and its affiliated industries.

Graduate Faculty

Ryan Lefers, William Mibra Griffith and Byrne S. Griffith Chair in Water Resources and Professor of Practice
Sushant Mehan, Assistant Professor
Kasiviswanathan Muthukumarappan, Klingbeil Endowed Department Head and Distinguished Professor
Mazhar Sher, Assistant Professor
Todd P. Trooien, Professor
Lin Wei, Professor
Pappu Yadav, Assistant Professor
Ren Yang, Assistant Professor

Programs

Master's Degrees

- Agricultural and Biosystems Engineering (M.S.) (Jerome J. Lohr College of Engineering)

Doctoral Degrees

- Agricultural and Biosystems Engineering (Ph.D.) (Jerome J. Lohr College of Engineering)
- Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization (College of Agriculture, Food and Environmental Sciences)

Certificates

- Precision Agriculture Certificate (College of Agriculture, Food and Environmental Sciences)

Facilities and Services

The Agricultural and Biosystems Engineering Department is housed in the Raven Precision Agriculture Center building. The entire building is dedicated to undergraduate and graduate instruction, research, and outreach projects that support the engineering needs of production agriculture, natural resource conservation, and value-added processing of the food and fiber produced in the region and nationally. Additional research and outreach projects take place at multiple field locations in the region. There are more than 25,000 square feet of space dedicated to industry-sponsored student design projects and cutting edge research, including a full fabrication shop and a computer lab to support these efforts. The department is also home to the South Dakota Water Resources Institute (SDWRI), dedicated to the proper stewardship of the state's water resources.

Student Engagement and Support Opportunities

Many students participate in activities such as internships and research projects. Other ABE opportunities are available via our student branch of the American Society of Agricultural and Biological Engineers (ASABE). In addition, engineering opportunities are available via organizations such as Society of Women Engineers, Engineers Without Borders, and others. The most outstanding students are honored by induction into the ABE honorary society of Alpha Epsilon, Agricultural honorary society of Gamma Sigma Delta and engineering honor societies such as Tau Beta Pi.

Department of Agronomy, Horticulture and Plant Science

Karen Sanguinet, Klingbeil Endowed Department Head
Keerthi Mandyam, Associate Professor and Graduate Coordinator
Department of Agronomy, Horticulture and Plant Science
Raven Precision Agriculture Center 140
605-688-4600 (Department Head, SRPAC 140)
605-688-4450 (Teaching Office, SNP 247)

The department is committed to graduate education in applied and basic plant sciences, as well as to providing experiences in instruction and grant writing towards producing competitive students well-prepared for careers in the plant sciences.

Graduate training includes classroom instruction, seminars designed to hone oral and written skills, and meaningful experience in laboratory and field research techniques. The department encourages collaborations among disciplines and research programs that inform graduate training.

The Department of Agronomy, Horticulture and Plant Science is an integrated department that includes programs in crop production, plant breeding, entomology, plant pathology, soils, GIS, water management, weed science, and biotechnology. The primary goals of the department are to conduct research in the above areas, to disseminate the research to the public, and to help prepare students for quality lives which includes preparation for an occupation in one or more of the below-mentioned disciplines.

Graduate Faculty

Gazala Ameen, Assistant Professor
John Ball, Professor
Bruce Bleakley, Professor
Melanie Caffe, Professor
Jiyul Chang, Lecturer
Jason Clark, Associate Professor
David Clay, South Dakota Corn Endowed Chair in Precision Agriculture and Distinguished Professor
Sachin Dhanda, Assistant Professor
Thomas DeSutter, Adjunct Professor

Anne Fennell, Distinguished Professor
Bryan W. French, Adjunct
Hani Ghosheh, Lecturer
Karl D. Glover, Professor
Jose Luis Gonzalez-Hernandez, Professor
Christopher Graham, Professor
Xingyou Gu, Professor
Louis S. Hesler, Adjunct
Eric Jones, Assistant Professor
David Karki, Assistant Professor
Péter Kovács, Associate Professor
Kristine Lang, Assistant Professor
Marie Langham, Adjunct
Michael Lehman, Adjunct
Keerthi, Mandyam, Associate Professor
Abigail Martens, Assistant Professor
Ravi Mural, Assistant Professor
Ali Nafchi, Assistant Professor
Thandiwe Nleya, Professor
Vander Nunes, Assistant Professor
Shannon Osborne, Adjunct
Kristopher Osterloh, Associate Professor
Cheryl Reese, Klingbeil Endowed Educator in Precision Agriculture and Senior Lecturer
Karen Sanguinet, Klingbeil Endowed Department Head and Professor
Sharon Schneider, Adjunct
Sunish Sehgal, Professor
Peter Sexton, Associate Professor
Madalyn Shires, Assistant Professor
Govinda Shreshta, Assistant Professor
Shyam Solanki, Assistant Professor
Senthil Subramanian, Professor
Adam Varenhorst, Associate Professor
Shaina Westhoff, Lecturer
Sutie Xu, Adjunct
Teng Yang, Assistant Professor

Programs

Master's Degrees

- Plant Science (M.S.)

Doctoral Degrees

- Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Plant Science Specialization
- Plant Science (Ph.D.)

Certificates

- Precision Agriculture Certificate

Facilities and Services

The department is housed in seven buildings across campus. These buildings provide research and teaching laboratories, greenhouses, seed house facilities and access to the functional genomics core facility. The on and off-campus facilities also include the SDSU Seed Testing Laboratory, SDSU Plant Diagnostics Clinic, Seed Certification, and Foundation Seed Stocks Division, which operates as services for the public. In addition, the department conducts research at five research farms near campus and five research stations across the state. The Field Specialists are housed in seven regional extension offices across the state.

Student Support and Engagement Opportunities

Students are encouraged to join and participate in the Plant Science Graduate Student Association (PSGSA) which conducts professional and social events on a regular basis. In addition, students are encouraged to participate and mentor undergraduate students in the Arboriculture Club, Agronomy and Conservation Club, or Horticulture and Urban Agriculture Club which offers opportunities for fellowship, leadership, and career planning for undergraduate students.

Department of Allied and Population Health

Deidra Van Gilder, Interim Department Head
Department of Allied and Population Health
Avera Health and Science Center 133, Box 2202C
605-688-6197

The Department of Allied and Population Health offers the Master of Public Health (M.P.H.) degree, a graduate certificate in public health, and teaches courses in social and administrative pharmacy for the Doctor of Pharmacy (Pharm.D.) program. At the undergraduate level, the department offers a B.S. in Medical Laboratory Science and an A.S. and B.S. in Respiratory Care. In addition to teaching, the department advances population health through research and innovations in community health and wellness services.

Graduate Faculty

James Amell, Julie Stevens and Dale Evenson Faculty Scholar for Rural Health and Associate Professor
Stephanie Hanson, Assistant Professor
Erin Miller, Gail M. Gullickson Professor of Public and Population Health and Associate Professor
Christopher Robbins, Assistant Professor

Programs

Master's Degrees

- Public Health (M.P.H.)

Certificates

- Public Health Certificate

Facilities and Services

The Master of Public Health (M.P.H.) degree program is an interdisciplinary graduate program, involving departments and colleges across the university.

Student Engagement and Support Opportunities

The program offers student engagement through research and practice opportunities. Ongoing partnerships exist with entities such as the South Dakota Area Health Education Center (AHEC), Indian Health Services, and the South Dakota Department of Health. Students can also become active in the South Dakota Public Health Association (SDPHA).

Department of Animal Science

Michael Gonda, Interim Department Head
Cody Wright, Professor and Graduate Coordinator
Department of Animal Science
Animal Science Complex 103A
605-688-5165

The Department of Animal Science offers graduate programs leading to the Master of Science and Doctor of Philosophy degrees in Animal Science. An Animal Science Certificate is also offered. Faculty and graduate students are actively involved in basic and/or applied research in the fields of nutrition, reproductive physiology, animal breeding and genetics, meat science, gastrointestinal microbiology, and livestock production systems.

The department is committed to providing graduate students with quality educational and research experiences and preparing them to meet the challenges of a competitive job market upon graduation.

Graduate Faculty

Amanda Blair, Professor
John Blanton, College of Agriculture, Food and Environmental Sciences Associate Dean – Research, Director – South Dakota Agricultural Experiment Station, and Professor
Ethan Blom, Adjunct
Casey Bradley, Adjunct
Jameson Brennan, Associate Professor
Anthony Bryant, Adjunct
Kristi Cammack, College of Agriculture, Food and Environmental Sciences Assistant Dean – West River Operations, Director – West River Research and Extension Center, and Professor
Joseph Cassady, College of Agriculture, Food and Environmental Sciences South Dakota Corn Utilization Council Endowed Dean and Professor
Erin DeHaan, Assistant Professor
Jessica Drum, Assistant Professor
Wes Gentry, Adjunct
Michael Gonda, Interim Department Head and Professor
Judson Grubbs, Associate Professor
Elizabeth Hines, Adjunct
John Jaeger, Professor
John Killefer, Professor
Carter Kruse, Adjunct
Crystal L. Levesque, Professor
Hector Menendez, Assistant Professor
Ana Baiao Menezes, Assistant Professor
Richard Nicolai, Adjunct
Rosemarie Nold, College of Agriculture, Food and Environmental Sciences Assistant Dean, Director – Institute of Global Agricultural Leadership, and Professor
George A. Perry, Adjunct

Ira Parsons, Assistant Professor
Lucas Rodrigues, Adjunct
Rafe Royall, Assistant Professor
Warren Rusche, Assistant Professor
Chris Schauer, Adjunct
Zachary Smith, Associate Professor
Benoit St-Pierre, Associate Professor
Rebecca Swanson, Assistant Professor
Robert C. Thaler, Farm Credit Services of American Endowed Chair in Swine Production and Distinguished Professor
Keith R. Underwood, Associate Professor
Philip Urso, Assistant Professor
Julie A. Walker, Professor
Eric Weaver, Assistant Professor
Cody L. Wright, Professor

Programs

Master's Degrees

- Animal Science (M.S.)

Doctoral Degrees

- Animal Science (Ph.D.)

Certificates

- Animal Science Certificate

Facilities and Services

Training and experience in research methods are among the most important facets of a well-rounded graduate student education. Excellent facilities and large herds and flocks of livestock are available for Animal Science research at South Dakota State University. Modern research facilities, including state-of-the-art facilities for cow-calf management and ruminant nutrition, along with new swine education and research facilities, both on-site and off-site, were completed in 2016.

Student Engagement and Support Opportunities

The department conducts cutting edge research that creates opportunities for graduate students. Qualified students may apply for a Graduate Research Assistant position.

Department of Biology and Microbiology

Yajun Wu, Interim Department Head
Radhey Kaushik, Professor and Graduate Coordinator
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Graduate degrees available through the Department of Biology and Microbiology are the M.S. and the Ph.D. in Biological Sciences. Students may choose specializations in Biology or Microbiology for the M.S. program, and Biology, Microbiology, or Molecular Biology for their Ph.D. program. The M.S. Biological Sciences degree program prepares students for a variety of careers, such as teachers, laboratory research assistants, positions with state and federal agencies, and many private industry positions. Some M.S. students choose to pursue a Ph.D. degree after completing their M.S. degree at SDSU. Similar career opportunities also exist for students completing their Ph.D. degree; however, job placement is typically at a higher level. University or college faculty positions generally require a Ph.D. degree. The M.S. in Human Biology provides graduate-level preparation for students for successful admission to professional schools, including those not admitted directly to professional school from an undergraduate program.

Normally, at least two years are needed to complete the requirements for the M.S. degree and at least four years (without a prior master's degree) for the Ph.D. degree. For some students, particularly those pursuing a career in secondary school teaching, a M.S. program with a non-thesis research option (Plan B) is available. Additional coursework and a research paper are required in lieu of the thesis for the Plan B program. A list of graduate courses in the Biology and Microbiology Department is available in the Graduate Bulletin. Additional courses may be taken in closely related departments, such as Chemistry and Biochemistry, Mathematics and Statistics, Veterinary and Biomedical Sciences, Natural Resource Management, Plant Science, and Animal Science.

Graduate Faculty

Bruce Bleakley, Professor
Volker Brözel, Professor
Nicholas Butzin, Associate Professor
Charles Fenster, Professor
Ryan Hanson, Assistant Professor
Greg Heiberger, Associate Professor and Dean of the Van D. and Barbara B. Fishback Honors College
Gergely Imre, Assistant Professor
Bishnu Karki, Associate Professor
Radhey Kaushik, Professor and Graduate Coordinator
Wanlong Li, Professor
Mark Messerli, Associate Professor
Ananda Nanjundaswamy, Richard and Janice Vetter Professorship in Biology and Microbiology and Associate Professor
Madhav Nepal, Professor
Ali Parsaeimehr, Assistant Research Professor
Ethan Snow, Associate Professor
Senthil Subramanian, Professor and Dean of the College of Natural Sciences
Natalie Thiex, Associate Professor
Xiuqing Wang, Professor
Yajun Wu, Professor and Interim Department Head
Ruanbao Zhou, Professor

Programs

Master's Degrees

- Biological Sciences (M.S.)
- Biological Sciences (M.S.) - Biology Specialization
- Biological Sciences (M.S.) - Microbiology Specialization
- Human Biology (M.S.)

Doctoral Degrees

- Biological Sciences (Ph.D.)
- Biological Sciences (Ph.D.) - Biology Specialization
- Biological Sciences (Ph.D.) - Microbiology Specialization
- Biological Sciences (Ph.D.) - Molecular Biology Specialization

Certificates

- Biotechnology Certificate

Department of Chemistry, Biochemistry and Physics

Brian Logue, Department Head
Department of Chemistry, Biochemistry and Physics
Avera Health and Science Center 247
605-688-5151 (Chemistry and Biochemistry)

Robert McTaggart, Assistant Department Head
Daktronics Engineering Hall 255
605-688-5428 (Physics)

The graduate programs in the department lead to a Applied Physics or Chemistry Education certificate, the M.S. or Ph.D. degrees in Chemistry, the M.S. or Ph.D. degree in Biochemistry, or the M.S. or Ph.D in Physics. Research programs exist in condensed matter (materials) physics, health/nuclear physics, analytical/environmental chemistry, biochemistry, chemical education, and organic/natural products chemistry.

Graduate Faculty

Michelle Baack, Adjunct Associate Professor
Derrick Brandis, Assistant Professor
Francisco Bustos, Adjunct Assistant Professor
Suvobrata Chakravarty, Professor
Indra Chandrasekar, Adjunct Assistant Professor
Pilar De La Puente, Adjunct Assistant Professor
Rudolph Faustino, Adjunct Assistant Professor
Darci Fink, Associate Professor
Kevin Francis, Adjunct Assistant Professor
Yung Huh, Professor
Adam Hoppe, Associate Dean of Research and Professor
Nurul Islam, Assistant Professor
Melody Jewell, Senior Lecturer
Michael Kareta, Adjunct Assistant Professor
Parashu Kharel, Professor
Lance Lee, Adjunct Associate Professor
Brian Logue, Department Head and Professor
Abdelhalim Loukil, Adjunct Assistant Professor
Sara Madsen, Senior Lecturer
Robert McTaggart, Professor
Matthew Miller, Professor
Keith Miskimins, Adjunct Professor
David Pearce, Adjunct Professor
Louis-Jan Pilaz, Adjunct Assistant Professor
Kyle Roux, Adjunct Associate Professor

Alexei Savinov, Adjunct Assistant Professor
Jay Shore, Associate Professor
Kameswaran Surendran, Adjunct Associate Professor
Jianning Tao, Adjunct Assistant Professor
Paola Vermeer, Adjunct Assistant Professor
Rachel Willand-Charnley, Bill and Nancy Wadsworth Endowed Research Faculty Scholar in Chemistry and Associate Professor
Cheng Zhang, Associate Professor

Programs

Master's Degrees

- Biochemistry (M.S.)
- Chemistry (M.S.)
- Chemistry (M.S.) - Chemistry Education Specialization
- Physics (M.S.)

Doctoral Degrees

- Biochemistry (Ph.D.)
- Chemistry (Ph.D.)
- Physics (Ph.D.)

Certificates

- Applied Physics Certificate
- Chemistry Education Certificate

Facilities and Services

The chemistry and biochemistry programs are housed in the Avera Health and Science Center, which provides 100,000 sq. ft. of research and instructional space. The physics programs are housed in Daktronics Engineering Hall, which provides 29,000 sq. ft. of research and instructional space.

Department of Civil and Environmental Engineering

Guanghui Hua, Department Head
Francis Ting, Professor and Graduate Coordinator
Department of Civil and Environmental Engineering
Crothers Engineering Hall 310, Box 2219
605-688-5427

Civil Engineering includes design, construction, and operation and maintenance of highways, airports, buildings, bridges, dams, water supply and distribution systems, waste water collection systems and treatment plants, irrigation and drainage systems, river and harbor improvements and many other infrastructure facilities essential in modern life. Civil Engineers are custodians of the built environment and are responsible for all aspects of the world's infrastructure. The Civil and Environmental Engineering Department's mission is to provide a highly respected, rigorous, practical education for our students, oriented toward problem solving through the integration of education, research and lifelong learning.

Graduate Faculty

Aritra Banerjee, Assistant Professor
Suzette Burckhard, Assistant Dean and Professor
Eleftheria Efthymiou, Assistant Professor
Rouzbeh Ghabchi, John M. Hanson Structural and Construction Engineering Professorship and Associate Professor
Guanghui Hua, Department Head and Professor
Akram Jawdhari, Assistant Professor
Sanjeev Kumar, Jerome J. Lohr Endowed Dean of the Jerome J. Lohr College of Engineering and Professor
Kyungnan Min, Senior Lecturer
Francis C.K. Ting, Professor

Programs

Master's Degrees

- Civil Engineering (M.S.)

Doctoral Degrees

- Civil Engineering (Ph.D.)

Facilities and Services

The Department of Civil and Environmental Engineering is home for state-of-the-art experimental and research facilities. The department is housed in Crothers Engineering Hall and maintains over 18,000 square feet of classroom and laboratory space dedicated to instruction and research experience, as well as testing laboratories for research and sponsored projects. This includes the Lohr Structures Lab, Fluid Mechanics Lab, HDR Environmental Lab, Geotechnical Lab, Concrete Lab, Structural Materials Lab, Bituminous Lab, Capstone Design Studio and Student Computer Lab. The Lohr Structures Laboratory is a 400 square meters high-bay/strong-floor structural testing facility that is configured to accommodate large-and full-scale test specimens. The Fluid Mechanics Laboratory has a 25-m-long, 0.90-m-wide and 0.75-m-deep research flume which can be used either as an open channel or as a wave tank. The HDR Environmental Laboratory is designed to perform three major functions: Teaching, Analysis, and Research. The research area of the HDR laboratory contains space for graduate work, a ventilated room for biological research, and an area with a high ceiling to accommodate pilot plant work. In addition, the materials, geotechnical, and asphalt laboratories are equipped with basic and advanced testing equipment which can support experimental research.

Student Support and Engagement Opportunities

The department provides outreach and services through the American Society of Civil Engineers Student Chapter Program.

Students seeking a Ph.D. degree in civil engineering will be conducting research in their area of interest under the mentorship of highly qualified and dedicated faculty. Research and teaching assistantships will be offered to qualified students. Students will also be expected to engage in scholarly activities through publishing of peer-reviewed journal papers and dissemination of research results at national conferences.

Department of Construction and Concrete Industry Management

Suzette Burckhard, Interim Department Head
Department of Construction and Concrete Industry Management
Solberg Hall 116, Box 2223
605-688-6417

The mission of the Construction and Concrete Industry Management Department is to provide high quality, relevant, and contemporary learning experiences for our students; to enhance the economic vitality of the region through outreach, research, and service initiatives for our industrial constituents; and to promote our respective disciplines through these outreach ventures and scholarly activity.

Graduate Faculty

Phuong Nguyen, Assistant Professor
Carrie Steinlicht, Senior Lecturer
Albena Yordanova, Senior Lecturer

Programs

Master's Degrees

- Engineering (M.Eng.)

Certificates

- Surface Mount Technology Certificate

Department of Dairy and Food Science

Londa Nwadike, David A. Thompson Endowed Department Head
Department of Dairy and Food Science
Alfred Dairy Science Hall 136, Box 2104
605-688-4116

The Dairy and Food Science Department offers graduate programs in Biological Sciences leading to a Master of Science or Doctor of Philosophy degree with specialization in Dairy Science for both Dairy Manufacturing and Dairy Production, and specialization in Food Science. The department is equipped with excellent laboratories and a dairy processing plant which manufactures cheese, butter, ice cream, and other products.

Metabolism and surgical facilities in the Animal Science Complex, and specialized laboratory equipment in Chemistry and Biochemistry, Veterinary and Biomedical Sciences, Health and Human Sciences Departments, and the Edgar S. McFadden Biostress laboratories, are also available. Graduate students accepted into the program will have opportunities to utilize these facilities to develop basic and/or applied research programs in dairy product processing and development, microbiology, chemistry, food safety, dairy cattle nutrition, management, and metabolism, while interacting with well qualified faculty. The Food Science specializations offer research opportunities in analytical methods for nutrient measurement, new food processing methods and carbohydrate chemistry.

The SDSU Dairy and Food Science department is an active part of the Midwest Dairy Foods Research Center, which is partially supported by National Dairy Council and Midwest Dairy Association. This provides graduate students in the Dairy Manufacturing area with a unique opportunity to be involved with current issues and research needs of the dairy industry.

Graduate Faculty

Sanjeev Anand, Distinguished Professor
Tony Bruinjé, Assistant Professor
Gengjun Chen, Assistant Professor
Clifford Hall, Professor
Srinivas Janaswamy, Associate Professor
Maneesha Mohan, Alfred Chair in Dairy Education and Associate Professor
Londa Nwadike, David A. Thompson Endowed Department Head and Professor
Maristela Rovai, Associate Professor
Prafulla Salunke, Assistant Professor
Turner Swartz, Assistant Professor

Programs

Master's Degrees

- Biological Sciences (M.S.) - Dairy Science Specialization
- Biological Sciences (M.S.) - Food Science Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.) - Dairy Science Specialization
- Biological Sciences (Ph.D.) - Food Science Specialization

Student Support and Engagement Opportunities

An application to the graduate program serves as an application for a graduate assistantship. Qualified applicants may be eligible for financial aid in the form of departmental research assistantships for master's and doctoral students.

Department of Geography and Geospatial Sciences

Bob Watrel, Department Head
George White, Professor and Graduate Coordinator (M.S. Program)
Xiaoyang Zhang, Distinguished Professor and Graduate Coordinator (Ph.D. Program)
Department of Geography and Geospatial Sciences
Wecota Hall 109, Box 506
605-688-4511

Geography is an exciting field that recognizes the complex relationships and linkages of human and natural systems; geography is the science of place. As such, geographers study and analyze many of today's pressing issues, which range from climate change, human modification of the Earth's systems, environmental hazards, resource assessment, and land use to population distributions, urbanization, cultural adaption, political organization of space, and globalization. Geographers' tools, skill sets, and techniques, which include computer cartography, remote sensing, Global Positioning Systems (GPS), and Geographic Information Systems (GIS), are recognized increasingly as essential for solving many contemporary questions and are not only being adopted by businesses and governmental agencies but also by wider society. More people are recognizing that geography is fundamental to understanding our world and solving many of the problems that confront us.

The Department of Geography and Geospatial Sciences at South Dakota State University offers Bachelor of Science programs in Geography and Geographic Information Sciences (GISc), Master of Science degrees in Geography and Geography with a specialization in Geographic Information Systems, and a Ph.D. in Geospatial Sciences and Engineering. A faculty with a wide range of expertise focuses on topics such as environment, geomorphology, soils, land use, hazards, energy use, cultural issues, and historical and political geography. Regional specialties include North America and Europe.

Graduate Faculty

Saraswati Bhusal, Assistant Professor
Jean Robert Bwangoy, Adjunct Associate Professor
Thomas Craig, Assistant Professor
Chris Crawford, Adjunct Associate Professor
Kimberly Johnson Maier, Assistant Professor
Maitiniyazi Maimaitijiang, Assistant Professor
Bruce Millett, Associate Professor
Birgit Peterson, Adjunct Associate Professor
David Roy, Adjunct Professor
Bob Watrel, Department Head and Professor
George W. White, Professor
George Xian, Adjunct Professor
Hankui Zhang, Associate Professor
Xiaoyang Zhang, Distinguished Professor

Programs

Master's Degrees

- Geography (M.S.)
- Geography (M.S.) - Geographic Information Sciences Specialization

Doctoral Degrees

- Geospatial Science and Engineering (Ph.D.) - Geography Specialization
- Geospatial Science and Engineering (Ph.D.) - Remote Sensing Specialization

Certificates

- Geographic Information Sciences Certificate
- Geospatial Intelligence Certificate

Accreditation

The Geospatial Intelligence graduate certificate is accredited by the United States Geospatial Intelligence Foundation (USGIF).

Facilities and Services

The Department of Geography and Geospatial Sciences houses the Geospatial Sciences Center of Excellence and produces its own annual Geography Convention, the longest running such event in the United States.

The Geospatial Science and Engineering (Ph.D.) facilities are housed in various locations on campus at SDSU, including the Geospatial Sciences Center of Excellence in Wecota Hall and the Image Processing Laboratory in Daktronics Engineering Hall, as well at the United States Geological Survey's Center for Earth Resources Observation and Science near Baltic, South Dakota.

Student Support and Engagement Opportunities

The department provides numerous opportunities for student engagement. For example, the Geography Club is a student organization centered on both academic and social functions. Membership is open to anyone interested. Additionally, the South Dakota State Geography Convention.

Students and faculty regularly travel including attendance at regional and national geography meetings, as well as travel to other parts of the world in pursuit of their individual scholarly interests.

Department of Graduate Nursing

Heidi Mennenga, Associate Dean for Academic Programs
Department of Graduate Nursing
Wagner Hall 255, Box 2275
605-688-5178

Graduate nursing education is crucial for role preparation in advanced practice, nursing education, nursing administration, nursing leadership, and research. Collectively, these roles meet the growing needs of the healthcare and academic settings. The Department of Graduate Nursing offers a variety of degrees, specializations, and curriculum plans.

Students can earn a Master of Science (M.S.) degree in two specializations: Nurse Educator and Nurse Administrator.

For students with a previous master's degree, two post-graduate certificate options are available: Adult-Gerontology Acute Care Nurse Practitioner and Psychiatric Mental Health Nurse Practitioner.

Graduate options continue in the doctoral programs. The Doctor of Nursing Practice degree will prepare nurses to bring a transformative level of care and leadership to primary care settings in rural and underserved communities. Students can earn a Doctor of Nursing Practice (D.N.P.) with the specialty area of a Clinical Nurse Leader, Family Nurse Practitioner, or Psychiatric Mental Health Nurse Practitioner. Students may enter these programs with either a bachelor's or a master's degree in nursing. Established in 2005, the Doctor of Philosophy in Nursing prepares nurse scientists to assume roles as healthcare researchers, faculty, and healthcare administrators with an emphasis on health promotion and disease prevention in underserved and rural populations. The Ph.D. program educates nurse scientists in academic, research, practice, and policy roles to address healthcare issues in urban, rural, frontier, and reservation areas.

Graduate Faculty

Robin Arends, Clinical Associate Professor
Brittany Brennan, Assistant Professor
Robin Brown, Associate Professor
Dannica Callies, Clinical Associate Professor
Nicole Carlson, Assistant Professor
Karin Emery, Assistant Dean (Brookings) / Associate Professor
Samantha Fischbach, Assistant Professor
Theresa Garren-Grubbs, Assistant Professor
Mary Anne Krogh, Dean / Professor
Michelle Lichtenberg, Assistant Professor
Heidi Mennenga, Associate Dean / Professor
Sarah Mollman, Associate Dean / Associate Professor
Lea Niederbaumer, Clinical Assistant Professor

Adam Norenberg, Clinical Assistant Professor
Christina Plemmons, Assistant Dean / Clinical Assistant Professor
Danielle Schievelbein, Assistant Professor
Nicole Selle, Clinical Assistant Professor
Abby Seydel, Assistant Professor
Amy VahnDijk, Clinical Assistant Professor
Uzma Zaidi, Professor

Programs

Master's Degrees

- Nursing (M.S.) - Nurse Administrator Specialization
- Nursing (M.S.) - Nurse Educator Specialization

Doctoral Degrees

- Nursing (Ph.D.)

Professional Doctoral Degrees

- Nursing (D.N.P.)
- Nursing (D.N.P.) - Clinical Nurse Leader Specialization
- Nursing (D.N.P.) - Family Nurse Practitioner Specialization
- Nursing (D.N.P.) - Psychiatric Mental Health Nurse Practitioner Specialization

Certificates

- Post-Graduate Adult-Gerontology Acute Care Nurse Practitioner Certificate
- Post-Graduate Psychiatric Mental Health Nurse Practitioner Certificate

Department of Mathematics and Statistics

Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering 209, Box 2225
605-688-6196

The mission of the Department of Mathematics and Statistics is to provide a rich environment which fosters excellent student centered instruction and engagement in high-quality research and scholarly activity. The department provides mathematical and statistical services and prepares graduates that improve the quality of life in South Dakota, the region, the nation, and the world.

The SDSU Department of Mathematics and Statistics offers the M.S. in Mathematics, the M.S. in Statistics, the M.S. in Data Science, and the Ph.D. in Computational Science and Statistics. All four programs offer students the opportunity to pursue graduate studies in a collegial environment with high faculty-student interaction and research activity, and are particularly effective at preparing graduates to work in business, industry, or government as well as the more traditional area of higher education.

Graduate Faculty

Ross Abraham, Professor
Matthew Biesecker, Associate Professor
Frederick Boehm, Assistant Professor
Gemechis Djira, Professor
Xijin Ge, Professor
Felix Gnettner, Assistant Professor
Jung-Han Kimn, Professor
Christine Larson, Kemp Honors Professor of Honors Calculus and Professor
Semhar Michael, Professor
Trang Nguyen, Assistant Professor
Michael Puthawala, Assistant Professor
Chris Saunders, Professor
Donald Vestal, Associate Professor
Sharon Vestal, Professor

Programs

Master's Degrees

- Data Science (M.S.)
- Mathematics (M.S.)
- Mathematics (M.S.) - Statistics Specialization
- Statistics (M.S.)

Doctoral Degrees

- Computational Science and Statistics (Ph.D.) - Data Science Specialization
- Computational Science and Statistics (Ph.D.) - Mathematics Specialization
- Computational Science and Statistics (Ph.D.) - Statistics Specialization

Certificates

- Advanced Graduate Mathematics Certificate
- Data Science Certificate
- Graduate Mathematics Certificate

Student Support and Engagement Opportunities

The department has graduate research and teaching assistantships and fellowships available for a number of qualified applicants.

Department of Mechanical Engineering

Yucheng Liu, Department Head
Saikat Basu, Associate Professor and Graduate Coordinator
Department of Mechanical Engineering
Crothers Engineering Hall 221, Box 2219
605-688-5426

The Department of Mechanical Engineering offers programs of study leading to the Bachelor of Sciences (B.S.), Master of Science (M.S.), and Doctor of Philosophy (Ph.D.) degrees in Mechanical Engineering, as well as minors in Aerospace Engineering, Biomedical Engineering, and Sustainable Energy Systems. Additionally, the B.S. degree in Healthcare Systems Engineering is also offered through the department. The department is focused on developing students' problem-solving talents, built upon a solid understanding of the scientific and mathematical principles that guide engineers. The faculty members are dedicated to providing a challenging and effective learning environment. They continue to build upon their considerable expertise through engineering research and practice.

Graduate Faculty

Shabbir Ahmed, Assistant Professor
Saikat Basu, Associate Professor
Jeffrey Doom, Associate Professor
Stephen Gent, Professor
Zhong Hu, Professor
Todd Letcher, Professor
Yucheng Liu, Duane Sander Endowed Professorship in Engineering Innovation and Entrepreneurship, Professor and Department Head
Gregory Michna, Associate Professor
Solaiman Tarafder, Assistant Professor

Programs

Master's Degrees

- Mechanical Engineering (M.S.)

Doctoral Degrees

- Mechanical Engineering (Ph.D.)

Department of Natural Resource Management

Alexander (Sandy) Smart, Interim Department Head
Department of Natural Resource Management
Edgar S. McFadden Biostress Laboratory 138
605-688-6121

The Department of Natural Resource Management provides undergraduate and graduate programs focused on improving the understanding and management of natural resources. The quality of life for many humans is intimately tied to the use and conservation of natural resources. Thus, educational opportunities in natural resource management at SDSU can lead to a wide range of career opportunities. Departmental faculty and staff conduct research and provide outreach services that contribute to the understanding and management of natural resources on local to global scales.

Graduate Faculty

Christopher Cheek, Assistant Professor
Steve Chipps, Professor
Alison Coulter, Associate Professor
David Coulter, Assistant Professor
Sean Di Stéfano, Assistant Professor
Krista Ehlert, Associate Professor
A. Joshua Leffler, Assistant Department Head and Professor
Jeff Martin, Assistant Professor
Lora Perkins, Professor
Bill Severud, Assistant Professor
Rachel Short, Assistant Professor
Alexander (Sandy) Smart, Interim Department Head and Professor
Joshua Stafford, Associate Professor
Christy Wails, Assistant Professor
Katie Wenzell, Assistant Professor
Lan Xu, Professor
Jennifer Zavaleta Cheek, Assistant Professor

Programs

Master's Degrees

- Biological Sciences (M.S.) - Natural Resource Management Specialization
- Wildlife and Fisheries Sciences (M.S.) - Fisheries Sciences Specialization
- Wildlife and Fisheries Sciences (M.S.) - Wildlife Sciences Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.) - Natural Resource Management Specialization
- Wildlife and Fisheries Sciences (Ph.D.)

Certificates

- Grassland Management Certificate

Facilities and Services

The department is housed within the McFadden Biostress Laboratory at SDSU. The Cottonwood Station, Oak Lake Field Station, and Wildlife Research Unit provide off-campus teaching and research facilities. The South Dakota Cooperative Fish and Wildlife Research Unit is located within the department.

Department of Pharmaceutical Sciences

Hemachand Tummala, Department Head
Department of Pharmaceutical Sciences
Avera Health and Science Center 255, Box 2202C
605-688-4236 or 605-688-5598

The department offers comprehensive M.S. and Ph.D. programs in Pharmaceutical Sciences that prepare graduates for academic, industry, and research careers. Our graduates are well-placed in academic, pharmaceutical/biotechnology industry, and research institutions, as well as regulatory agencies in the US (US-FDA) and other countries. In addition to receiving national recognition for their research work, the graduate students are also active in various national scientific organizations.

Our highly dedicated faculty members provide quality education and research training in the pharmaceutical and biomedical sciences. The faculty have been recognized for the use of new teaching methods and technologies to enhance student learning. The department has an active research program in cancer, nanomedicine, infectious diseases, neuropharmacology, immunology, and eye diseases. The research expertise in the department includes medicinal chemistry, pharmacology, molecular biology, and pharmaceutics (drug and vaccine delivery systems).

Graduate Faculty

Wenfeng An, Markl Faculty Scholar in Oncology Research and Professor
Gudiseva Chandrasekher, Associate Professor
Jayarama Gunaje, Associate Professor
Bilal Hafeez, Assistant Professor
Tanvir Khaliq, Assistant Professor
Sanku Mallik, Associate Dean of Research and Professor
Shafiqur Rahman, Professor
Komal Raina, Kevin and Lorie Haarberg Endowed Chair in Oncology Research and Associate Professor
Joshua Reineke, Haarberg Drug, Disease and Delivery Research Center Director and Associate Professor
Hemachand Tummala, Department Head, Graduate Program Coordinator, and Professor

Programs

Master's Degrees

- Pharmaceutical Sciences (M.S.)

Doctoral Degrees

- Pharmaceutical Sciences (Ph.D.)

Facilities and Services

The graduate program is housed in the Avera Health and Science Center on the Brookings campus. The Avera Health and Science Center has well-equipped classrooms that utilize modern technology for delivering the curriculum. The facility has modern research laboratories with access to state-of-the-art equipment and facilities that support our growing research program. Further, researchers from the department have access to the University-wide core facilities.

Student Support and Engagement Opportunities

Graduate students may choose to become involved with the College's Honorary societies and other student organizations including the student chapter of the American Association of Pharmaceutical Scientists (AAPS).

Department of Pharmacy Practice

Shanna O'Connor, Department Head
Department of Pharmacy Practice
Avera Health and Science Center 133, Box 2202C
605-688-2100 (Sioux Falls) or 605-688-6197 (Brookings)

The Department of Pharmacy Practice builds on the fundamentals of pharmaceutical sciences so that our students gain the knowledge and expertise to become skilled pharmacy practitioners once they complete the Doctor of Pharmacy (Pharm.D.) degree.

Graduate Faculty

James Clem, Associate Dean of Student Services and Professor
Dennis Hedge, Provost and Professor
Jodi Heins, Professor
Brad Laible, Associate Dean for Academic Programs and Professor

Programs

Professional Doctoral Degrees

- Pharmacy (Pharm.D.)

Facilities and Services

The first two years of the pharmacy program are delivered in the Avera Health and Science Center, a first-class educational and research facility on the Brookings campus. The Avera Health and Science Center has enabled the college to incorporate new teaching strategies into the curriculum that will lead to pharmacy graduates that are better prepared to provide patient care utilizing modern technology and a team-based approach. The facility also has modern research laboratories that support our growing research program. The third-year courses are delivered in Sioux Falls. The transition to Sioux Falls allows students the opportunity for patient care experiences in the large and innovative health care facilities in the city.

Student Support and Engagement Opportunities

Graduate students may choose to get involved with the College's Honorary societies and other student organizations.

Department of Veterinary and Biomedical Sciences

Angela Pillatzki, Department Head
Eric Nelson, Assistant Department Head
Lisa Lunn, Associate Dean and Director Professional Program in Veterinary Medicine
Stephan Schmitz-Esser, Graduate Coordinator
Department of Veterinary and Biomedical Sciences
Animal Disease Research and Diagnostic Laboratory 1100
605-688-5172

Animal infectious disease and biomedical research in the Department of Veterinary and Biomedical Science offer outstanding students the opportunity to conduct basic and/or applied research at both the M.S. and Ph.D. degree level in infectious disease. Students have the opportunity to conduct research in a variety of disciplines with SDSU scientists while earning advanced degrees in one Biological Science. This program has a unique mission, with the primary focus of the research directed to the mechanisms of infectious diseases of food producing animals following infections with bacteria, viruses or parasites. The program uses multidisciplinary approaches. Cooperating scientists work on biological, biochemical and immunological components of animal disease systems involving the host, environment and pathogen in the areas of molecular virology, molecular biology and recombinant DNA technology, developmental diagnostics, cellular immunology, parasitology, pathogenesis, epidemiology, genetics and physiology.

Graduate Faculty

Kerry Blanton, Clinical Assistant Professor
Beverly Cassady, Clinical Assistant Professor
Russ Daly, Professor
David Knudsen, Professor
Keith Koistinen, Assistant Professor
Lisa Lunn, Professor
Peter Moisan, Associate Professor
Sunil Mor, Assistant Professor
Eric Nelson, Distinguished Professor
Carissa Odland, Clinical Assistant Professor
Angela Pillatzki, Associate Professor
Stephan Schmitz-Esser, Professor
Tamer Sharafeldin, Associate Professor
Denusha Shrestha, Assistant Professor
Aziz Siddiqui, Clinical Assistant Professor

Debin Tian, Assistant Professor
Manuel Vasquez-Hidalgo, Assistant Professor
Hilary Ward, Assistant Professor

Programs

Master's Degrees

- Biological Sciences (M.S.) - Veterinary Microbiology Emphasis or Veterinary Pathology Emphasis
- Biological Sciences (M.S.) - Veterinary Medicine Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization
- Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization

Professional Doctoral Degrees

- Professional Program in Veterinary Medicine (2+2 Collaborative Program with University of Minnesota's College of Veterinary Medicine)

Facilities and Services

- Animal Disease Research and Diagnostic Laboratory

McComish Department of Electrical Engineering and Computer Science

Rajesh Kavasseri, Interim Department Head
Jun Huang, Assistant Professor and Graduate Coordinator (Computer Science)
Xiaojun Xian, Assistant Professor and Graduate Coordinator (Electrical Engineering)
McComish Department of Electrical Engineering and Computer Science
Daktronics Engineering Hall 214
605-688-4526

The McComish Department of Electrical Engineering and Computer Science combines all aspects of electricity, electronics, hardware, and software into one multi-disciplinary unit. The department has well-established, nationally and internationally known research programs in artificial intelligence, machine learning, materials, image processing and power and energy systems.

Graduate Faculty

Robert Fourney, Associate Professor
Jun Huang, Assistant Professor
Ruyi Lian, Assistant Professor
Chulwoo Pack, Assistant Professor
Junjian Qi, Harold C. Hohbach Endowed Professor in Electrical Engineering and Associate Professor
Songxin Tan, Associate Professor
Kwanghee Won, Associate Professor
Xiaojun Xian, Assistant Professor

Programs

Master's Degrees

- Artificial Intelligence Engineering (M.S.)
- Computer Science (M.S.)
- Electrical Engineering (M.S.)

Doctoral Degrees

- Artificial Intelligence Engineering (Ph.D.)
- Computer Science (Ph.D.)
- Electrical Engineering (Ph.D.)

Certificates

- Power Systems Engineering Certificate

Facilities and Services

With more than $12 million invested in classrooms and laboratories, graduate students benefit from modern lecture rooms and gain valuable experience using state-of-the-art equipment. Daktronics Engineering Hall is home to the Electrical Engineering and Computer Science programs with over 15,000 square feet of dedicated research space. The department boasts a 5-bay multi-million dollar clean room, several class one gloveboxes, and nano-characterization labs for developing both organic and inorganic electronics, as well as numerous other labs for research in artificial intelligence, machine learning, power and alternative energy systems, sensors, and fiber optics.

Ness School of Management and Economics

Joseph Santos, Ness Endowed Director
Nicole Klein, Associate Director of Academics
David Davis, Professor and Graduate Coordinator (Economics and Business Analytics)
Ekaterina Koromyslova, Professor and Graduate Coordinator (Operations Management and Supply Chain Management)
Ness School of Management and Economics
Harding Hall
605-688-4141

The Ness School of Management and Economics offers an M.S. in Economics and an M.S. in Operations Management (MSOM), with program options designed to support both research-oriented and professionally focused graduate students. Specialized non-thesis options in Business Analytics and Supply Chain Management are available within the MSOM program.

Master of Science in Economics

The M.S. in Economics provides rigorous training in economic theory, quantitative methods, and applied analysis. The program prepares students for analytical careers in business, government, and policy institutions, as well as for doctoral study in economics or related fields. Core coursework includes advanced microeconomics, macroeconomics, and econometrics, with a strong emphasis on applied economic research. Students complete a six-credit research thesis and may customize their program through elective coursework in areas such as economics, agricultural economics, finance, and management.

Master of Science in Operations Management - Thesis Track

The M.S. in Operations Management (MSOM) thesis track is designed for professionals seeking advanced expertise in managing technical and operational functions within organizations. The curriculum emphasizes analytical decision-making and leadership in operational contexts. Core coursework includes operations management, project management, and leadership, complemented by elective coursework in three subject areas, namely resources, operations, and analysis. Students in this track complete a research thesis that integrates theory and applied problem-solving.

Master of Science in Operations Management - Non-Thesis Specializations

The M.S. in Operations Management (MSOM) program also offers two non-thesis specializations that build upon the MSOM core curriculum and emphasize applied, professionally oriented learning. Students complete either program with an integrative, strategic capstone course.

- The Business Analytics specialization focuses on data-driven decision-making and managerial analysis. Coursework includes advanced managerial economics, financial management, and marketing strategy and analytics. Graduates are prepared for roles in business analytics, consulting, management, and related fields.
- The Supply Chain Management specialization emphasizes supply chain design and coordination. Coursework includes supply chain management, transportation and logistics, and warehouse management. The specialization prepares graduates for careers in supply chain operations, logistics management, procurement, and distribution across diverse industries.

Coursework in the non-thesis MSOM options is offered in flexible formats, including hybrid and online delivery. Depending on professional and personal commitments, students may complete these programs in 12 or 24 months.

Research and teaching assistantships may be available to qualified students in either thesis track. A limited number of scholarships may be available to graduate students.

Graduate Faculty

Axton Betz-Hamilton, Associate Professor
Whoi Cho, Assistant Professor
Rohini Daraboina, Assistant Professor
David E. Davis, Professor and Graduate Coordinator
Matthew A. Diersen, Griffith Chair in Agricultural Finance and Professor
Xiaozhou Ding, Assistant Professor
Matthew Elliot, Associate Professor
Michelle Fleig-Palmer, Associate Professor
Hailong Jin, Associate Professor
Nicole Klein, Associate Director of Academics and Professor
Ekaterina Koromyslova, Professor and Graduate Coordinator
George Langelett, Professor
Hoanh Le, Assistant Professor
Andrea Leschewski, Associate Professor
Shirley Liu, Assistant Professor
Huitian Lu, Professor

Brittany McKnight, Assistant Professor
David Palmer, Professor
Joseph M. Santos, Ness Endowed Director and Professor
Oscar Sarasty, Assistant Professor
Sarah Sellars, Assistant Professor
Craig Silvernagel, Milton Nies Endowed Faculty Scholar and Associate Professor
Nacasius Ujah, Associate Professor
Evert Van der Sluis, Professor
Tong Wang, Professor
Zhiguang Wang, Everett and Bernetta DuBois Endowed Professorship in Business Finance and Investments Analysis and Professor
Biying Yang, Nies Early Career Faculty Scholar of Management and Assistant Professor
Jason Zimmerman, Professor

Programs

Master's Degrees

- Economics (M.S.) (College of Arts, Humanities and Social Sciences)
- Operations Management (M.S.) (Jerome J. Lohr College of Engineering)
- Operations Management (M.S.) - Business Analytics Specialization (College of Arts, Humanities and Social Sciences)
- Operations Management (M.S.) - Supply Chain Management Specialization (Jerome J. Lohr College of Engineering)

Certificates

- Analytical Business Management Certificate (College of Arts, Humanities and Social Sciences)
- Family Financial Planning Certificate (College of Arts, Humanities and Social Sciences)
- Foundations of Operations Management Certificate (Jerome J. Lohr College of Engineering)
- Real Estate Certificate (College of Arts, Humanities and Social Sciences)

Accelerated Master's Option

An accelerated master's degree option allows students to efficiently utilize their time in college to achieve the advanced degrees sooner. Qualified students enrolled in Ness School undergraduate programs may begin their graduate studies while they complete their undergraduate degree, applying up to 12 graduate program credits to the bachelor's degree. Students must follow the policy and procedures outlined in SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

Accreditation

The Ness School of Management and Economics is accredited by the Association to Advance Collegiate Schools of Business International (AACSB).

Student Support and Engagement Opportunities

The Ness School of Management and Economics prides itself on providing excellent academic programs and offering high-quality services to students. A limited number of research and teaching assistantships and scholarships may be available to qualified students. The Management and Economics Graduate Student Association (MEGSA) supports graduate-student engagement opportunities.

School of American and Global Studies

Christine Garst-Santos, Karen D. Stuck Endowed Director
School of American and Global Studies
Lincoln Hall 132, Box 2212
605-688-5101

The School of American and Global Studies (AGS) prepares critical thinkers and proficient researchers who are culturally literate and globally engaged. The school brings together many of the core disciplines in the humanities and social sciences. AGS offers undergraduate majors and minors in American Indian and Indigenous Studies, French Studies, German, Global Studies, History, Political Science, and Spanish, along with minors in Legal Studies, Oceti Sakowin Language, Philosophy and Religion in addition to certificates in American Civic Traditions, Basic French Language Proficiency, Basic German Language Proficiency, Basic Oceti Sakowin Language Proficiency, Basic Spanish Language Proficiency, Lobbying and Government Advocacy, Public Service, and Workplace Intercultural Competence. More broadly, the school fulfills SDSU's land-grant mission by creating an opportunity for the campus and the community to explore current and historical social, cultural and political issues in-depth. The curriculum provides students with experience in the cultural, historical, linguistic, philosophical, political, and religious systems that sustain U.S. and global societies.

School faculty efforts support a challenging curriculum that encourages civic participation to strengthen the values and historic traditions of democracy. Its members encourage and prepare students to live in an increasingly interconnected world and to understand and appreciate the human diversity created by cultures, geography, and time. The political science faculty promote an awareness and understanding of global events, while the history faculty identify the historic background and historical trends that influence these events. The modern languages and American Indian and Indigenous Studies faculty provide critical understanding of the languages, cultures, and histories of specific geopolitical regions. The philosophy and religion faculty deal with the fundamental questions of life, the basis of knowledge and reasoning, ethics, and practices of the world's many religious traditions. All faculty contribute to the global studies curriculum, fostering the development of intercultural competence and global citizenship. This curriculum is presented in a manner that develops and enhances critical thinking and communication skills to prepare students for meaningful employment, further scholarship, and community engagement. These efforts facilitate the achievement of national distinction by the school's majors as scholars and engaged citizens.

Faculty research crosses academic, disciplinary, and geographic boundaries to advance and disseminate knowledge about key domestic and global issues that are of vital importance to South Dakota and beyond. As part of our Land Grant mission, the school connects the university with the community and the world through its outreach. We serve communities at home and abroad in areas such as linguistic and cultural competency and experiential learning. Many degrees prepare you for a specific job; our degrees provide skills applicable to a wide range of professions in a complex and changing world.

Disciplines in the School of American and Global Studies offer dual listed, topics, and independent study courses on an as needed basis. In addition, the School supports graduate education courses in other degree programs, including Interdisciplinary Studies and the Social Sciences Ph.D. Occasional courses are offered for teachers needing in-service or continuing education credit. Graduate degrees are not available in these disciplines, but students may use these courses in an approved plan of study.

Graduate Faculty

José Álvarez, Associate Professor
Marie-Pierre Baggett, Professor
Molly Enz, Distinguished Professor
Jamie Folsom, Assistant Professor
Christine Garst-Santos, Karen D. Stuck Endowed Director and Associate Professor
Erin Griffin, Assistant Professor
Lisa Hager, Associate Professor
Luz Kirschner, Associate Professor
James Murphy, Associate Professor
Gregory R. Peterson, Associate Director and Professor
William Prigge, Professor
Dale Potts, Associate Professor
María Ramos-García, Professor
Eckhard Rölz, Professor
Jonathan Ruff, Assistant Professor
Charles Vollan, Associate Professor
Dave Wiltse, Professor
Evren Celik Wiltse, Professor
Graham Wrightson, Professor

Programs

Coursework Only

School of Communication and Journalism

Joshua Westwick, Director
School of Communication and Journalism
Yeager Hall 211
605-688-4171

Marina Hendricks, Associate Professor and M.M.C. Graduate Program Coordinator
Yeager Hall 211
605-688-4171

Karla Hunter, Professor and M.A. Graduate Program Coordinator
Pugsley Center 115
605-688-4171

The mission of the School of Communication and Journalism is to foster the development of exemplary communicators as industry leaders, scholars, professionals, entrepreneurs, and educators through innovative curricula, research, practice, and opportunities.

Graduate Faculty

Jenn Anderson, Professor
Shola Aromona, Assistant Professor

Hayden Barber, Assistant Professor
Andrea Carlile, Assistant Professor
Hyesoo Chang, Assistant Professor
Rocky Dailey, Professor
Marina Hendricks, Associate Professor
Karla Hunter, Professor
Rebecca A. Kuehl, Associate Director and Professor
Erica Summerfield, Assistant Professor
Joshua Westwick, Director and Professor

Programs

Master's Degrees

- Communication and Media Studies (M.A.)
- Mass Communication (M.M.C.)

School of Counseling, Human Development and Family Science

Amber Letcher, Interim Director
School of Counseling, Human Development and Family Science
Thompson Center 105
605-688-4321

The mission of the School of Counseling, Human Development and Family Science is to enhance the success of human service professionals who support the well-being of individuals, families, and communities across the lifespan through integration of transdisciplinary research, teaching, service, and outreach and engagement.

In the School of Counseling, Human Development and Family Science, students are introduced to a broad human services foundation that blends counseling, developmental science, and family systems perspectives, giving them a well-rounded understanding of how people grow, adapt, and thrive in a changing world. Through internships, practicums, service-learning, and community engagement opportunities, students gain practical skills while working directly with individuals and families. These experiences are paired with an emphasis on research-informed practice, teaching students how to use evidence-based strategies to address challenges and promote resilience. At its core, the program is grounded in the belief that individuals, families, and communities are interconnected, and that supporting one level strengthens the others.

Graduate Faculty

Andrea Bjornestad, Professor
Alison Boughn, Assistant Director and Associate Professor of Counseling and Human Resource Development
Hande Briddick, Professor
William Briddick, Associate Professor
Christin Carotta, Associate Professor
Gene Dockery, Assistant Professor
Erin Lavender-Stott, Associate Professor
Amber Letcher, Interim Director and Professor
Katelyn Romsa, Associate Professor
Raynimol Thomas, Assistant Professor
Abigail Van Patten-Freeman, Assistant Professor
Dakota Witzel, Assistant Professor

Programs

Master's Degrees

- Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization
- Counseling and Human Resource Development (M.S.) - Clinical Mental Health Counseling Specialization
- Counseling and Human Resource Development (M.S.) - College Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Marriage and Family Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Rehabilitation Counseling Specialization
- Counseling and Human Resource Development (M.S.) - School Counseling Specialization
- Human Sciences (M.S.) - Human Development and Family Science Specialization

Certificates

- Academic Advising Certificate
- Athletic Academic Advising Certificate

Student Support and Engagement Opportunities

The School of Counseling, Human Development and Family Science provides assistantship opportunities for which students may apply.

School of Design

Pat Crawford, Director
School of Design
Chicoine Architecture, Mathematics & Engineering Hall 382
605-688-4103

The School of Design provides an opportunity for students to study architecture, graphic design, interior design, landscape architecture, studio art and/or art education. These disciplines have come together to form a School of Design that provides a unique collaborative environment leading to better-prepared graduates who are professionally qualified to contribute to the vitality and well-being of South Dakota and beyond.

School of Design students enroll in courses that explore design thinking, creativity and professional study while enjoying in depth educational experiences leading to professional licensure, stronger portfolios and increased opportunities following graduation.

The School of Design offers courses in animation, art education, art history, ceramics, computer graphics, drawing, film, interactive design, graphic design, painting, printmaking, sculpture, and web design. The school does not offer a graduate level degree in studio art. However, students may enroll in graduate courses provided by the school.

Graduate Faculty

Mohamed Ahmed, Assistant Professor
Hamid Amini, Assistant Professor
Diana Behl, Associate Professor
Jeremiah Bergstrom, Lecturer
Don Burger Jr, Associate Professor
Leda Cempellin, Professor
Pat Crawford, Professor
Robert Dalton, Assistant Professor
Ali Moazzeni Khorasgani, Assistant Professor
Marisa TenBrink, Assistant Professor
Elizabeth Tofte, Associate Professor

Programs

Master's Degrees

- Architecture (M.Arch.)

School of Education

Anne Karabon, Wendell and Marlys Thompson Director
School of Education
Wenona Hall 108, Box 507
605-688-5039

The mission of the School of Education is to provide high quality educational experiences to learners and to integrate applied research and community engagement to address contemporary challenges.

The School of Education offers a range of graduate programs designed for practicing educators, educational leaders, and professionals seeking to deepen their expertise and advance their impact in schools, districts, and educational organizations. Our graduate programs are grounded in the science of learning and applied research, preparing students to lead with knowledge, skill, and professional integrity in an evolving educational landscape. Students engage with faculty who are active scholars and practitioners, bringing both disciplinary expertise and real-world relevance to graduate-level instruction. Field-based application, practitioner inquiry, and community engagement are woven throughout the curriculum, connecting graduate study directly to the challenges and opportunities students encounter in their professional settings.

Graduate Faculty

Mary Bowne, Professor
Kay Cutler, Professor
Anthony Durr, Associate Professor
Hamada Elfraragy, Assistant Professor
Jacob Englin, Assistant Professor
Nicole Graves, Associate Professor
Patrick Hales, Assistant Director of K-12 Teacher Education and Associate Professor
Laura Hasselquist, Associate Professor
Anne Karabon, Wendell and Marlys Thompson Director of the School of

Education and Associate Professor
Lacy Knutson, Lucas P. Wintrode Endowed Professor of Autism Studies and Assistant Professor

Programs

Master's Degrees

- Agricultural Education (M.S.)
- Curriculum and Instruction (M.Ed.)
- Curriculum and Instruction (M.Ed.) - Career and Technical Education Specialization
- Curriculum and Instruction (M.Ed.) - Literacy Instructional Coaching Specialization
- Educational Administration (M.Ed.)

Certificates

- Literacy Instructional Coaching Certificate

Student Support and Engagement Opportunities

The School of Education has a few assistantships for which students can apply.

School of English and Interdisciplinary Studies

Jason McEntee, Director
Paul Baggett, Professor and Graduate Coordinator
School of English and Interdisciplinary Studies
Pugsley Continuing Education Center 301, Box 2218
605-688-5191

The English and Interdisciplinary Studies school's graduate programs prepare students for professional careers or further graduate study by developing their skills in a single discipline (English) or in multiple disciplines (Interdisciplinary Studies).

The English M.A. offers instruction in a wide range of specialty areas, including British and American literature, women's writing, Native American literature, literary theory, rhetoric, composition, creative writing, professional and technical writing, peace and conflict studies, and film studies. Students will develop their capacities for textual analysis, research, theory, and creative and critical writing. Students in the English M.A. program may choose either the Literature track or the Writing and Rhetoric track.

The M.S. in Interdisciplinary Sciences program is an innovative, flexible, and highly individualized graduate program designed to meet students' academic and professional goals. Students will work with their advisor to finalize their plan of study in at least two or three disciplines, using classes that are relevant to supporting the student in achieving their educational goals. Students will complete a plan of study with a research/design paper or coursework only option.

Graduate Faculty

Paul Baggett, Professor
Amber Jensen, Senior Lecturer
Kathy Malone, Associate Professor
Jason McEntee, Director and Professor
Nathan Serfling, Assistant Professor
Sharon Smith, Professor

Programs

Master's Degrees

- English (M.A.)
- Interdisciplinary Studies (M.S.)

Student Support and Engagement Opportunities

The school offers a number of graduate teaching assistantships for the nine-month academic year. Teaching assistants take two graduate classes each semester and teach either two sections of composition or one section of composition with duties in the Writing Center. The assistantship is renewable each year, providing the student is making good academic progress and receives satisfactory teaching evaluations. Graduate teaching assistants receive a stipend, office space, faculty library status, and a full tuition waiver. Applicants who wish to be considered for a graduate teaching assistantship should indicate their interest in the statement of purpose submitted to the Graduate School as part of their online application.

School of Health and Human Sciences

Jessica Meendering, Director
School of Health and Human Sciences
Wagner Hall 425
605-688-5161

The School of Health and Human Sciences offers graduate degrees in Athletic Training, Dietetics, Human Sciences Family Financial Planning, Nutrition and Exercise Sciences, and Sport and Recreation Administration. The overall goal(s) of the graduate programs are to provide students with the knowledge and experiences that improve the depth and breadth of professional competency, enhance written and oral communication, and promote scholarly pursuits and scientific research to inform practice and/or prepare them for advanced study at the doctoral level.

Health and Human Sciences faculty are committed to SDSU's tripartite mission of teaching, scholarship, and outreach, where the focus is on integrating students into the learning environment under close supervision of qualified faculty. As well as teaching and mentoring students, faculty are researchers and scholars who produce new knowledge and serve related professional organizations in leadership capacities. Faculty and students commit themselves to fostering scholarship and outreach efforts that reflect local, regional, national, and/or global contexts; promoting careers in an ever-changing global marketplace; inspiring critical thinking and theory building; encouraging activities with socially responsible impacts on individuals, households, communities, and environments; and and embracing a wide range of perspectives and experiences.

Graduate Faculty

Allison Barry, Assistant Professor
Gemma Bastian, Assistant Professor
Angela Brown, Clinical Assistant Professor
Cody Christensen, Associate Professor
Seth Daughters, Lecturer
Moul Dey, Professor
Samitin Dhakal, Assistant Professor
Elizabeth Droke, Associate Professor
Tyler Hajek, Assistant Professor
Xu Li, Associate Professor
Jessica Meendering, Director and Professor
Chaise Murphy, Assistant Professor
Tracy Nelson, Senior Lecturer
Riley Northrup, Instructor
Kunsoon Park, Associate Professor
Trevor Roiger, Clinical Associate Professor
Bryan Romsa, Associate Professor
Jessica Smith-Ricketts, Assistant Professor
Roman Waldera, Instructor
Lee Weidauer, Associate Professor
Mary Beth Zwart, Clinical Associate Professor

Programs

Master's Degrees

- Athletic Training (M.S.)
- Nutrition and Dietetics (M.S.)
- Nutrition and Exercise Sciences (M.S.) - Exercise Science Specialization
- Nutrition and Exercise Sciences (M.S.) - Nutritional Sciences Specialization
- Sport Management (M.S.)

Doctoral Degrees

- Nutrition and Exercise Sciences (Ph.D.)

Student Support and Engagement Opportunities

The School of Health and Human Sciences aims to provide premier academic programs and high-quality services to students. A limited number of research and teaching assistantships and scholarships may be available to qualified graduate students.

School of Performing Arts

David Reynolds, Director
School of Performing Arts
Performing Arts Center 123B, Box 2830
605-688-5188

The School of Performing Arts at South Dakota State University fosters and provides opportunities for creativity, performance, and both artistic and intellectual understanding through the study and practice of performing arts within contemporary and historical cultures. Mindful of the University's Land Grant

mission, we strive to provide outreach-engagement that creates meaningful connections among students, the University, and the broader community.

Graduate Faculty

David Reynolds, Director and Professor

Programs

Coursework Only

School of Psychology, Sociology and Rural Studies

Tyler Miller, Director
School of Psychology, Sociology and Rural Studies
Psychology, Sociology and Rural Studies 107, Box 2120
605-688-4322

The School of Psychology, Sociology and Rural Studies has a long proud history of service, research and educational excellence at South Dakota State University. In keeping with the land-grant mission, the school is active in education, research and outreach.

The school administers the Center for Rural Vitality and Community Well-Being, which provides data, in-depth analysis of data, and training to individuals, businesses and governmental agencies. The Center also fosters community engagement and interdisciplinary research associated with rural vitality and community well-being.

The school complements the vision of South Dakota State University and the College of Arts, Humanities and Social Sciences to be nationally distinctive and locally relevant through faculty teaching, scholarship and service. Faculty members encourage and prepare students for graduate programs and professional careers by providing a sound knowledge base of psychology as a science and recognition of the multiplicity of viewpoints, schools of thought and subdivisions within the field. Faculty efforts support a challenging curriculum for the development of research skills and appreciation, to strengthen core competencies and understanding of discipline-related perspectives, and to foster opportunities for formal internships and practicums. This curriculum is presented in a manner that develops and enhances critical thinking and communication skills to prepare students for meaningful employment, further scholarship, sociocultural and international awareness, and civic involvement and engagement.

Graduate Faculty

Patricia Ahmed, Assistant Professor
Abdallah Badahdah, Professor
MaryJo Benton Lee, Adjunct
Matt Filteau, Assistant Professor
Jessica Lowe, Assistant Professor
Paul Markel, Professor
Rebecca Martin, Professor
Tyler Miller, Director and Professor
Abigail Tobias-Lauerman, Assistant Professor
Weiwei Zhang, Associate Professor

Programs

Master's Degrees

- Social Science (M.S.)

Doctoral Degrees

- Social Science (Ph.D.)
- Social Science (Ph.D.) - Environment and Rural Development Specialization
- Social Science (Ph.D.) - Rural Well-being Specialization



Online, Off-Campus, and Continuing Education Programs

South Dakota State University is committed to providing access to rich academic experiences which enhance the quality of life in South Dakota, the region, the nation, and the world. SDSU has a long tradition, and responsibility for, delivering education to citizens near and far through credit courses, non-credit professional development, short courses, and workshops at off-campus locations and online.

The Center for Online and Professional Education collaborates with the academic units to broaden the reach of SDSU, with a commitment to providing quality education no matter where students reside. Coursework and programs offered off-campus and online effectively extend the reach of SDSU by offering the same quality education to students who want to earn their degree while living and working in their home community.

Academic Credit Programs

Academic standards and policies governing off-campus and online courses are identical to the on-campus instructional program. Hence, credit course offerings, instruction and academic standards are the responsibilities of the Vice President for Academic Affairs, College Deans, Department Heads, and School Directors.

Off-Campus Locations

SDSU, in partnership with the other SD Board of Regents institutions, offers advising and support services, courses and programs at off-campus locations across South Dakota. SDSU's College of Education and Human Sciences provides academic programming at Black Hills State University – Rapid City, SDSU's College of Nursing provides academic programming in Rapid City and Sioux Falls and the College of Pharmacy and Allied Health Professions provides academic offerings in Brookings, Huron, Madison, Rapid City and Sioux Falls. SDSU's College of Agriculture, Food and Environmental Sciences provides academic programming in Pierre. For more information regarding offerings at these off-campus locations, please visit the Center for Online and Professional Education website.

Online Education

South Dakota State University offers undergraduate and graduate courses and programs online. SDSU offers online courses and programs for students needing a more flexible schedule, yet a rigorous and quality educational experience. Online courses are taught by the same SDSU faculty and are comparable to on-campus courses in quality and rigor. Students receive the same credit for completing an online course as they would for an on-campus course. Based upon more than 80 years of effective off-campus education, SDSU is committed to serving:

- Working adults
- Part-time students
- Time- and place-bound individuals
- K-12 students, teachers, and administrators
- Employees seeking career development skills
- Government and military personnel
- Persons with disabilities

For more information regarding SDSU's online education opportunities call 605-688-4154, or go to the Center for Online and Professional Education website.

Students enrolling in online courses may incur additional costs associated with online learning, such as, but not limited to, test proctoring and technology (software/hardware).

Summer Term

SDSU offers a wide range of courses on and off-campus to continue your studies during the summer months. Summer programming is offered May through August and is characterized by innovation and responsiveness to your needs. Classes are comfortably sized, and time is available for individual attention from the faculty member. Participants need not be regularly matriculated at SDSU but may be admitted as non-degree seeking students. For more information visit the Summer Term website.

Compliance

Higher education is governed by state, federal and international laws and regulations, which impact areas including the delivery of online courses and programs, internships and other experiential learning activities, as well as programs designed and advertised as leading to professional licensure or certification.

State Authorization

Colleges and universities who market to, recruit, and offer educational activities to out-of-state students must understand and follow the laws and regulations set forth in those states. Authorization may be required for SDSU to serve and reach students in states outside of South Dakota. SDSU is determined to comply with all state regulations and will apply for authorization, when necessary, from those states where it conducts activities such as delivery of online courses, placement for field experiences (internships, clinicals, practicums, etc.), academic and athletic recruiting, marketing, etc.

SDSU participates in the National Council of State Authorization Reciprocity Agreement (NC-SARA). South Dakota became a SARA state in November 2014 and SDSU became a SARA member institution in March 2015. This membership provides SDSU the authorization to provide educational activities within other SARA states without further authorization. Activities that are beyond the scope allowed through SARA may require individual state authorization. For further state authorization and complaint process information, please visit the Center for Online and Professional Education State Authorization website.

Professional Licensure and Certification

South Dakota State University offers a variety of courses and programs online and is committed to providing a quality education to help you reach your professional goals. Some professions require licensure or certification to practice/work in the field; for instance, a student must hold a teacher certification to teach, or a nurse must be licensed to work in a hospital. The curriculum for several degree programs at South Dakota State University have been designed to meet the licensure or certification requirements in South Dakota and prepare students to sit for licensure or certification exams in South Dakota. The various licensing boards in each state are responsible for setting requirements for licensure or certification in their state and distance students with intent of returning or moving to any state other than South Dakota should be aware of the unique requirements for that state.

Students seeking to establish licensure or certification outside the state of South Dakota can find information pertaining to the licensure or certification requirements in their state on the Center for Online and Professional Education Professional Licensure and Certification website. You are encouraged to engage with an academic advisor prior to beginning any online academic program that would lead to licensure or certification, to best understand the requirements in your intended state of residence. Assistance will be provided to candidates by contacting the appropriate program advisor. SDSU is unable to enroll students who will be physically located in a state or territory on the first day of class in the licensure program in which the SDSU professional licensure or certification program does not meet or not yet determined to meet the educational requirements for licensure or certification.

Continuing Education and Microcredentials

South Dakota State University has a rich history of providing opportunities and access to higher education pathways leading to degrees through its land-grant mission and is well-positioned to provide alternative credentials through microcredentials in support of lifelong learning initiatives. SDSU's Pathway to Premier 2030 drives the university to develop and invest in continuing education opportunities with an emphasis on workforce and economic development, utilize high-impact processes to prepare individuals to become global citizens, expand outreach and educational opportunities through collaborative partnerships, and develop university staff through professional development and training programs.

Continuing Education Units

The Center for Online and Professional Education can authorize Continuing Education Units (CEUs). Today's workforce needs constant and current information to keep up to date with industry and association certifications. Continuing Education Units (CEUs) offer flexibility in delivery and fulfilling certification requirements. Visit the Continuing Education Units website to learn more about offering CEUs for your next workshop, short course, or conference.

Digital Badges

South Dakota State University, in partnership with Credly, offers secure, verifiable digital credentials that showcase individuals' skills and achievements. These digital badges provide a trusted method for sharing and validating competencies with employers, colleagues, and institutions. For more information, please visit the Digital Badges website.

Career Academy from Coursera

Through its partnership with Coursera, South Dakota State University offers currently enrolled students, faculty, and staff complimentary access to the Coursera Career Academy—a comprehensive catalog of non-credit courses and professional certificates. This initiative supports flexible learning, career development, and global engagement by connecting participants with a worldwide network of learners. For more information, please contact the Center for Online and Professional Education at 605-688-4154, email us, or visit the Career Academy website.

Professional Development Courses

SDSU academic units offer a variety of professional development and continuing education programming specific to their field of study. For more information, please visit the following websites:

- Child and Family Resource Network
- Nursing Continuing Professional Development
- Pharmacy and Allied Health Professions Preceptor Training and Continuing Education
- SDSU Extension



Degrees and Associated Majors

Graduate Programs at SDSU

The Graduate School supports post-baccalaureate education at SDSU by promoting programs for student recruitment, setting and adhering to admission standards, and defining and maintaining rigorous academic standards for graduate programs. Administrative support is provided to departments and colleges delivering master's, doctoral, and professional programs, as well as graduate certificates. The information below provides links to major programs and specializations.

Master's Degrees

- Master of Architecture (M.Arch.)
- Master of Arts (M.A.)
- Master of Education (M.Ed.)
- Master of Engineering (M.Eng.)
- Master of Mass Communication (M.M.C.)
- Master of Public Health (M.P.H.)
- Master of Science (M.S.)

Doctoral Ph.D. and Professional Programs

- Doctor of Nursing Practice (D.N.P.)
- Doctor of Pharmacy (Pharm.D.)
- Doctor of Philosophy (Ph.D.)

Graduate Certificates

Programs and Degrees Listed Alphabetically by Degree

Master's Degrees

- Agricultural and Biosystems Engineering (M.S.)
- Agricultural Education (M.S.)
- Animal Science (M.S.)
- Architecture (M.Arch.)
- Artificial Intelligence Engineering (M.S.)
- Athletic Training (M.S.)
- Biochemistry (M.S.)
- Biological Sciences (M.S.)
- Biological Sciences (M.S.) - Biology Specialization
- Biological Sciences (M.S.) - Dairy Science Specialization
- Biological Sciences (M.S.) - Food Science Specialization
- Biological Sciences (M.S.) - Microbiology Specialization
- Biological Sciences (M.S.) - Natural Resource Management Specialization
- Biological Sciences (M.S.) - Veterinary Medicine Specialization
- Chemistry (M.S.)
- Chemistry (M.S.) - Chemistry Education Specialization
- Civil Engineering (M.S.)
- Communication and Media Studies (M.A.)
- Computer Science (M.S.)
- Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization
- Counseling and Human Resource Development (M.S.) - Clinical Mental Health Counseling Specialization
- Counseling and Human Resource Development (M.S.) - College Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Marriage and Family Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Rehabilitation Counseling Specialization
- Counseling and Human Resource Development (M.S.) - School Counseling Specialization
- Curriculum and Instruction (M.Ed.)
- Curriculum and Instruction (M.Ed.) - Career and Technical Education Specialization
- Curriculum and Instruction (M.Ed.) - Literacy Instructional Coaching Specialization
- Data Science (M.S.)
- Economics (M.S.)
- Educational Administration (M.Ed.)
- Electrical Engineering (M.S.)
- Engineering (M.Eng.)
- English (M.A.)
- Geography (M.S.)
- Geography (M.S.) - Geographic Information Sciences Specialization
- Global Agricultural Leadership (M.S.)
- Human Biology (M.S.)
- Human Sciences (M.S.) - Human Development and Family Science Specialization
- Interdisciplinary Studies (M.S.)
- Mass Communication (M.M.C.)
- Mathematics (M.S.)
- Mathematics (M.S.) - Statistics Specialization
- Mechanical Engineering (M.S.)
- Nursing (M.S.) - Nurse Administrator Specialization
- Nursing (M.S.) - Nurse Educator Specialization
- Nutrition and Dietetics (M.S.)
- Nutrition and Exercise Sciences (M.S.) - Exercise Science Specialization
- Nutrition and Exercise Sciences (M.S.) - Nutritional Sciences Specialization
- Operations Management (M.S.)
- Operations Management (M.S.) - Business Analytics Specialization
- Operations Management (M.S.) - Supply Chain Management Specialization
- Pharmaceutical Sciences (M.S.)
- Physics (M.S.)
- Plant Science (M.S.)
- Public Health (M.P.H.)
- Social Science (M.S.)
- Sport Management (M.S.)
- Statistics (M.S.)
- Wildlife and Fisheries Sciences (M.S.) - Fisheries Sciences Specialization
- Wildlife and Fisheries Sciences (M.S.) - Wildlife Sciences Specialization

Doctoral Degrees

- Agricultural and Biosystems Engineering (Ph.D.)
- Animal Science (Ph.D.)
- Artificial Intelligence Engineering (Ph.D.)
- Biochemistry (Ph.D.)
- Biological Sciences (Ph.D.)
- Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization
- Biological Sciences (Ph.D.) - Biology Specialization
- Biological Sciences (Ph.D.) - Dairy Science Specialization

- Biological Sciences (Ph.D.) - Food Science Specialization
- Biological Sciences (Ph.D.) - Microbiology Specialization
- Biological Sciences (Ph.D.) - Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Natural Resource Management Specialization
- Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Plant Science Specialization
- Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization
- Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization
- Chemistry (Ph.D.)
- Civil Engineering (Ph.D.)
- Computational Science and Statistics (Ph.D.) - Data Science Specialization
- Computational Science and Statistics (Ph.D.) - Mathematics Specialization
- Computational Science and Statistics (Ph.D.) - Statistics Specialization
- Computer Science (Ph.D.)
- Electrical Engineering (Ph.D.)
- Geospatial Science and Engineering (Ph.D.) - Geography Specialization
- Geospatial Science and Engineering (Ph.D.) - Remote Sensing Specialization
- Mechanical Engineering (Ph.D.)
- Nursing (Ph.D.)
- Nutrition and Exercise Sciences (Ph.D.)
- Pharmaceutical Sciences (Ph.D.)
- Physics (Ph.D.)
- Plant Science (Ph.D.)
- Social Science (Ph.D.)
- Social Science (Ph.D.) - Environment and Rural Development Specialization
- Social Science (Ph.D.) - Rural Well-being Specialization
- Wildlife and Fisheries Sciences (Ph.D.)

Professional Doctoral Degrees

- Nursing (D.N.P.)
- Nursing (D.N.P.) - Clinical Nurse Leader Specialization
- Nursing (D.N.P.) - Family Nurse Practitioner Specialization
- Nursing (D.N.P.) - Psychiatric Mental Health Nurse Practitioner Specialization
- Pharmacy (Pharm.D.)
- Professional Program in Veterinary Medicine

Certificates

- Academic Advising Certificate
- Advanced Graduate Mathematics Certificate
- Analytical Business Management Certificate
- Animal Science Certificate
- Applied Physics Certificate
- Athletic Academic Advising Certificate
- Biotechnology Certificate
- Chemistry Education Certificate
- Data Science Certificate
- Family Financial Planning Certificate
- Foundations of Operations Management Certificate
- Geographic Information Sciences Certificate
- Geospatial Intelligence Certificate
- Graduate Mathematics Certificate
- Grassland Management Certificate
- Literacy Instructional Coaching Certificate
- Post-Graduate Adult-Gerontology Acute Care Nurse Practitioner Certificate
- Post-Graduate Psychiatric Mental Health Nurse Practitioner Certificate
- Power Systems Engineering Certificate
- Precision Agriculture Certificate
- Public Health Certificate
- Real Estate Certificate
- Surface Mount Technology Certificate

Programs and Degrees Listed Alphabetically by Program

- Academic Advising Certificate
- Advanced Graduate Mathematics Certificate
- Agricultural and Biosystems Engineering (M.S.)
- Agricultural and Biosystems Engineering (Ph.D.)
- Agricultural Education (M.S.)
- Analytical Business Management Certificate
- Animal Science (M.S.)
- Animal Science (Ph.D.)
- Animal Science Certificate
- Applied Physics Certificate
- Architecture (M.Arch.)
- Artificial Intelligence Engineering (M.S.)
- Artificial Intelligence Engineering (Ph.D.)
- Athletic Academic Advising Certificate
- Athletic Training (M.S.)
- Biochemistry (M.S.)
- Biochemistry (Ph.D.)
- Biological Sciences (M.S.)
- Biological Sciences (M.S.) - Biology Specialization
- Biological Sciences (M.S.) - Dairy Science Specialization
- Biological Sciences (M.S.) - Food Science Specialization
- Biological Sciences (M.S.) - Microbiology Specialization
- Biological Sciences (M.S.) - Natural Resource Management Specialization
- Biological Sciences (M.S.) - Veterinary Medicine Specialization
- Biological Sciences (Ph.D.)
- Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization
- Biological Sciences (Ph.D.) - Biology Specialization
- Biological Sciences (Ph.D.) - Dairy Science Specialization
- Biological Sciences (Ph.D.) - Food Science Specialization
- Biological Sciences (Ph.D.) - Microbiology Specialization
- Biological Sciences (Ph.D.) - Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Natural Resource Management Specialization
- Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Plant Science Specialization
- Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization
- Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization
- Biotechnology Certificate
- Chemistry (M.S.)
- Chemistry (M.S.) - Chemistry Education Specialization
- Chemistry (Ph.D.)
- Chemistry Education Certificate
- Civil Engineering (M.S.)
- Civil Engineering (Ph.D.)
- Communication and Media Studies (M.A.)
- Computational Science and Statistics (Ph.D.) - Data Science Specialization
- Computational Science and Statistics (Ph.D.) - Mathematics Specialization
- Computational Science and Statistics (Ph.D.) - Statistics Specialization
- Computer Science (M.S.)
- Computer Science (Ph.D.)
- Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization
- Counseling and Human Resource Development (M.S.) - Clinical Mental Health Counseling Specialization
- Counseling and Human Resource Development (M.S.) - College Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Marriage and Family Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Rehabilitation Counseling Specialization
- Counseling and Human Resource Development (M.S.) - School Counseling Specialization
- Curriculum and Instruction (M.Ed.)
- Curriculum and Instruction (M.Ed.) - Career and Technical Education Specialization
- Curriculum and Instruction (M.Ed.) - Literacy Instructional Coaching Specialization
- Data Science (M.S.)
- Data Science Certificate
- Economics (M.S.)
- Educational Administration (M.Ed.)
- Electrical Engineering (M.S.)
- Electrical Engineering (Ph.D.)
- Engineering (M.Eng.)
- English (M.A.)
- Family Financial Planning Certificate
- Foundations of Operations Management Certificate
- Geographic Information Sciences Certificate
- Geography (M.S.)
- Geography (M.S.) - Geographic Information Sciences Specialization
- Geospatial Intelligence Certificate
- Geospatial Science and Engineering (Ph.D.) - Geography Specialization
- Geospatial Science and Engineering (Ph.D.) - Remote Sensing Specialization
- Global Agricultural Leadership (M.S.)
- Graduate Mathematics Certificate
- Grassland Management Certificate

- Human Biology (M.S.)
- Human Sciences (M.S.) - Human Development and Family Science Specialization
- Interdisciplinary Studies (M.S.)
- Literacy Instructional Coaching Certificate
- Mass Communication (M.M.C.)
- Mathematics (M.S.)
- Mathematics (M.S.) - Statistics Specialization
- Mechanical Engineering (M.S.)
- Mechanical Engineering (Ph.D.)
- Nursing (D.N.P.)
- Nursing (D.N.P.) - Clinical Nurse Leader Specialization
- Nursing (D.N.P.) - Family Nurse Practitioner Specialization
- Nursing (D.N.P.) - Psychiatric Mental Health Nurse Practitioner Specialization
- Nursing (M.S.) - Nurse Administrator Specialization
- Nursing (M.S.) - Nurse Educator Specialization
- Nursing (Ph.D.)
- Nutrition and Dietetics (M.S.)
- Nutrition and Exercise Sciences (M.S.) - Exercise Science Specialization
- Nutrition and Exercise Sciences (M.S.) - Nutritional Sciences Specialization
- Nutrition and Exercise Sciences (Ph.D.)
- Operations Management (M.S.)
- Operations Management (M.S.) - Business Analytics Specialization
- Operations Management (M.S.) - Supply Chain Management Specialization
- Pharmaceutical Sciences (M.S.)
- Pharmaceutical Sciences (Ph.D.)
- Pharmacy (Pharm.D.)
- Physics (M.S.)
- Physics (Ph.D.)
- Plant Science (M.S.)
- Plant Science (Ph.D.)
- Post-Graduate Adult-Gerontology Acute Care Nurse Practitioner Certificate
- Post-Graduate Psychiatric Mental Health Nurse Practitioner Certificate
- Power Systems Engineering Certificate
- Precision Agriculture Certificate
- Professional Program in Veterinary Medicine
- Public Health (M.P.H.)
- Public Health Certificate
- Real Estate Certificate
- Social Science (M.S.)
- Social Science (Ph.D.)
- Social Science (Ph.D.) - Environment and Rural Development Specialization
- Social Science (Ph.D.) - Rural Well-being Specialization
- Sport Management (M.S.)
- Statistics (M.S.)
- Surface Mount Technology Certificate
- Wildlife and Fisheries Sciences (M.S.) - Fisheries Sciences Specialization
- Wildlife and Fisheries Sciences (M.S.) - Wildlife Sciences Specialization
- Wildlife and Fisheries Sciences (Ph.D.)

Programs and Degrees Listed by College and Program

College of Agriculture, Food and Environmental Sciences

Master's Degrees

- Global Agricultural Leadership (M.S.)

Department of Agricultural and Biosystems Engineering

Doctoral Degrees

- Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization

Certificates

- Precision Agriculture Certificate

Department of Agronomy, Horticulture and Plant Science

Master's Degrees

- Plant Science (M.S.)

Doctoral Degrees

- Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Plant Science Specialization
- Plant Science (Ph.D.)

Certificates

- Precision Agriculture Certificate

Department of Animal Science

Master's Degrees

- Animal Science (M.S.)

Doctoral Degrees

- Animal Science (Ph.D.)

Certificates

- Animal Science Certificate

Department of Dairy and Food Science

Master's Degrees

- Biological Sciences (M.S.) - Dairy Science Specialization
- Biological Sciences (M.S.) - Food Science Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.) - Dairy Science Specialization
- Biological Sciences (Ph.D.) - Food Science Specialization

Department of Natural Resource Management

Master's Degrees

- Biological Sciences (M.S.) - Natural Resource Management Specialization
- Wildlife and Fisheries Sciences (M.S.) - Fisheries Sciences Specialization
- Wildlife and Fisheries Sciences (M.S.) - Wildlife Sciences Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.) - Natural Resource Management Specialization
- Wildlife and Fisheries Sciences (Ph.D.)

Certificates

- Grassland Management Certificate

Department of Veterinary and Biomedical Sciences

Master's Degrees

- Biological Sciences (M.S.) - Veterinary Medicine Specialization

Doctoral Degrees

- Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization
- Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization

Professional Doctoral Degrees

- Professional Program in Veterinary Medicine

College of Arts, Humanities and Social Sciences

Ness School of Management and Economics

Master's Degrees

- Economics (M.S.)
- Operations Management (M.S.) - Business Analytics Specialization

Certificates

- Analytical Business Management Certificate
- Family Financial Planning Certificate
- Real Estate Certificate

School of American and Global Studies

School of Communication and Journalism

Master's Degrees

- Communication and Media Studies (M.A.)
- Mass Communication (M.M.C.)

School of Design

Master's Degrees

- Architecture (M.Arch.)

School of English and Interdisciplinary Studies

Master's Degrees

- English (M.A.)
- Interdisciplinary Studies (M.S.)

School of Performing Arts

School of Psychology, Sociology and Rural Studies

Master's Degrees

- Social Science (M.S.)

Doctoral Degrees

- Social Science (Ph.D.)
- Social Science (Ph.D.) - Environment and Rural Development Specialization
- Social Science (Ph.D.) - Rural Well-being Specialization

College of Education and Human Sciences

School of Counseling, Human Development and Family Science

Master's Degrees

- Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization
- Counseling and Human Resource Development (M.S.) - Clinical Mental Health Counseling Specialization
- Counseling and Human Resource Development (M.S.) - College Counseling Specialization

- Counseling and Human Resource Development (M.S.) - Marriage and Family Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Rehabilitation Counseling Specialization
- Counseling and Human Resource Development (M.S.) - School Counseling Specialization
- Human Sciences (M.S.) - Human Development and Family Science Specialization

Certificates

- Academic Advising Certificate
- Athletic Academic Advising Certificate

School of Education

Master's Degrees

- Agricultural Education (M.S.)
- Curriculum and Instruction (M.Ed.)
- Curriculum and Instruction (M.Ed.) - Career and Technical Education Specialization
- Curriculum and Instruction (M.Ed.) - Literacy Instructional Coaching Specialization
- Educational Administration (M.Ed.)

Certificates

- Literacy Instructional Coaching Certificate

School of Health and Human Sciences

Master's Degrees

- Athletic Training (M.S.)
- Nutrition and Dietetics (M.S.)
- Nutrition and Exercise Sciences (M.S.) - Exercise Science Specialization
- Nutrition and Exercise Sciences (M.S.) - Nutritional Sciences Specialization
- Sport Management (M.S.)

Doctoral Degrees

- Nutrition and Exercise Sciences (Ph.D.)

College of Natural Sciences

Department of Biology and Microbiology

Master's Degrees

- Biological Sciences (M.S.)
- Biological Sciences (M.S.) - Biology Specialization
- Biological Sciences (M.S.) - Microbiology Specialization
- Human Biology (M.S.)

Doctoral Degrees

- Biological Sciences (Ph.D.)
- Biological Sciences (Ph.D.) - Biology Specialization
- Biological Sciences (Ph.D.) - Microbiology Specialization
- Biological Sciences (Ph.D.) - Molecular Biology Specialization

Certificates

- Biotechnology Certificate

Department of Chemistry, Biochemistry and Physics

Master's Degrees

- Biochemistry (M.S.)
- Chemistry (M.S.)
- Chemistry (M.S.) - Chemistry Education Specialization
- Physics (M.S.)

Doctoral Degrees

- Biochemistry (Ph.D.)
- Chemistry (Ph.D.)
- Physics (Ph.D.)

Certificates

- Applied Physics Certificate
- Chemistry Education Certificate

Department of Geography and Geospatial Sciences

Master's Degrees

- Geography (M.S.)
- Geography (M.S.) - Geographic Information Sciences Specialization

Doctoral Degrees

- Geospatial Science and Engineering (Ph.D.) - Geography Specialization
- Geospatial Science and Engineering (Ph.D.) - Remote Sensing Specialization

Certificates

- Geographic Information Sciences Certificate
- Geospatial Intelligence Certificate

College of Nursing

Department of Graduate Nursing

Master's Degrees

- Nursing (M.S.) - Nurse Administrator Specialization
- Nursing (M.S.) - Nurse Educator Specialization

Doctoral Degrees

- Nursing (Ph.D.)

Professional Doctoral Degrees

- Nursing (D.N.P.)
- Nursing (D.N.P.) - Clinical Nurse Leader Specialization
- Nursing (D.N.P.) - Family Nurse Practitioner Specialization
- Nursing (D.N.P.) - Psychiatric Mental Health Nurse Practitioner Specialization

Certificates

- Post-Graduate Adult-Gerontology Acute Care Nurse Practitioner Certificate
- Post-Graduate Psychiatric Mental Health Nurse Practitioner Certificate

College of Pharmacy and Allied Health Professions

Professional Doctoral Degrees

- Pharmacy (Pharm.D.)

Department of Allied and Population Health

Master's Degrees

- Public Health (M.P.H.)

Certificates

- Public Health Certificate

Department of Pharmaceutical Sciences

Master's Degrees

- Pharmaceutical Sciences (M.S.)

Doctoral Degrees

- Pharmaceutical Sciences (Ph.D.)

Department of Pharmacy Practice

Graduate School Graduate School

Jerome J. Lohr College of Engineering

Department of Agricultural and Biosystems Engineering

Master's Degrees

- Agricultural and Biosystems Engineering (M.S.)

Doctoral Degrees

- Agricultural and Biosystems Engineering (Ph.D.)

Department of Civil and Environmental Engineering

Master's Degrees

- Civil Engineering (M.S.)

Doctoral Degrees

- Civil Engineering (Ph.D.)

Department of Construction and Concrete Industry Management

Master's Degrees

- Engineering (M.Eng.)

Certificates

- Surface Mount Technology Certificate

Department of Mathematics and Statistics

Master's Degrees

- Data Science (M.S.)
- Mathematics (M.S.)
- Mathematics (M.S.) - Statistics Specialization
- Statistics (M.S.)

Doctoral Degrees

- Computational Science and Statistics (Ph.D.) - Data Science Specialization
- Computational Science and Statistics (Ph.D.) - Mathematics Specialization
- Computational Science and Statistics (Ph.D.) - Statistics Specialization

Certificates

- Advanced Graduate Mathematics Certificate
- Data Science Certificate
- Graduate Mathematics Certificate

Department of Mechanical Engineering

Master's Degrees

- Mechanical Engineering (M.S.)

Doctoral Degrees

- Mechanical Engineering (Ph.D.)

McComish Department of Electrical Engineering and Computer Science

Master's Degrees

- Artificial Intelligence Engineering (M.S.)
- Computer Science (M.S.)
- Electrical Engineering (M.S.)

Doctoral Degrees

- Artificial Intelligence Engineering (Ph.D.)
- Computer Science (Ph.D.)
- Electrical Engineering (Ph.D.)

Certificates

- Power Systems Engineering Certificate

Ness School of Management and Economics

Master's Degrees

- Operations Management (M.S.)

- Operations Management (M.S.) - Supply Chain Management Specialization

Certificates

- Foundations of Operations Management Certificate

Programs and Degrees Listed by Degree Type

Master of Architecture (M.Arch.)

- Architecture (M.Arch.)

Master of Arts (M.A.)

- Communication and Media Studies (M.A.)
- English (M.A.)

Master of Education (M.Ed.)

- Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization
- Curriculum and Instruction (M.Ed.)
- Curriculum and Instruction (M.Ed.) - Career and Technical Education Specialization
- Curriculum and Instruction (M.Ed.) - Literacy Instructional Coaching Specialization
- Educational Administration (M.Ed.)

Master of Engineering (M.Eng.)

- Engineering (M.Eng.)

Master of Mass Communication (M.M.C.)

- Mass Communication (M.M.C.)

Master of Public Health (M.P.H.)

- Public Health (M.P.H.)

Master of Science (M.S.)

- Agricultural and Biosystems Engineering (M.S.)
- Agricultural Education (M.S.)
- Animal Science (M.S.)
- Artificial Intelligence Engineering (M.S.)
- Athletic Training (M.S.)
- Biochemistry (M.S.)
- Biological Sciences (M.S.)
- Biological Sciences (M.S.) - Biology Specialization
- Biological Sciences (M.S.) - Dairy Science Specialization
- Biological Sciences (M.S.) - Food Science Specialization
- Biological Sciences (M.S.) - Microbiology Specialization
- Biological Sciences (M.S.) - Natural Resource Management Specialization
- Biological Sciences (M.S.) - Veterinary Medicine Specialization
- Chemistry (M.S.)
- Chemistry (M.S.) - Chemistry Education Specialization
- Civil Engineering (M.S.)
- Computer Science (M.S.)
- Counseling and Human Resource Development (M.S.) - Clinical Mental Health Counseling Specialization
- Counseling and Human Resource Development (M.S.) - College Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Marriage and Family Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Rehabilitation Counseling Specialization
- Counseling and Human Resource Development (M.S.) - School Counseling Specialization
- Data Science (M.S.)
- Economics (M.S.)
- Electrical Engineering (M.S.)
- Geography (M.S.)
- Geography (M.S.) - Geographic Information Sciences Specialization
- Global Agricultural Leadership (M.S.)
- Human Biology (M.S.)
- Human Sciences (M.S.) - Human Development and Family Science Specialization
- Interdisciplinary Studies (M.S.)
- Mathematics (M.S.)
- Mathematics (M.S.) - Statistics Specialization
- Mechanical Engineering (M.S.)
- Nursing (M.S.) - Nurse Administrator Specialization
- Nursing (M.S.) - Nurse Educator Specialization
- Nutrition and Dietetics (M.S.)
- Nutrition and Exercise Sciences (M.S.) - Exercise Science Specialization
- Nutrition and Exercise Sciences (M.S.) - Nutritional Sciences Specialization
- Operations Management (M.S.)
- Operations Management (M.S.) - Business Analytics Specialization
- Operations Management (M.S.) - Supply Chain Management Specialization
- Pharmaceutical Sciences (M.S.)
- Physics (M.S.)
- Plant Science (M.S.)
- Social Science (M.S.)
- Sport Management (M.S.)
- Statistics (M.S.)
- Wildlife and Fisheries Sciences (M.S.) - Fisheries Sciences Specialization
- Wildlife and Fisheries Sciences (M.S.) - Wildlife Sciences Specialization

Doctor of Nursing Practice (D.N.P.)

- Nursing (D.N.P.)
- Nursing (D.N.P.) - Clinical Nurse Leader Specialization
- Nursing (D.N.P.) - Family Nurse Practitioner Specialization
- Nursing (D.N.P.) - Psychiatric Mental Health Nurse Practitioner Specialization

Doctor of Pharmacy (Pharm.D.)

- Pharmacy (Pharm.D.)

Doctor of Philosophy (Ph.D.)

- Agricultural and Biosystems Engineering (Ph.D.)
- Animal Science (Ph.D.)
- Artificial Intelligence Engineering (Ph.D.)
- Biochemistry (Ph.D.)
- Biological Sciences (Ph.D.)
- Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization
- Biological Sciences (Ph.D.) - Biology Specialization
- Biological Sciences (Ph.D.) - Dairy Science Specialization
- Biological Sciences (Ph.D.) - Food Science Specialization
- Biological Sciences (Ph.D.) - Microbiology Specialization
- Biological Sciences (Ph.D.) - Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Natural Resource Management Specialization
- Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Plant Science Specialization
- Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization
- Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization
- Chemistry (Ph.D.)
- Civil Engineering (Ph.D.)
- Computational Science and Statistics (Ph.D.) - Data Science Specialization
- Computational Science and Statistics (Ph.D.) - Mathematics Specialization
- Computational Science and Statistics (Ph.D.) - Statistics Specialization
- Computer Science (Ph.D.)
- Electrical Engineering (Ph.D.)
- Geospatial Science and Engineering (Ph.D.) - Geography Specialization
- Geospatial Science and Engineering (Ph.D.) - Remote Sensing Specialization
- Mechanical Engineering (Ph.D.)
- Nursing (Ph.D.)
- Nutrition and Exercise Sciences (Ph.D.)
- Pharmaceutical Sciences (Ph.D.)
- Physics (Ph.D.)
- Plant Science (Ph.D.)
- Social Science (Ph.D.)
- Social Science (Ph.D.) - Environment and Rural Development Specialization
- Social Science (Ph.D.) - Rural Well-being Specialization
- Wildlife and Fisheries Sciences (Ph.D.)

Doctor of Veterinary Medicine (DVM) (2+2 Collaborative Program with University of Minnesota's College of Veterinary Medicine)

- Professional Program in Veterinary Medicine

Certificates

- Academic Advising Certificate
- Advanced Graduate Mathematics Certificate
- Analytical Business Management Certificate
- Animal Science Certificate
- Applied Physics Certificate
- Athletic Academic Advising Certificate
- Biotechnology Certificate
- Chemistry Education Certificate
- Data Science Certificate
- Family Financial Planning Certificate
- Foundations of Operations Management Certificate
- Geographic Information Sciences Certificate
- Geospatial Intelligence Certificate
- Graduate Mathematics Certificate
- Grassland Management Certificate

- Literacy Instructional Coaching Certificate
- Post-Graduate Adult-Gerontology Acute Care Nurse Practitioner Certificate
- Post-Graduate Psychiatric Mental Health Nurse Practitioner Certificate
- Power Systems Engineering Certificate
- Precision Agriculture Certificate
- Public Health Certificate
- Real Estate Certificate
- Surface Mount Technology Certificate

Programs Offered Online and at Off-Campus Locations

Online Programs

Master's Degrees

- Agricultural Education (M.S.)
- Artificial Intelligence Engineering (M.S.)
- Chemistry (M.S.) - Chemistry Education Specialization
- Counseling and Human Resource Development (M.S.) - College Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Marriage and Family Counseling Specialization
- Counseling and Human Resource Development (M.S.) - Rehabilitation Counseling Specialization
- Curriculum and Instruction (M.Ed.)
- Curriculum and Instruction (M.Ed.) - Career and Technical Education Specialization
- Curriculum and Instruction (M.Ed.) - Literacy Instructional Coaching Specialization
- Educational Administration (M.Ed.)
- English (M.A.)
- Human Sciences (M.S.) - Human Development and Family Science Specialization
- Interdisciplinary Studies (M.S.)
- Mass Communication (M.M.C.)
- Nursing (M.S.) - Nurse Administrator Specialization
- Nursing (M.S.) - Nurse Educator Specialization
- Operations Management (M.S.)
- Operations Management (M.S.) - Business Analytics Specialization
- Operations Management (M.S.) - Supply Chain Management Specialization
- Pharmaceutical Sciences (M.S.)
- Public Health (M.P.H.)

Doctoral Degrees

- Artificial Intelligence Engineering (Ph.D.)
- Computer Science (Ph.D.)
- Nursing (Ph.D.)

Professional Doctoral Degrees

- Nursing (D.N.P.)
- Nursing (D.N.P.) - Clinical Nurse Leader Specialization
- Nursing (D.N.P.) - Family Nurse Practitioner Specialization
- Nursing (D.N.P.) - Psychiatric Mental Health Nurse Practitioner Specialization

Certificates

- Advanced Graduate Mathematics Certificate
- Animal Science Certificate
- Athletic Academic Advising Certificate
- Chemistry Education Certificate
- Literacy Instructional Coaching Certificate
- Data Science Certificate
- Geographic Information Sciences Certificate
- Graduate Mathematics Certificate
- Grassland Management Certificate
- Foundations of Operations Management Certificate
- Post-Graduate Adult-Gerontology Acute Care Nurse Practitioner Certificate
- Post-Graduate Psychiatric Mental Health Nurse Practitioner Certificate
- Public Health Certificate
- Real Estate Certificate

Rapid City

Master's Degrees

- Animal Science (M.S.)
- Biological Sciences (M.S.) - Natural Resource Management Specialization
- Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization
- Counseling and Human Resource Development (M.S.) - Clinical Mental Health Counseling Specialization
- Counseling and Human Resource Development (M.S.) - College Counseling Specialization
- Counseling and Human Resource Development (M.S.) - School Counseling Specialization
- Plant Science (M.S.)
- Wildlife and Fisheries Sciences (M.S.) - Fisheries Sciences Specialization
- Wildlife and Fisheries Sciences (M.S.) - Wildlife Sciences Specialization

Doctoral Degrees

- Animal Science (Ph.D.)
- Biological Sciences (Ph.D.) - Natural Resource Management Specialization
- Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization
- Biological Sciences (Ph.D.) - Plant Science Specialization
- Plant Science (Ph.D.)
- Wildlife and Fisheries Sciences (Ph.D.)

Certificates

- Academic Advising Certificate



Academic Programs

Master's Degrees

Agricultural and Biosystems Engineering (M.S.)

Program Coordinator/Contact

Kasiviswanathan Muthukumarappan, Maynard A. Klingbeil Endowed Department Head and Distinguished Professor
Lin Wei, Professor and Graduate Coordinator
Department of Agricultural and Biosystems Engineering
Raven Precision Agriculture Center 136
605-688-5666

Program Information

Graduate work in the Department of Agricultural and Biosystems Engineering leads to Master of Science in Agricultural and Biosystems Engineering, Doctor of Philosophy in Agricultural and Biosystems Engineering, and Doctor of Philosophy in Biological Sciences degrees.

Students who undertake graduate studies in Agricultural and Biosystems Engineering normally have as their goal a better understanding of the current theories, principles, issues, and problems in agricultural, environmental and biological systems. Graduate studies improve the student's ability to think critically and creatively, and to synthesize, analyze, and integrate ideas for decision-making and problem solving.

The department offers students an opportunity to undertake research and advanced study in specialization areas such as food and biomaterial processing, physical properties of biological materials, natural resource engineering, precision agriculture, structures, indoor environment, waste management and machine design.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 30 Credit Hours

Core Requirements

- ABE 500-, 600-, or 700-Level Electives Credits: 9
- ABE 790 - Seminar (COM) Credits: 1-3 (1 credit required)
- STAT 541 - Statistical Methods II Credits: 3

Select one of the following options

Thesis

- ABE 798 - Thesis (COM) Credits: 1-7 (5-7 credits required)
- Electives Credits: 10-12

Non-Thesis

- Electives Credits: 17

Total Required Credits: 30 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Two letters of recommendation with at least one from an individual who can address the applicant's technical knowledge background and ability to perform research, a research statement or statement of interest area intent, and transcripts are required.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Agricultural Education (M.S.)

Program Coordinator/Contact

Patrick Hales, Associate Professor, Assistant Director of K-12 Teacher Education
Laura Hasselquist, Associate Professor
School of Education
Wenona Hall 108
605-688-5039

Program Information

The master's degree in Agricultural Education is designed to meet the needs of individuals who work (or plan to work) in agricultural education, non-profit organizations, post-secondary education or in agriculture leadership. The School of Education, Counseling and Human Development provides professional preparation for those who want to expand their knowledge and advance themselves professionally in the agricultural industry.

Certification and Licensure

This program may lead to alternative certification in agricultural education at the secondary level in South Dakota.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 30 Credit Hours

Core Requirements

- AGED 650 - Foundations of Agricultural Education Credits: 3

- EDER 610 - Introduction to Research Credits: 3
- EDER 614 - Advanced Educational Research Design and Analysis Credits: 3
- EDFN 600 - Educational Theory in Practice Credits: 3
- EPSY 740 - Educational Psychology: Cognition, Learning and Applications Credits: 3

Select one of the following options

Thesis

- AGED 798 - Thesis (COM) Credits: 1-7 (6 credits required)
- Electives Credits: 9

Non-Thesis

- Electives Credits: 15

Total Required Credits: 30 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Applicants must provide a resume, goal statement, and two professional letters of reference as part of the application process.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Animal Science (M.S.)

Program Coordinator/Contact

Michael Gonda, Interim Department Head and Professor
Cody Wright, Professor
Department of Animal Science
Animal Science Complex 101
605-688-5165

Program Information

The Department of Animal Science offers graduate programs leading to the Master of Science and Doctor of Philosophy degrees in Animal Science. Faculty and graduate students are actively involved in basic and/or applied research in the fields of nutrition, reproductive physiology, animal breeding and genetics, meat science, gastrointestinal microbiology, and livestock production systems. With the multi-disciplinary approaches towards production efficiency, product enhancement, and basic science graduate students gain strong skill sets. The graduate programs are administered in collaboration with the Departments of Animal Science, Dairy Science, Veterinary and Biomedical Sciences, and Agricultural and Biosystems Engineering. The department is committed to providing graduate students with quality educational and research experiences and preparing them to meet the challenges of a competitive job market upon graduation.

This program allows for considerable latitude in the education and training of students. Identification of a major professor with resources to support the student's thesis project is required for unconditional acceptance into the program. An advisory committee will be formed for each student. The advisory committee will work with the student to design a unique and individualized plan of study to meet the interests and needs of the student. While the training of most students is largely directed to a single discipline represented within one of the participating departments, cross-discipline training is available and encouraged.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours

Core Requirements

- AS 790 - Seminar (COM) Credits: 1 (2 credits required)
- AS, DS, or VET 500-level or higher Electives Credits: 6
- AS 798 - Thesis (COM) Credits: 1-7 (5-10 credits required)
- Electives Credits: 12-17

Total Required Credits: 30 (Thesis)

Notes

The Advisory Committee will work with the student to select the discipline specific courses intended to prepare the student in their emphasis area.

Graduate student evaluations will be conducted each semester.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Two letters of reference, a letter of interest and intent, transcripts, and a resume.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Architecture (M.Arch.)

Program Coordinator/Contact

Pat Crawford, Director
Sean Ervin, Professor of Practice and Program Coordinator
School of Design
Chicoine Architecture, Mathematics and Engineering Hall 382
605-688-4103

Program Information

The Master of Architecture (M.Arch.) program prepares professional leaders with specialized knowledge and skills to meet the nation's needs in design, building, and education. The aim of the program is to prepare architecture majors to practice in a full range of contexts and settings.

The Master of Architecture degree is comprised of a 48-credit hour, four semester graduate curriculum which rounds out the department's seven semester NAAB accredited professional program. Refer to the department website for NAAB Professional Program details.

Accreditation

In the United States, most registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit professional degree programs in architecture offered by institutions with U.S. regional accreditation, recognizes three types of degrees: the Bachelor of Architecture, the Master of Architecture, and the Doctor of Architecture. A program may be granted an eight-year term, an eight-year term with conditions, or a three-year term of initial accreditation, depending on the extent of its conformance with established education standards.

Doctor of Architecture and Master of Architecture degree programs may require a non-accredited undergraduate degree in architecture for admission. However, the non-accredited degree is not, by itself, recognized as an accredited degree.

South Dakota State University's Architecture Program offers the following NAAB-accredited degree programs:

- M.Arch. (preprofessional degree plus 48 graduate credits)
- M.Arch. (nonpreprofessional degree plus 97 credits)
- Next accreditation visit for all programs: 2027

Available Options for Graduate Degrees

Master of Architecture

- Non-Thesis: 48 Credit Hours

Core Requirements

- ARCH 544 - History of Profession Credits: 3
- ARCH 555 - Building Studio Credits: 5 *
- ARCH 555L - Building Lab Credits: 2 *
- ARCH 603 - Practicing Architecture Credits: 1
- ARCH 631 - Technology of Envelopes Credits: 2
- ARCH 632 - Technology of Interiors Credits: 2
- ARCH 650 - Comprehensive Building Design Credits: 6
- ARCH 653 - Independent Performance Credits: 6
- ARCH 654 - Research Studio Credits: 5
- ARCH 654L - Research Lab Credits: 2

- ARCH 655 - Independent Documentation Credits: 3
- ARCH 673 - Professional Practice I Credits: 3
- ARCH 674 - Professional Practice II Credits: 3
- 500- or 600-level Electives. Electives will be selected in consultation with advisor. Credits 5*

Total Required Credits: 48 (Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

The first application preference deadline for admission during the fall semester is January 31. The second application preference deadline is March 15. There is not an option to start the graduate program in a spring semester due to the sequential nature of studios.

Students may be admitted fully or conditionally. Students conditionally admitted with insufficient graphic capacity may be required to take fundamental drawing and / or design courses the fall semester before beginning professional study.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU Bachelor of Fine Arts Architecture students. During the fall of the student's Junior year in the program, students may apply for the Accelerated Master's Program in Architecture by the March 29 deadline. Up to 12 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

*Students completing the B.F.A. in Architecture to accelerated Master of Architecture program will complete the following courses in place of ARCH 555 - Building Studio Credits: 5, ARCH 555L - Building Lab Credits: 2, and 500- or 600-level Electives (5 credits):

- ARCH 501 - Writing Architecture Credits: 3
- ARCH 502 - Reading Architecture Credits: 3
- ARCH 534 - Technology of Systems Credits: 3
- ARCH 543 - Urban History Credits: 3

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Artificial Intelligence Engineering (M.S.)

Program Coordinator/Contact

Rajesh Kavasseri, Interim Department Head
Jun Huang, Assistant Professor and Graduate Coordinator
McComish Department of Electrical Engineering and Computer Science
Daktronics Engineering Hall 214
605-688-4526

Program Information

The M.S. in Artificial Intelligence Engineering (AIE) program prepares students with advanced analytical, computational, hardware, and ethical foundations needed to design intelligent technologies that learn from data and support human decision-making. Building on a strong core in computer science, AI, and hardware systems, students deepen and apply these skills in domains where SDSU has established engineering strengths. Through domain-aligned labs, interdisciplinary electives, thesis or industry-informed project options, students learn to design data-centric, intelligent solutions that integrate hardware and software for high-stakes, real-world decisions. Graduates are prepared for advanced technical and leadership roles in the modern AI workforce and help strengthen cross-departmental collaboration by translating AI fundamentals into impactful applications across these priority fields.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 30 Credit Hours

Core Requirements

- AIE 501 - Artificial Intelligence Engineering Credits: 3
- EE 569 - Fundamentals of High-Performance Computing Credits: 3

Select one of the following options

Thesis

- AIE 798 - Thesis (COM) Credits: 1-9
- Electives Credits: 18

Non-Thesis

- Electives Credits: 24

Total Required Credits: 30 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: Not Required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Two letters of recommendation with at least one from an individual who can address the applicant's technical knowledge background and ability to perform research, a research statement or statement of interest area, and transcripts are required.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Athletic Training (M.S.)

Program Coordinator/Contact

Jessica Meendering, Director
Trevor Roiger, Clinical Associate Professor
School of Health and Human Sciences
Wagner Hall 425
605-688-5161

Program Information

The South Dakota State University Master of Science in Athletic Training (AT) program aspires to prepare engaged practitioners and contemporary leaders of athletic training. Through the cultivation of a learning environment implementing innovative and best practice pedagogies, the program exists to challenge students to become reflective, professional, and ethical practitioners dedicated to improving patients' quality of life. The overall goals of the program are to provide students with knowledge and experiences which improve the depth and breadth of professional competency in athletic training, enhance written and oral communication abilities, and promote an appreciation for the ways research can inform practice, and/or prepare students for advanced study in the field.

The Master of Science in Athletic Training prepares students for entry into clinical practice as licensed athletic trainers. The program is two years in length and includes a blend of coursework and clinical experiences completed under the supervision of preceptors who are appropriately credentialed health care professionals. Clinical experiences will include working with a variety of patients in high schools, colleges/universities, sports medicine clinics, and medical and rehabilitation clinics. Upon successful completion of the curriculum, students will be eligible to challenge the national certifying examination for athletic trainers through the Board of Certification (BOC).

Each year the Master of Science in AT program admits (1) new cohort of students who begin their plan of study during the summer term. Admission to the program is on a competitive basis. For full admission into the athletic training program, students must complete the SDSU Graduate School application as well as a secondary selective admissions application specifically for the AT program.

Accreditation

The Master of Science in Athletic Training at South Dakota State University was awarded initial accreditation by the Commission on Accreditation of Athletic Training Education (CAATE) in August, 2008.

Certification and Licensure

Upon completion of the program, students are eligible to challenge the national certifying examination for athletic trainers through the Board of Certification. As a

professional degree program, it is not designed for individuals who already have a degree in Athletic Training or are eligible for certification in Athletic Training.

Academic Requirements

Students enrolled in the Athletic Training program must pay for a background check before they can be placed at any of the clinical sites. The approximate cost of the background check is $75.00.

Available Options for Graduate Degrees

Master of Science

- Thesis: 57 Credit Hours
- Non-Thesis: 54 Credit Hours

Core Requirements

- AT 600 - Introduction to Patient Management Credits: 2
- AT 610 - Interventions I Credits: 3
- AT 611 - Prophylactic Interventions Credits: 2
- AT 651 - Clinical Experience I Credits: 1
- AT 652 - Clinical Experience II Credits: 1
- AT 722 - Patient Examination and Treatment I Credits: 6
- AT 725 - Principles of Acute Care in Athletic Training Credits: 2
- AT 725L - Principles of Acute Care Lab Credits: 1
- AT 732 - Patient Examination and Treatment II Credits: 6
- AT 735 - Health Care Administration for Athletic Training Credits: 2
- AT 740 - Functional Movement Credits: 2
- AT 740L - Functional Movement Lab Credits: 1
- AT 742 - General Medical Examination Credits: 3
- AT 753 - Clinical Experience III Credits: 2
- AT 754 - Clinical Experience IV Credits: 1
- AT 755 - Clinical Experience V Credits: 5
- AT 756 - Clinical Experience VI Credits: 5
- BIOL 721 - Advanced Human Anatomy Credits: 2
- BIOL 721L - Advanced Human Cadaver Dissection Credits: 2
- NUTR 725 - Nutrition and Human Performance Credits: 3

Select one of the following options

Thesis

- HNS 798 - Thesis (COM) Credits: 1-7 (5 credits required)

Non-Thesis

- AT 788 - Research Problems/Projects (COM) Credits: 1 (2 credits required)

Total Required Credits: 57 (Thesis), 54 (Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Program Application

Admission into the MSAT program is on a competitive basis. Each year the AT program uses a Primary (Graduate School Application) and Secondary (Program Application) Selective Admission Process to admit (1) new cohort of students who will begin their program of study during the Summer term. The AT program begins reviewing applications on a rolling basis beginning in August of the year preceding the start of the next cohort. Applications are accepted until April 15th.

In order to complete all application requirements, students must:

- Complete the Graduate School Application and submit this to the South Dakota State University Graduate School.
- Complete the Secondary Selective Admission Process/Program Application and submit application materials through ATCAS (Athletic Training Centralized Application Service) or directly to Dr. Trevor Roiger, Athletic Training program director. Students wishing to apply directly to the M.S. in Athletic Training Program can do so by contacting Dr. Roiger at trevor.roiger@sdstate.edu and requesting the necessary application forms. When complete, these materials can be submitted directly to:

  Dr. Trevor Roiger, AT, EMT
  Box 2275A, Wagner 135
  School of Health and Human Sciences
  Brookings, SD 57007

** Pre-Selection to the Athletic Training Program: Students who are of Junior-level standing at SDSU, or sophomores who are enrolled in the early assurance/accelerated track, can apply for pre-selection to the MSAT program by beginning the Secondary Selective Admissions process up to 1 year in advance of their first eligible cohort. Applying for pre-selection requires completion of a sub-set of the total application requirements for program admission. The program will pre-select up to 12 students into the athletic training program. If the number of qualified pre-selection applications exceeds 12, the top 12 will be selected based on weighted criteria. Pre-selection does not guarantee unconditional admission into the MSAT program; only students who have successfully completed ALL application requirements for the Graduate School, and those required of the Secondary Selective Admissions application, will be officially admitted.

Verification and Demonstration of Technical Standards

Students will receive a copy of the program's technical standards as part of the application process. They will be asked to verify that they have received a copy, understand the concepts and work with the program if accommodations are necessary. Technical standards set the guidelines for the application process and progress in the major by describing the essential skills considered necessary for admitted students to possess in order to complete the responsibilities associated with being an athletic training student and subsequently, a practicing athletic trainer. Technical Standards are requirements of the Commission on Accreditation of Athletic Training Education (CAATE). Technical standards are assessed at the time of application, during progress, and for completion of the program. Skills are described in five areas: cognitive ability/skills, psychomotor skill, affective behaviors, interpersonal skills, and knowledge or/interest in the profession of athletic training. The technical standards also describe policy statements regarding accommodations, standards of English as a second language, and eligibility requirements for the national certifying examination offered by the BOC.

Secondary Selective Admissions Minimum Selection Criteria

The criteria listed below represent additional prerequisite requirements.

- Completed Health Assessment
- Verification of Technical Standards
- Cumulative (or Junior-Senior) GPA of 3.0 or better
- Completed program application, letter of interest, two letters of reference and a personal interview
- **Successful completion (C or better) of the following courses or their equivalents.***

Basic and Applied Sciences

- BIOL 151-151L General Biology I and Lab
  or BIOL 101-101L Biology Survey I and Lab
- BIOL 221-221L Human Anatomy and Lab
- BIOL 325-325L Physiology and Lab
- CHEM 112-112L General Chemistry I and Lab
  or CHEM 106-106L Chemistry Survey and Lab
- EXS 350 Exercise Physiology
- EXS 454 Biomechanics
- PHYS 101-101L Survey of Physics and Lab
  or PHYS 111-111L Introduction to Physics I and Lab

Social Sciences

- PSYC 101 General Psychology

Nutrition

- NUTR 315 Human Nutrition

Statistics

- STAT 281 Statistics
  or HSC 445 Epidemiology

Optional

- AT 164 Introduction to Athletic Training
- EXS 354 Prevention and Care of Athletic Injuries
- HSC 443 Public Health Sciences

*Course equivalents will be evaluated through course titles, the SDSU Transfer Credit Evaluator system, or by a manual review of the syllabus from the course(s) in question to ensure the necessary content requirements are met.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to 9 credits of graduate-level coursework in the M.S. in Athletic Training may be

used to satisfy requirements for an undergraduate degree. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

Financial Aid

Students on the 5-year accelerated track to completion of the M.S. in Athletic Training (3+2 with Exercise Science) are accepted into the professional athletic training program at the end of the third year of their undergraduate degree. As such, these students are classified as undergraduates during their first 3 years of study, but as graduate students once they have been accepted into and begin coursework in the M.S. in Athletic Training program. While graduate students qualify for greater amounts of financial aid in the form of unsubsidized loans, they are no longer eligible for Pell Grants or Subsidized Loans.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Biochemistry (M.S.)

Program Coordinator/Contact

Brian Logue, Department Head
Cheng Zhang, Associate Professor
Department of Chemistry, Biochemistry and Physics
Avera Health and Science Center 247
605-688-5151

Program Information

The Master of Science (M.S.) in Biochemistry provides students with a deep understanding of the molecular and chemical processes that are the foundations of biological functions. Students explore topics such as chemical foundations of biological processes, enzymology, molecular genetics, and structural biology. The curriculum provides a strong foundation in both theoretical and practical aspects of biochemistry. The program emphasizes critical thinking, problem-solving, and the application of biochemical techniques to real-world challenges. This rigorous program combines advanced coursework with hands-on laboratory research to provide graduates with the skills needed to contribute to cutting-edge research and development, pursue further academic study, or enter the workforce as a professional scientist in career fields such as biotechnology, pharmaceuticals, healthcare, and academic research.

Research Infrastructure

The Department of Chemistry, Biochemistry, and Physics at South Dakota State University boasts state-of-the-art research infrastructure housed within the Avera Health and Science Center's laboratory and research wing. The department features specialized core facilities to support its innovative research programs, including the Core Mass Spectrometry Facility and the Core Nuclear Magnetic Resonance (NMR) Facility. These cutting-edge facilities are readily available to graduate students, faculty, and even industry partners, providing invaluable hands-on experience and driving forward research in fields ranging from advanced materials to cancer biology. In addition to these core facilities, a wide array of specialized instrumentation is maintained within individual faculty laboratories, ensuring the department possesses ample modern resources to conduct transformative, real-world research.

Available Options for Graduate Degrees

Master of Science

- Thesis: 31 Credit Hours

Core Requirements

- BIOL 743 - Cell Biology (COM) Credits: 3
- BIOS 662 - Advanced Molecular Biology Credits: 3
- CHEM 548 - Biophysical Chemistry Credits: 3
- CHEM 705 - Principles of Biochemistry Credits: 3
- CHEM 707 - Chemical Communication Skills Credits: 2
- CHEM 790 - Seminar (COM) Credits: 1 (2 credits required)
- CHEM 798 - Thesis (COM) Credits: 1-7 (5 credits required)
- GSR 601 - Research Regulations Compliance Credits: 1

Select from the following

Students will select 9 credits from the following list or other courses approved by their advisory committee. The courses must be in the STEM disciplines. Credits: 9

- BIOL 570 - Cancer Biology (COM) Credits: 3
- BIOL 583 - Developmental Biology (COM) Credits: 3
- CHEM 567 - Essentials of Glycobiology Credits: 3
- CHEM 568 - Chemical Biology Credits: 3
- MICR 524 - Medical and Veterinary Virology Credits: 3
- MICR 533 - Medical Microbiology (COM) Credits: 3
- MICR 539 - Medical and Veterinary Immunology Credits: 3
- STAT 541 - Statistical Methods II Credits: 3
- Other courses approved by advisory committee. Credits: 3

Total Required Credits: 31 (Thesis)

Additional Admission Requirements

GRE: General and subject score are recommended but not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

The priority deadline for applying for admission for the fall semester is December 1. A secondary deadline is January 15. The department typically does not admit students for the spring semester unless applicants have secured funding for their graduate education. Support can come from three sources:

- Research assistantship from a professor in the department
- Personal or family funds
- Scholarship from the government or an organization

In addition to the materials required by the Graduate School, the Department of Chemistry, Biochemistry and Physics requires the following application materials:

- A one- to two-page personal statement which includes a description of undergraduate research, work experience, or other factors demonstrating a propensity toward graduate studies. The personal statement should also include a statement of the applicant's career goals. The applicant may upload this statement while completing the Graduate School's online application.
- Two letters of recommendation, preferably at least one from faculty at the applicant's undergraduate institution. Letters should come from faculty who are directly familiar with the applicant's academic work. They must address the applicant's scholarly potential and may also speak to the applicant's potential for graduate studies in the discipline. Letters should come directly from the recommenders, who may submit their letters electronically along with the personal recommendation form provided by the Graduate School. The Graduate School will email recommenders detailed instructions for submitting their recommendations using the contact information provided by the applicant.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Biological Sciences (M.S.)

Program Coordinator/Contact

Yajun Wu, Interim Department Head
Radhey Kaushik, Professor and Graduate Coordinator
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Program Information

This is a collaborative graduate program leading to the Master of Science degree in Biological Sciences. Departments that cooperate in the program are the Departments of Agricultural and Biosystems Engineering; Agronomy, Horticulture and Plant Science; Biology and Microbiology; Dairy and Food Science; Natural Resource Management; and Veterinary and Biomedical Sciences. Specializations and emphases are available in the following areas:

- Biology Specialization
- Dairy Science Specialization
- Food Science Specialization
- Microbiology Specialization

- Natural Resource Management Specialization
- Veterinary Medicine Specialization
- Veterinary Microbiology Emphasis
- Veterinary Pathology Emphasis

The master's and doctoral programs in Biological Sciences allow for considerable latitude in the education and training of students. Students interested in advanced studies in the biological sciences will have the opportunity to tailor a program that meets their interests by selecting courses offered by faculty from the participating departments. While the training of most students is largely directed to a single discipline represented within one of the participating departments, cross-disciplinary training is available. Generally, identification of a major professor with resources to support the student's dissertation project is required for unconditional acceptance into the program. Therefore, interested persons should make an application for program admission well in advance of the anticipated date of enrollment. Please refer to each departmental section for a listing of the graduate faculty and details regarding the areas of study offered in this program. Inquiries should be made directly to the department representing the discipline of interest.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 32 Credit Hours

Core Requirements

The student, major advisor, and Advisory Committee select the discipline-specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

Thesis

- XXX 790 - Seminar Credits: 2
- XXX 798 - Thesis Credits: 5-10
- 3 or more credits of STAT courses numbered 500-level or higher
- 6 additional course credits, designed to meet the interests and individual needs of the student
- Electives Credits: 9-14

Non-Thesis

- XXX 790 - Seminar Credits: 2
- XXX 788 - Research Problems/Project minimum Credits: 2-3
- 3 or more credits of STAT courses numbered 500-level or higher
- Electives Credits: 18-19

Total Required Credits: 30 (Thesis), 32 (Non-Thesis)

Additional Admission Requirements

GRE: Not a general requirement, but individual departments may require GRE
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

(Individual departments may have different requirements for GRE, TOEFL iBT, TOEFL Essentials, IELTS, and Duolingo.)

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Biological Sciences (M.S.) - Biology Specialization

Program Coordinator/Contact

Yajun Wu, Interim Department Head
Radhey Kaushik, Professor and Graduate Coordinator
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Program Information

The Department of Biology and Microbiology provides students with a wide range of opportunities for advanced study. The graduate faculty offer expertise and graduate student advisement in subdisciplines from molecular biology through ecology. Faculty members are very successful in obtaining extramural funds to support graduate student projects. Graduate students have modern research laboratories, equipment and field research sites available to carry out their research projects. The learning environment, scholarly excellence and quality of teaching are areas of strength in the department's Graduate Program.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 32 Credit Hours

Core Requirements

For details, see specific program: Biological Sciences (M.S.)

The student, major advisor, and Advisory Committee select the discipline-specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

Thesis

- XXX 790 - Seminar Credits: 2
- XXX 798 - Thesis Credits: 5-10
- 3 or more credits of STAT courses numbered 500-level or higher
- 6 additional course credits, designed to meet the interests and individual needs of the student
- Electives Credits: 9-14

Non-Thesis

- XXX 790 - Seminar Credits: 2
- XXX 788 - Research Problems/Project minimum Credits: 2-3
- 3 or more credits of STAT courses numbered 500-level or higher
- Electives Credits: 18-19

Total Required Credits: 30 (Thesis), 32 (Non-Thesis)

Master's Graduation Requirements

- Yearly evaluation (research progress + coursework)
- Presentation of Thesis/Paper (public) during the last semester of program
- Oral defense of Thesis (committee) during the last semester of program
- Thesis - OR - Research Paper completion

Additional Admission Requirements

GRE: Scores ranking above the 50th percentile will strengthen the case for admission
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

At least two letters of reference or Personal References must be sent to the Department. A personal statement that includes a description of the applicants involvement in research, the applicants research interest, and career goals is also required.

Retention in the program is dependent on formation of a committee and completion of review matrix by the end of the first year. In ensuing years, students must have a committee meeting and complete review annually.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Biological Sciences (M.S.) - Dairy Science Specialization

Program Coordinator/Contact

Londa Nwadike, David A. Thompson Endowed Department Head
Department of Dairy and Food Science
Alfred Dairy Science Hall 136, Box 2104
605-688-4116

Program Information

The Dairy and Food Science Department provides research opportunities leading to master's and PhD degrees. SDSU is one of the few universities in the US with a Dairy Science program that offers Dairy Production and Manufacturing majors. It is equipped with excellent laboratories, and a state-of-the-art dairy processing plant which has the capability of processing fluid milk, cheese, butter, ice cream, concentrated and dried products, and other products.

Metabolism and surgical facilities in the Animal Science Complex, and specialized laboratory equipment in Chemistry and Biochemistry, Veterinary and Biomedical Sciences, Health and Human Sciences Departments, and the Edgar S. McFadden

Biostress laboratories, are also available. Graduate students accepted into the program will have opportunities to utilize these facilities to develop basic and/or applied research programs in dairy product processing and development, microbiology, chemistry, food safety, dairy cattle nutrition, management, and metabolism, while interacting with well qualified faculty.

The SDSU Dairy Science program, in collaboration with the Food Science and Nutrition Program at the University of Minnesota and the Food Science and Human Nutrition Program at Iowa State University, comprise the Midwest Dairy Foods Research Center. This provides graduate students in the manufacturing area with a unique opportunity to be involved with current issues and research needs.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours

Core Requirements

For details see specific program: M.S. in Biological Sciences.

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- DS 731 - Laboratory Techniques in Dairy Science Credits: 3
- DS 790 - Seminar (COM) Credits: 1-3 (2 credits required)
- DS 796 - Field Experience (COM) Credits: 1-3 (1 credit required)
- DS 798 - Thesis (COM) Credits: 1-7 (5-10 credits required)
- STAT course 500-level or higher Credits: 3
- Electives (as needed to reach 30 credits) Credits: 0-7

Select from the following

Select any three courses from the following list of DS courses. Credits: 9-13

- DS 500 - Dairy Chemistry and Analysis Credits: 3
- DS 500L - Dairy Chemistry and Analysis Lab Credits: 2
- DS 513 - Physiology of Lactation Credits: 3
- DS 513L - Physiology of Lactation Lab Credits: 1
- DS 542 - Dairy Product and Process Development Credits: 3
- DS 560 - Dairy Product Processing I Credits: 4
- DS 560L - Dairy Product Processing I Lab Credits: 1
- DS 561 - Dairy Product Processing II Credits: 4
- DS 561L - Dairy Product Processing II Lab Credits: 1
- DS 580 - Dairy Farm Operations I Credits: 3
- DS 580L - Dairy Farm Operations I Lab Credits: 1
- DS 581 - Dairy Farm Operations II Credits: 3
- DS 581L - Dairy Farm Operations II Lab Credits: 1
- DS 711 - Ruminology Credits: 3
- DS 722 - Advanced Dairy and Food Microbiology Credits: 3

Total Required Credits: 30 (Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

At least two letters of reference and a personal statement that includes a description of the applicant's involvement in research, the applicant's research interest, and career goals.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Biological Sciences (M.S.) - Food Science Specialization

Program Coordinator/Contact

Londa Nwadike, David A. Thompson Endowed Department Head
Department of Dairy and Food Science
Alfred Dairy Science Hall 136, Box 2104
605-688-4116

Program Information

The Food Science program offers excellent opportunities for graduate level coursework and research leading to academic or industry careers in Food Science. Graduate students receive advanced preparation related to food processing, product development, and food safety. Food science is a multi-disciplinary program administered by the Department of Dairy and Food Science, but may also encompass areas such as animal science, food grain processing, and agricultural and biosystems engineering.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 32 Credit Hours

Core Requirements

For details see specific program: M.S. in Biological Sciences.

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- DS 722 - Advanced Dairy and Food Microbiology Credits: 3
- DS 731 - Laboratory Techniques in Dairy Science Credits: 3
- DS 790 - Seminar (COM) Credits: 1-3 (2 credits required)
- DS 796 - Field Experience (COM) Credits: 1-3 (1 credit required)
- FS 500 - Food Chemistry and Analysis Credits: 3
- FS 500L - Food Chemistry and Analysis Lab Credits: 2
- FS 551 - New Food Product Development Credits: 3
- FS 551L - New Food Product Development Lab Credits: 1
- STAT course 500-level or higher Credits: 3

Select one of the following options

Thesis

- FS 798 - Thesis (COM) Credits: 1-7 (5-9 credits required)
- Electives Credits: 0-4

Non-Thesis

- FS 788 - Research Problems/Projects (COM) Credits: 1-3 (2-3 credits required)
- Electives Credits: 8-9

Total Required Credits: 30 (Thesis), 32 (Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

At least two letters of reference and a personal statement that includes a description of the applicant's involvement in research, the applicant's research interest, and career goals.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Biological Sciences (M.S.) - Microbiology Specialization

Program Coordinator/Contact

Yajun Wu, Interim Department Head
Radhey Kaushik, Professor and Graduate Coordinator
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Program Information

The Department of Biology and Microbiology provides students with a wide range of opportunities for advanced study. The graduate faculty offers expertise and graduate student advisement in subdisciplines from molecular biology through ecology. Faculty members are very successful in obtaining extramural funds to support graduate student projects. Graduate students have modern research laboratories, equipment, and field research sites available to carry out their research projects. The learning environment, scholarly excellence, and quality of teaching are areas of strength in the department's Graduate Program..

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 32 Credit Hours

Core Requirements

For details, see specific program: Biological Sciences (M.S.).

The student, major advisor, and Advisory Committee select the discipline-specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

Thesis

- XXX 790 - Seminar Credits: 2
- XXX 798 - Thesis Credits: 5-10
- 3 or more credits of STAT courses numbered 500-level or higher
- 6 additional course credits, designed to meet the interests and individual needs of the student
- Electives Credits: 9-14

Non-Thesis

- XXX 790 - Seminar Credits: 2
- XXX 788 - Research Problems/Project minimum Credits: 2-3
- 3 or more credits of STAT courses numbered 500-level or higher
- Electives Credits: 18-19

Total Required Credits: 30 (Thesis), 32 (Non-Thesis)

Master's Graduation Requirements

- Yearly evaluation (research progress + coursework)
- Presentation of Thesis/Paper (public) during the last semester of program
- Oral defense of Thesis (committee) during the last semester of program
- Thesis - OR - Research Paper completion

Additional Admission Requirements

GRE: Scores ranking above the 50th percentile will strengthen the case for admission
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

At least two letters of reference or Personal References must be sent to the Department. A personal statement that includes a description of the applicant's involvement in research, the applicant's research interest, and career goals is also required.

Retention in the program is dependent on the formation of a committee and completion of the review matrix by the end of the first year. In ensuing years, students must have a committee meeting and complete a review annually.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Biological Sciences (M.S.) - Natural Resource Management Specialization

Program Coordinator/Contact

Alexander (Sandy) Smart, Interim Department Head and Professor
Joshua Leffler, Assistant Department Head and Professor
Department of Natural Resource Management
Edgar S. McFadden Biostress Laboratory 138
605-688-6121

Program Information

The Natural Resource Management specialization will provide training in ecology, evolution, environmental sciences, and range areas of expertise with a focus on basic and applied research.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 32 Credit Hours

Core Requirements

- NRM 790 - Seminar (COM) Credits: 1 (2 credits required)
- STAT courses numbered 500 level or higher Credits: 3
- Additional course credits from BOT, EES, NRM, RANG, or WL numbered 500-level or higher Credits: 6

Select one of the following options

Thesis

- BIOS 798 - Thesis (COM) Credits: 1-10 (5-10 credits required)
- Electives Credits: 9-14

Non-Thesis

- NRM 788 - Research Problems/Projects (COM) Credits: 1-3 (2-3 credits required)
- Electives Credits: 18-19

Total Required Credits: 30 (Thesis), 32 (Non-Thesis)

Additional Admission Requirements

GRE: Not Required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Biological Sciences (M.S.) - Veterinary Medicine Specialization

Program Coordinator/Contact

Lisa Lunn, Associate Dean and Director Professional Program in Veterinary Medicine
Carissa Odland, Clinical Assistant Professor and Graduate Coordinator
Department of Veterinary and Biomedical Sciences
Animal Disease Research and Diagnostic Laboratory 105
605-688-6645

Program Information

SDSU, in partnership with the University of Minnesota (U of MN), is offering a collaborative Professional Program in Veterinary Medicine leading to a Doctor of Veterinary Medicine (DVM) degree. Students must first complete all their pre-veterinary requirements and then can apply to the new professional program. Students admitted to the professional program will be allowed to dual-enroll in the Biological Sciences (M.S.) - Veterinary Medicine Specialization, thus having the opportunity to simultaneously earn an M.S. degree while completing the PPVM coursework needed for transitioning to the University of Minnesota to complete the final two years of the DVM degree. For more information about applying to the PPVM visit the Association of American Veterinary Medical Colleges, Veterinary Medical College Application Service (VMCAS).

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 32 Credit Hours

Core Requirements

- VET 606 - Critical Scientific Reading Credits: 1
- VET 645 - Clinical Epidemiology Credits: 2
- VET 646 - Public Health Credits: 2

Select from the following

Thesis

- BIOS 798 - Thesis (COM) Credits: 1-10 (5-10 credits required)
- VET Electives Credits: 15-20

Non-Thesis

- VET 788 - Research Problems/Projects (COM) Credits: 1-3 (3 credits required)
- VET Electives Credits: 24

Total Required Credits: 30 (Thesis), 32 (Non-Thesis)

Additional Academic Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

- An electronic application for admission must be submitted through VMCAS.
- Official copies of all transcripts must be sent directly to VMCAS.
- Three electronic Letters of Reference must be submitted as part of the VMCAS application on behalf of the applicant. It is strongly recommended that at least one letter is written by a DVM.
- Specific prerequisite coursework must be completed prior to enrollment. Prerequisite courses must be equivalent to the SDSU courses indicated in this planner: Approved Preveterinary Coursework. Students from other universities will be directed to follow the comprehensive area college prerequisite guides developed by the University of Minnesota for a list of approved prerequisites.
- Preference will be given to applicants from South Dakota and Minnesota and the states adjoining South Dakota and/or Minnesota which includes: Iowa, Montana, Nebraska, North Dakota, Wisconsin, and Wyoming.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Chemistry (M.S.)

Program Coordinator/Contact

Brian Logue, Department Head
Cheng Zhang, Associate Professor
Department of Chemistry, Biochemistry and Physics
Avera Health and Science Center 247
605-688-5151

Program Information

The department's chemistry faculty research programs fall into the thematic focus areas of environmental chemistry and green chemistry, chemical sensor development, organic synthesis, materials chemistry, natural products chemistry, and chemical education. Within these multidisciplinary and interdisciplinary focus areas, students can select research projects that involve the traditional subdisciplines of chemistry -- analytical, biochemistry, inorganic, organic and physical. Currently active research projects in the Department focus on various aspects of analytical chemistry, drug discovery and delivery, synthesis or photoactive materials including polymers, materials chemistry and self-assembly, chromatography, the chemistry of cell membranes, cancer biology, environmental and green chemistry, chemistry of climate change, photo-physical chemistry, natural products synthesis, biophysical chemistry, computational chemistry, and solid-state NMR. For additional information about these options review the descriptions of current faculty research interests on the department website.

In addition to a traditional thesis-based M.S. degree, the department also offers a predominantly online Chemistry M.S. with chemistry education specialization. This is a non-thesis degree that focuses on the content necessary for practicing high school teachers to achieve highly qualified status. Admission in this program is limited to practicing high school science teachers. Students interested in thesis-based M.S. degree in the sub-disciplinary area of chemistry education should select the Chemistry (M.S.) program in their application for admission.

Research Infrastructure

The Department of Chemistry, Biochemistry, and Physics at South Dakota State University boasts state-of-the-art research infrastructure housed within the Avera Health and Science Center's laboratory and research wing. The department features specialized core facilities to support its innovative research programs, including the Core Mass Spectrometry Facility and the Core Nuclear Magnetic Resonance (NMR) Facility. These cutting-edge facilities are readily available to graduate students, faculty, and even industry partners, providing invaluable hands-on experience and driving forward research in fields ranging from advanced materials to cancer biology. In addition to these core facilities, a wide array of specialized instrumentation is maintained within individual faculty laboratories, ensuring the department possesses ample modern resources to conduct transformative, real-world research.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours

Core Requirements

- CHEM 790 - Seminar (COM) Credits: 1 (2 credits required, split between literature and final seminar)
- CHEM 798 - Thesis (COM) Credits: 1-7 (9 credits required)
- CHEM Electives Credits: 7
  Select any four of the following:
- CHEM 701 - Advanced Organic Chemistry I Credits: 3
  or CHEM 703 - Advanced Physical Chemistry Credits: 3
  or CHEM 704 - Advanced Inorganic Chemistry Credits: 3
  or CHEM 705 - Principles of Biochemistry Credits: 3
  or CHEM 706 - Advanced Analytical Chemistry Credits: 3

Total Required Credits: 30 (Thesis)

Additional Admission Requirements

GRE: General and subject score are recommended but not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

The priority deadline for applying for admission for the fall semester is December 1. A secondary deadline is January 15. The department typically does not admit students for the spring semester unless applicants have secured funding for their graduate education. Support can come from three sources:

- Research assistantship from a professor in the department
- Personal or family funds
- Scholarship from the government or an organization

In addition to the materials required by the Graduate School, the Department of Chemistry, Biochemistry and Physics requires the following application materials:

- A one- to two-page personal statement which includes a description of undergraduate research, work experience, or other factors demonstrating a propensity toward graduate studies. The personal statement should also include a statement of the applicant's career goals. The applicant may upload this statement while completing the Graduate School's online application.
- Two letters of recommendation, preferably at least one from faculty at the applicant's undergraduate institution. Letters should come from faculty who are directly familiar with the applicant's academic work. They must address the applicant's scholarly potential and may also speak to the applicant's potential for graduate studies in the discipline. Letters should come directly from the recommenders, who may submit their letters electronically along with the personal recommendation form provided by the Graduate School. The Graduate School will email recommenders detailed instructions for submitting their recommendations using the contact information provided by the applicant.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Chemistry (M.S.) - Chemistry Education Specialization

Program Coordinator/Contact

Brian Logue, Department Head
Matt Miller, Professor
Melody Jewell, Senior Lecturer
Department of Chemistry, Biochemistry and Physics
Avera Health and Science Center 247
605-688-5151

Program Information

In addition to a traditional thesis-based M.S. degree, the department also offers a predominantly online Chemistry M.S. with chemistry education specialization. This is a non-thesis degree that focuses on the content necessary for practicing high school teachers to achieve highly qualified status. Admission in this program is limited to in-service high school/college science teachers. Most of the coursework is offered online for distance learning. An intensive two-week, hands-on research experience on the SDSU campus in Brookings completes the degree requirements. Students interested in thesis-based M.S. degree in the sub-disciplinary area of chemical education should select the Chemistry (M.S.) program in their application for admission.

Available Options for Graduate Degrees

Master of Science

- Non-Thesis: 32 Credit Hours

Core Requirements

- CHEM 770 - Atomic Theory and Bonding Credits: 3
- CHEM 771 - Intermolecular Interactions and Phases of Matter Credits: 3
- CHEM 772 - Thermodynamics Credits: 3
- CHEM 773 - Equilibria and Acid-Base Chemistry Credits: 3
- CHEM 774 - Kinetics, Nuclear, and Electrochemistry Credits: 3
- CHEM 775 - Organic and Biochemistry Credits: 3
- CHEM 776 - Laboratory Development Credits: 3 (6 credits required) (Must be taken twice for 3 credits each session.)
- CHEM 777 - Action Research in the Secondary Classroom Credits: 1 (2 credits required)
- CHEM 778 - Chemistry Teaching Strategies Credits: 3
- CHEM 788 - Research Problems/Projects (COM) Credits: 1-6 (3 credits required, taken over at least two semesters)

Total Required Credits: 32 (Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Applications are reviewed on a rolling basis. Classes in this program typically begin in late August for fall, early January for spring and mid-May for summer.

In addition to the materials required by the Graduate School, the Department of Chemistry, Biochemistry and Physics requires the following application materials:

- A one- to two-page personal statement which includes a description of work experience, or other factors demonstrating a propensity toward graduate studies. The personal statement should also include a statement of the applicant's career goals. The applicant may upload this statement while completing the Graduate School's online application.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Civil Engineering (M.S.)

Program Coordinator/Contact

Guanghui Hua, Department Head
Francis Ting, Professor and Graduate Coordinator
Department of Civil and Environmental Engineering
Crothers Engineering Hall 310, Box 2219
605-688-5427

Program Information

The Master of Science in Civil Engineering (MSCE) program provides students with advanced education across key civil engineering disciplines, including environmental, geotechnical, structural, transportation, and water resources engineering. The MSCE program integrates coursework, engineering design, and research to prepare graduates to develop innovative solutions that enhance the safety, resilience, and sustainability of civil infrastructure systems.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 30 Credit Hours

Core Requirements

- CEE 700-Level Electives Credits: 6

Select one of the following options

Thesis

- CEE 702 - Graduate Colloquium Credits: 2
- CEE 798 - Thesis (COM) Credits: 1-9 (7 credits required)
- Electives Credits: 15

Non-Thesis

- Electives Credits: 24

Total Required Credits: 30 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Two letters of recommendation with at least one from an individual who can address the applicant's technical knowledge background and ability to perform research, a research statement or statement of interest area intent, and transcripts are required.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Communication and Media Studies (M.A.)

Program Coordinator/Contact

Rebecca A. Kuehl, Associate Director
Karla Hunter, Professor and Graduate Program Coordinator
School of Communication and Journalism
Yeager Hall 211
605-688-4171

Program Information

The Master of Arts in Communication and Media Studies is a broad-based graduate degree for students with an undergraduate degree in communication studies, media studies, or related areas. Coursework emphasizes the intersections of academic and professional approaches to understanding, creating, and evaluating messages across contexts. Core coursework covers the foundations of the communication and media studies disciplines (including relevant theories and

methods), explores cross-platform communication, and offers applied coursework in either professional communication or media law.

Students who pursue the thesis option complete an additional 9-12 credits of elective coursework and conduct an independent, theoretically-based study that generates new disciplinary knowledge and prepares them for advanced graduate work. Students who pursue the non-thesis option complete an additional 12-15 credits of elective coursework and complete an independent, applied project that addresses a practical issue using skills related to students' chosen career fields.

Academic Requirements

Students enrolled in this graduate program must earn a grade of B or higher in CMST 702 - Communication Theory and Methods I and CMST 703 - Communication Theory and Methods II.

Available Options for Graduate Degrees

Master of Arts

- Thesis: 30 Credit Hours
- Non-Thesis: 30 Credit Hours

Core Requirements

- CMST 700 - Instructional Communication Credits: 3 (Required only for Graduate Teaching Assistants)
- CMST 702 - Communication Theory and Methods I Credits: 3
- CMST 703 - Communication Theory and Methods II Credits: 3
- CMST 720 - Professional Communication Credits: 3
  or MCOM 730 - Media Law Case Studies Credits: 3
- MCOM 620 - Writing for Media Audiences Credits: 3
  or MCOM 710 - Cross-Platform Storytelling Credits: 3
  or MCOM 746 - Cross-Platform Campaigns Credits: 3
  or MCOM 761 - Social Media Management Credits: 3

Select one of the following options

Thesis

- CMST 798 - Thesis (COM) Credits: 1-7 (6 credits required)
  or MCOM 798 - Thesis (COM) Credits: 1-6 (6 credits required)
- Electives as approved by advisor Credits: 9-12

Non-Thesis

- CMST 788 - Research Problems/Projects (COM) Credits: 1-6 (3 credits required)
  or MCOM 788 - Research Problems/Projects (COM) Credits: 1-6 (3 credits required)
- Electives as approved by advisor Credits: 12-15

Total Required Credits: 30 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 5.5
TOEFL Essentials: 10.5
IELTS: 7.0
Duolingo: 120

GPA: 3.0 on a 4.0 scale for undergraduate GPA

Previous coursework: At least 18 credit hours of relevant coursework (e.g., Advertising, Agricultural Communication, Communication Studies, Journalism, Marketing, Media Studies, or Public Relations).

- Priority Deadline: February 1
  - Applications received by February 1 will receive priority consideration; however, application review will continue until the spots are filled.
  - Students will only be considered for Fall admission.
  - All applications received by the priority deadline receive a timely, comprehensive review by the graduate committee. Students admitted during this round of review are prioritized for funding decisions.
  - Admission decisions will be shared at least 10 working days before the April 15 deadline set by the Council of Graduate Schools.
- Application materials
  - Resume/CV
  - Writing sample (max: 5 pages)
  - Cover letter (max: 2 pages) that addresses
    - Interest in graduate work in communication & media studies
    - How this degree will advance professional goals
    - Preparation for success in advanced studies in communication and media studies
  - Official Transcripts
    - Note: If the coursework was completed at a South Dakota Board of Regents (SDBOR) institution, we have access to your transcript, and you do not need to take any action.
  - $35 application fee
- International Applicants may only receive unconditional admission. To receive unconditional admission, international applicants must meet these requirements:
  - A minimum GPA of 3.0 on a 4.0 scale.
  - A professional academic transcript evaluation for degrees earned outside the United States. (This requirement cannot be waived unless your highest degree was earned or will be earned in the U.S. prior to enrollment at SDSU).
  - If you are completing your bachelor's degree at the time of application, you may submit an incomplete evaluation. If you are accepted, a complete transcript and/or evaluation with completed degree will be required by the end of your first semester of coursework.
  - Official U.S. transcripts where a degree is earned (or will be earned), and official U.S. transcripts where graduate level coursework has been taken.
  - The School of COJO requires higher English proficiency scores than the minimum set by the SDSU Graduate School. International applicants must achieve a minimum TOEFL iBT score of 5.5, TOEFL Essentials score of 10.5, or an IELTS score of 7.0.
- Process for assistantship decisions.
  - Admission decisions are made by the graduate committee.
  - Assistantship offers are facilitated by the hiring manager.
  - Admitted students being considered for an assistantship will provide the hiring manager with additional materials upon request and complete an interview with the hiring manager.
  - Assistantship offers will be shared at least 10 working days before the April 15 deadline set by the Council of Graduate Schools.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Computer Science (M.S.)

Program Coordinator/Contact

Rajesh Kavasseri, Interim Department Head
Jun Huang, Assistant Professor and Graduate Coordinator
McComish Department of Electrical Engineering and Computer Science
Daktronics Engineering Hall 214
605-688-4526

Program Information

The McComish Department of Electrical Engineering and Computer Science offers the Master of Science in Computer Science. The program prepares graduate students for positions in the design and development of computer systems and applications in business and industry and for scientific positions in industrial or academic computing research. Areas of research interest within the department currently include Artificial Intelligence, Machine Learning, Computer Vision, Applied Computing, Computer Security, Cloud and Mobile Computing, and Computer Networks.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 30 Credit Hours

Core Requirements

- CSC 7XX Electives Credits: 6

Select one of the following options

Thesis

- CSC 798 - Thesis (COM) Credits: 1-9 (6 credits required)
- Electives Credits: 18

Non-Thesis

- Electives Credits: 24

Total Required Credits: 30 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Two letters of recommendation with at least one from an individual who can address the applicant's technical knowledge background and ability to perform research, a research statement or statement of interest area, and transcripts are required.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization

Program Coordinator/Contact

Alison Boughn, Assistant Director
Katelyn Romsa, Associate Professor
School of Counseling, Human Development and Family Science
Thompson Center 105
605-688-4321

Program Information

This Administration of Student Affairs Specialization is designed for those who seek professional roles in student affairs or related areas of higher education in any postsecondary setting. The administrative emphasis will build skills based on both theory and experience.

The Master of Education specialization in Administration of Student Affairs meets the guidelines of the Council for the Advancement of Standards in Higher Education (CAS).

Available Options for Graduate Degrees

Master of Education

- Thesis: 36 Credit Hours
- Non-Thesis: 36 Credit Hours

Core Requirements

- CHRD 601 - Introduction to Professional Issues and Ethics Credits: 1
- CHRD 602 - Research and Evaluation in Counseling and Human Development Credits: 3
- CHRD 731 - Multicultural Counseling and Human Relations Credits: 3
- CHRD 742 - Career Counseling and Planning Credits: 3
- CHRD 770 - Student Development: Theory and Practice Credits: 3
- CHRD 771 - Student Personnel Services Credits: 3
- CHRD 772 - Administration and Leadership in Student Affairs Credits: 3
- CHRD 773 - Current Issues in Academic Advising and Student Affairs Credits: 3
- CHRD 794 - Internship (COM) Credits: 1-6 (6 credits required)
- EDFN 727 - Group Processes Credits: 3

Select one of the following options

Thesis

- CHRD 798 - Thesis (COM) Credits: 1-6 (5 credits required)

Non-Thesis

- Electives Credits: 5

Total Required Credits: 36 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Formal Application Process

In addition to applying for Graduate School, applicants must also apply to the CHRD program by April 1 for fall admission or by October 1 for spring admission. Admission is competitive; late applications will not be considered. Students have one calendar year from the time of acceptance to begin taking courses otherwise formal re-application to the CHRD program is required.

The CHRD department requires all applicants to submit the documents below by the appropriate admission deadline:

- CHRD Disclosure Statement
- Resume
- A typed, one-page goal statement discussing your aspirations to the counseling field.
- Two completed CHRD Recommendation Forms (do not use the Graduate School reference forms).

Based on the rating score of the applicant's file, the applicant will either be invited to the group screening interview to continue the admissions process or denied admission.

Criminal Background Check Requirement

Applicants who successfully complete the interview will be required to successfully complete and pay for a criminal background check before an official offer of admission is secured.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Counseling and Human Resource Development (M.S.) - Clinical Mental Health Counseling Specialization

Program Coordinator/Contact

Alison Boughn, Assistant Director
William Briddick, Associate Professor
School of Counseling, Human Development and Family Science
Thompson Center 105
605-688-4321

Program Information

Students who successfully complete this specialization will earn a Master of Science in Counseling and Human Resource Development specializing in Clinical Mental Health Counseling. Upon successful completion of the core requirements, and those of the Clinical Mental Health Counseling specialization and with the successful completion of the comprehensive written exam, graduates are endorsed as having constructed appropriate entry level knowledge and as having met appropriate skill acquisition to be recognized as professional clinical mental health counselors. Students in the Clinical Mental Health Counseling specialization are also responsible for having taken supporting area courses which supplement or enhance their chosen specialty.

Accreditation

The Master of Science in CHRD specializing in Clinical Mental Health Counseling, is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP).

Certification and Licensure

All Master of Science students are eligible to begin the process for the National Certified Counselor certification by taking the NCE six months before or after they graduate.

Graduation from this program does not grant immediate licensure as a counselor. Licensure differs by state and is obtainable by completing additional client contact hours after graduation. Students are responsible for researching licensure requirements for the state in which they plan to practice.

The Clinical Mental Health Counseling specialization is designed to meet the requirements of the South Dakota Board of Counselor Examiners. Graduates of this specialization are eligible for training supervisee status under the South Dakota Board of Examiners for Counselors. Once graduates complete an approved plan for the remainder of the supervised clinical experience, they are eligible for licensure as a Licensed Professional Counselor (LPC).

Available Options for Graduate Degrees

Master of Science

- Thesis: 60 Credit Hours
- Non-Thesis: 60 Credit Hours

Core Requirements

- CHRD 601 - Introduction to Professional Issues and Ethics Credits: 1
- CHRD 602 - Research and Evaluation in Counseling and Human Development Credits: 3
  or EDER 610 - Introduction to Research Credits: 3
- CHRD 610 - Developmental Issues in Counseling Credits: 3
- CHRD 647 - Pharmacological Issues in Mental Health Counseling Credits: 3
- CHRD 661 - Theories of Counseling Credits: 3
- CHRD 701 - Professional Issues and Ethics II Credits: 1
- CHRD 713 - Administration and Management of Mental Health Organizations Credits: 3
- CHRD 723 - Counseling the Family Credits: 3
- CHRD 731 - Multicultural Counseling and Human Relations Credits: 3
- CHRD 736 - Appraisal of the Individual Credits: 3
- CHRD 741 - Crisis Counseling Credits: 3
- CHRD 742 - Career Counseling and Planning Credits: 3
- CHRD 755 - Clinical Diagnosis and Treatment Planning Credits: 4
- CHRD 766 - Group Counseling Credits: 3
- CHRD 785 - Pre-Practicum Credits: 3
- CHRD 786 - Counseling Practicum Credits: 3-5 (3 credits required)
- CHRD 794 - Internship (COM) Credits: 1-6 (6 credits required)

Select one of the following options

Thesis

- CHRD 798 - Thesis (COM) Credits: 1-6 (5 credits required)
- Electives (Select courses from the Non-Thesis list) Credits: 4

Non-Thesis

- Electives Credits: 9

Select from the following

The following is a list of potential electives, though it is not comprehensive. Note: *Prerequisites or permission of instructor may be required.

- CHRD 706 - Play Therapy Basics Credits: 3
- CHRD 707 - Advanced Play Therapy and Techniques Credits: 2 *
- CHRD 708 - Play Therapy: Filial and Family Credits: 1 *
- CHRD 709 - Applications of Play Therapy Credits: 2 *
- CHRD 710 - Clinical Experiences in Play Therapy I Credits: 1 *
- CHRD 711 - Clinical Experiences in Play Therapy II Credits: 2 *
- CHRD 725 - Couples and Advanced Family Counseling Credits: 3
- CHRD 728 - Child and Adolescent Counseling Credits: 3
- CHRD 756 - Counseling the Addictive Client Credits: 3
- CHRD 788 - Research Problems/Projects (COM) Credits: 1-3 (2 credits required)

Total Required Credits: 60 (Thesis & Non-Thesis)

Additional Program Requirements

- All Master of Science students are required to purchase and carry professional liability insurance throughout the duration of the program. M.Ed. students will be required to purchase and carry professional liability insurance if enrolled in clinical courses.
- Clinical course registration is completed by the department.
- Students enrolled in the M.S. CHRD program need to complete a 100-hour practicum and an approved 600-hour internship. These experiences allow students to learn by doing, with active, sound supervision.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Formal Application Process

In addition to applying for Graduate School, applicants must also apply to the CHRD program by April 1 for fall admission or by October 1 for spring admission. Admission is competitive.

The CHRD department requires all applicants to submit the documents below by the appropriate admission deadline:

- CHRD Disclosure Statement
- Resume
- A typed, one-page goal statement discussing your aspirations to the counseling field.
- Two completed CHRD Recommendation Forms (do not use the Graduate School reference forms).

Based on the rating score of the applicant's file, the applicant will either be invited to the group screening interview top continue the admissions process or denied admission.

Criminal Background Check Requirement

Applicants who successfully complete the interview will be required to successfully complete and pay for a criminal background check before an official offer of admission is secured.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Counseling and Human Resource Development (M.S.) - College Counseling Specialization

Program Coordinator/Contact

Alison Boughn, Assistant Director
Katelyn Romsa, Associate Professor
School of Counseling, Human Development and Family Science
Thompson Center 105
605-688-4321

Program Information

The College Counseling program is designed for students who are interested in working as professional counselors in institutions of higher education. Candidates selected for this program are expected to make a major commitment to graduate training and to enroll in coursework on a regular basis. The program includes a 600 clock-hour supervised counseling internship experience. The College Counseling program emphasizes preventative, remediation, and developmental counseling skills. Students preparing to specialize as college counselors will demonstrate the knowledge skills necessary to promote the academic, career, personal, and social development of individuals in higher education settings.

The following statement is intended to identify the specific endorsement for students entering College Counseling: Upon successful completion of the core requirements, and those of the College Counseling specialization and with the successful completion of the Counselor Preparation Comprehensive Exam (CPCE) exam, graduates are endorsed as having constructed appropriate entry level knowledge and as having met appropriate skill acquisition to be recognized as professional college counselors. Students in the College Counseling specialization are also responsible for having taken supporting area courses which supplement or enhance their chosen specialty.

The College Counseling course of study is designed to meet the requirements of the South Dakota Board of Counselor Examiners. Once graduates complete an approved supervised clinical experience and pass the appropriate examinations, they are eligible for licensure as a Licensed Professional Counselor (LPC) initially, and eventually a Licensed Professional Counselor – Mental Health (LPC-MH).

Accreditation

The Master of Science in CHRD specializing in College Counseling is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP).

Certification and Licensure

All Master of Science students are eligible to begin the process for the National Certified Counselor certification by taking the NCE six months before or after they graduate.

Graduation from this program does not grant immediate licensure as a counselor. Licensure differs by state and is obtainable by completing additional client contact

hours after graduation. Students are responsible for researching licensure requirements for the state in which they plan to practice.

Available Options for Graduate Degrees

Master of Science

- Thesis: 60 Credit Hours
- Non-Thesis: 60 Credit Hours

Core Requirements

- CHRD 601 - Introduction to Professional Issues and Ethics Credits: 1
- CHRD 602 - Research and Evaluation in Counseling and Human Development Credits: 3
  or EDER 610 - Introduction to Research Credits: 3
- CHRD 610 - Developmental Issues in Counseling Credits: 3
- CHRD 661 - Theories of Counseling Credits: 3
- CHRD 701 - Professional Issues and Ethics II Credits: 1
- CHRD 731 - Multicultural Counseling and Human Relations Credits: 3
- CHRD 736 - Appraisal of the Individual Credits: 3
- CHRD 741 - Crisis Counseling Credits: 3
- CHRD 742 - Career Counseling and Planning Credits: 3
- CHRD 755 - Clinical Diagnosis and Treatment Planning Credits: 4
- CHRD 766 - Group Counseling Credits: 3
- CHRD 770 - Student Development: Theory and Practice Credits: 3
- CHRD 771 - Student Personnel Services Credits: 3
- CHRD 772 - Administration and Leadership in Student Affairs Credits: 3
- CHRD 773 - Current Issues in Academic Advising and Student Affairs Credits: 3
- CHRD 785 - Pre-Practicum Credits: 3
- CHRD 786 - Counseling Practicum Credits: 3-5 (3 credits required)
- CHRD 794 - Internship (COM) Credits: 1-6 (6 credits required)

Select one of the following options

Thesis

- CHRD 798 - Thesis (COM) Credits: 1-6 (5 credits required)
- Electives Credits: 1

Non-Thesis

- Electives Credits: 6

Total Credits Required: 60 (Thesis & Non-Thesis)

Additional Program Requirements

- All Master of Science students are required to purchase and carry professional liability insurance throughout the duration of the program. M.Ed. students will be required to purchase and carry professional liability insurance if enrolled in clinical courses.
- Clinical course registration is completed by the department.
- Students enrolled in the M.S. CHRD program need to complete a practicum and an approved internship. These experiences allow students to learn by doing, with active, sound supervision. The practicum and internship experiences carry clock and credit hour completion expectations. For example, for every 3 credits of internship, students are required to complete 20 hours per week of on-site experience. In addition, regular work expectations outside the classroom exist for every credit hour enrolled. Thus, students enrolled in 3 credits of internship or practicum experience will be considered part-time. Students enrolled in 4 credits of internship or 3 credits of practicum plus other courses to total 4 semester credits will be considered full-time.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Formal Application Process

In addition to applying for Graduate School, applicants must also apply to the CHRD program by April 1 for fall admission or by October 1 for spring admission. Admission is competitive; late applications will not be considered. Students have one calendar year from the time of acceptance to begin taking courses otherwise formal re-application to the CHRD program is required.

The CHRD department requires all applicants to submit the documents below by the appropriate admission deadline:

- CHRD Disclosure Statement
- Resume
- A typed, one-page goal statement discussing your aspirations to the counseling field.
- Two completed CHRD Recommendation Forms (do not use the Graduate School reference forms).

Based on the rating score of the applicant's file, the applicant will either be invited to the group screening interview to continue the admissions process or denied admission.

Criminal Background Check Requirement

Applicants who successfully complete the interview will be required to successfully complete and pay for a criminal background check before an official offer of admission is secured.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Counseling and Human Resource Development (M.S.) - Marriage and Family Counseling Specialization

Program Coordinator/Contact

Alison Boughn, Assistant Director
School of Counseling, Human Development and Family Science
Thompson Center 105
605-688-4321

Program Information

Students who successfully complete this specialization will earn a Master of Science in Counseling and Human Resource Development specializing in Marriage and Family Counseling. Upon successful completion of the core requirements, and those of the Marriage and Family Counseling specialization and with the successful completion of the comprehensive written exam (CPCE), graduates are endorsed as having constructed appropriate entry level knowledge and as having met appropriate skill acquisition to be recognized as professional marriage and family therapists. Students in the Marriage and Family Counseling specialization are also responsible for having taken supporting area courses which supplement or enhance their chosen specialty.

Certification and Licensure

All Master of Science students are eligible to begin the process for the National Certified Counselor certification. Upon graduation, Marriage and Family Counseling specialization students are eligible to apply to complete the National Marriage and Family Therapy Examination.

Graduation from this program does not grant immediate licensure as a marriage and family therapist. Licensure differs by state and is obtainable by completing additional client contact hours after graduation. Students are responsible for researching licensure requirements for the state in which they plan to practice.

The Marriage and Family Counseling specialization is designed to meet the requirements of the South Dakota Board of Counselor Examiners. Graduates of this specialization are eligible for training supervisee status under the South Dakota Board of Examiners for Counselors. Once graduates complete an approved plan for the remainder of the supervised clinical experience, they are eligible for licensure as a Licensed Marriage and Family Therapist (LMFT).

Available Options for Graduate Degrees

Master of Science

- Thesis: 60 Credit Hours
- Non-Thesis: 60 Credit Hours

Core Requirements

- CHRD 601 - Introduction to Professional Issues and Ethics Credits: 1
- CHRD 602 - Research and Evaluation in Counseling and Human Development Credits: 3
  or EDER 610 - Introduction to Research Credits: 3
- CHRD 610 - Developmental Issues in Counseling Credits: 3
- CHRD 661 - Theories of Counseling Credits: 3
- CHRD 701 - Professional Issues and Ethics II Credits: 1
- CHRD 702 - Advanced Human Sexuality Credits: 3

or CHRD 756 - Counseling the Addictive Client Credits: 3

- CHRD 723 - Counseling the Family Credits: 3
- CHRD 725 - Couples and Advanced Family Counseling Credits: 3
- CHRD 728 - Child and Adolescent Counseling Credits: 3
  or CHRD 706 - Play Therapy Basics Credits: 3
- CHRD 731 - Multicultural Counseling and Human Relations Credits: 3
- CHRD 736 - Appraisal of the Individual Credits: 3
- CHRD 741 - Crisis Counseling Credits: 3
- CHRD 742 - Career Counseling and Planning Credits: 3
- CHRD 755 - Clinical Diagnosis and Treatment Planning Credits: 4
- CHRD 766 - Group Counseling Credits: 3
- CHRD 785 - Pre-Practicum Credits: 3
- CHRD 786 - Counseling Practicum Credits: 3-5 (3 credits required)
- CHRD 794 - Internship (COM) Credits: 1-6 (6 credits required)

Select one of the following options

Thesis

- CHRD 798 - Thesis (COM) Credits: 1-6 (5 credits required)
- Electives Credits: 1

Non-Thesis

- Electives (Any prefix and course should be related to counseling) Credits: 6

Select from the following

The following is a list of potential electives, though it is not comprehensive. Note: *Prerequisites or permission of instructor may be required.

- CHRD 647 - Pharmacological Issues in Mental Health Counseling Credits: 3
- CHRD 706 - Play Therapy Basics Credits: 3
- CHRD 707 - Advanced Play Therapy and Techniques Credits: 2
- CHRD 708 - Play Therapy: Filial and Family Credits: 1
- CHRD 709 - Applications of Play Therapy Credits: 2
- CHRD 710 - Clinical Experiences in Play Therapy I Credits: 1
- CHRD 711 - Clinical Experiences in Play Therapy II Credits: 2
- CHRD 713 - Administration and Management of Mental Health Organizations Credits: 3
- CHRD 756 - Counseling the Addictive Client Credits: 3
- CHRD 788 - Research Problems/Projects (COM) Credits: 1-3 (2 credits required)

Total Required Credits: 60 (Thesis & Non-Thesis)

Additional Program Requirements

- All Master of Science students are required to purchase and carry professional liability insurance throughout the duration of the program. M.Ed. students will be required to purchase and carry professional liability insurance if enrolled in clinical courses.
- Clinical course registration is completed by the department.
- Students enrolled in the M.S. CHRD program need to complete a 100-hour practicum and an approved 600-hour internship. These experiences allow students to learn by doing, with active, sound supervision. Within their internship, a focus on family systems theory should be emphasized and at least 10% of direct client contact hours should be conducted with two or more clients present in session.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Formal Application Process

In addition to applying for Graduate School, applicants must also apply to the CHRD program by April 1 for fall admission or by October 1 for spring admission. Admission is competitive; late applications will not be considered.

The CHRD department requires all applicants to submit the documents below by the appropriate admission deadline:

- CHRD Disclosure Statement
- Resume
- A typed, one-page goal statement discussing your aspirations to the counseling field
- Two completed CHRD Recommendation Forms (do not use the Graduate School reference forms).

Based on the rating score of the applicant's file, the applicant will either be invited to the group screening interview top continue the admissions process or denied admission.

Criminal Background Check Requirement

Applicants who successfully complete the interview will be required to successfully complete and pay for a criminal background check before an official offer of admission is secured.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Counseling and Human Resource Development (M.S.) - Rehabilitation Counseling Specialization

Program Coordinator/Contact

Alison Boughn, Assistant Director
Gene Dockery, Assistant Professor
School of Counseling, Human Development and Family Science
Thompson Center 105
605-688-4321

Program Information

The Rehabilitation Counseling Specialization is dedicated to enhancing the effectiveness of counselors and programs of service to people with disabilities. Educational experiences will aim to prepare qualified rehabilitation counselors, increase knowledge in the field of rehabilitation, and to apply knowledge to the growing effectiveness of rehabilitation professionals and service delivery systems. In alliance with students, agencies, consumers, and professional organizations, the specialty area will promote the independence, acceptance, and dignity of all people with significant disabilities.

Students who successfully complete this specialization will earn a Master of Science in Counseling and Human Resource Development specializing in Rehabilitation Counseling. Upon successful completion of the core requirements, and those of the Rehabilitation Counseling emphasis, and with successful completion of the comprehensive written exam, graduates are endorsed as having constructed appropriate entry level knowledge and as having met appropriate skill acquisition to be recognized as professional rehabilitation and mental health counselors. Students in this emphasis are also responsible for having taken supporting area courses which supplement or enhance their chosen specialty.

Accreditation

The Master of Science in CHRD specializing in Rehabilitation Counseling is accredited by the Council for the Accreditation of Counseling and Related Educational Programs (CACREP).

Certification and Licensure

All Master of Science students are eligible to begin the process for the National Certified Counselor certification by taking the NCE six months before or after they graduate.

Students specializing in Rehabilitation Counseling are eligible to begin the process for the Certified Rehabilitation Counselor certification by taking the CRC exam after a student has completed 75% of coursework or after graduation.

Graduation from this program does not grant immediate licensure as a counselor. Licensure differs by state and is obtainable by completing additional client contact hours after graduation. Students are responsible for researching licensure requirements for the state in which they plan to practice.

Available Options for Graduate Degrees

Master of Science

- Thesis: 63 Credit Hours
- Non-Thesis: 60 Credit Hours

Core Requirements

- CHRD 601 - Introduction to Professional Issues and Ethics Credits: 1
- CHRD 602 - Research and Evaluation in Counseling and Human Development Credits: 3
  or EDER 610 - Introduction to Research Credits: 3

- CHRD 610 - Developmental Issues in Counseling Credits: 3
- CHRD 661 - Theories of Counseling Credits: 3
- CHRD 690 - Seminar (COM) Credits: 1-3 (1 credit required) (Ethics)
- CHRD 701 - Professional Issues and Ethics II Credits: 1
- CHRD 731 - Multicultural Counseling and Human Relations Credits: 3
- CHRD 736 - Appraisal of the Individual Credits: 3
- CHRD 741 - Crisis Counseling Credits: 3
- CHRD 742 - Career Counseling and Planning Credits: 3
- CHRD 751 - Overview of Rehabilitation and Mental Health Counseling Credits: 3
- CHRD 752 - Medical and Psychological Aspects of Disability Credits: 3
- CHRD 753 - Case Management Principles and Plan Development Credits: 3
- CHRD 755 - Clinical Diagnosis and Treatment Planning Credits: 4
- CHRD 756 - Counseling the Addictive Client Credits: 3
- CHRD 757 - Case Consultation and Supervision Credits: 3
- CHRD 766 - Group Counseling Credits: 3
- CHRD 785 - Pre-Practicum Credits: 3
- CHRD 786 - Counseling Practicum Credits: 3-5 (3 credits required)
- CHRD 794 - Internship (COM) Credits: 1-6 (6 credits required)

Select one of the following options

Thesis

- CHRD 798 - Thesis (COM) Credits: 1-6 (5 credits required)

Non-Thesis

- Electives Credits: 2

Total Required Credits: 63 (Thesis), 60 (Non-Thesis)

Additional Program Requirements

- All Master of Science students are required to purchase and carry professional liability insurance throughout the duration of the program. M.Ed. students will be required to purchase and carry professional liability insurance if enrolled in clinical courses.
- Clinical course registration is completed by the department.
- Students enrolled in the M.S. CHRD program need to complete a practicum and an approved internship. These experiences allow students to learn by doing, with active, sound supervision. The practicum and internship experiences carry clock and credit hour completion expectations. For example, for every 3 credits of internship, students are required to complete 20 hours per week of on-site experience. In addition, regular work expectations outside the classroom exist for every credit hour enrolled. Thus, students enrolled in 3 credits of internship or practicum experience will be considered part-time. Students enrolled in 4 credits of internship or 3 credits of practicum plus other courses to total 4 semester credits will be considered full-time.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Formal Application Process

In addition to applying for Graduate School, applicants must also apply to the CHRD program by April 1 for fall admission or by October 1 for spring admission. Admission is competitive; late applications will not be considered. Students have one calendar year from the time of acceptance to begin taking courses otherwise formal re-application to the CHRD program is required.

The CHRD department requires all applicants to submit the documents below by the appropriate admission deadline:

- CHRD Disclosure Statement
- Resume
- A typed, one-page goal statement discussing your aspirations to the counseling field.
- Two completed CHRD Recommendation Forms (do not use the Graduate School reference forms).

Based on the rating score of the applicant's file, the applicant will either be invited to the group screening interview to continue the admissions process or denied admission.

Criminal Background Check Requirement

Applicants who successfully complete the interview will be required to successfully complete and pay for a criminal background check before an official offer of admission is secured.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Counseling and Human Resource Development (M.S.) - School Counseling Specialization

Program Coordinator/Contact

Alison Boughn, Assistant Director
Hande Briddick, Professor
School of Counseling, Human Development and Family Science
Thompson Center 105
605-688-4321

Program Information

The School Counseling specialization is designed to prepare students for endorsement/certification as a school counselor in the state of South Dakota. Should the student seek endorsement in another state, it is that student's responsibility to meet any additional requirements by that particular state. Students who successfully complete this specialization will earn a Master of Science in Counseling and Human Resource Development specializing in School Counseling.

Upon successful completion of the core requirements, and those of the School Counseling specialization, and with the successful completion of the comprehensive written exam, graduates are endorsed as having constructed entry level knowledge and as having met appropriate skill acquisition to be recognized as professional school counselors. Students in the School Counseling specialization are also responsible for having taken supporting area courses which supplement or enhance their chosen specialty.

Accreditation

The Master of Science in CHRD specializing in School Counseling is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP).

Certification and Licensure

All Master of Science students are eligible to begin the process for the National Certified Counselor certification by taking the NCE six months before or after they graduate.

The School Counseling specialization prepares students for endorsement/certification in the state of South Dakota. Students are responsible for researching school counseling certification requirements for any state in which they wish to practice.

Graduation from this program does not grant immediate licensure as a counselor. Licensure differs by state. Students are responsible for researching licensure requirements for the state in which they plan to practice.

Available Options for Graduate Degrees

Master of Science

- Thesis: 60 Credit Hours
- Non-Thesis: 60 Credit Hours

Core Requirements

- AIS 511 - South Dakota Indian Studies (COM) Credits: 3
- CHRD 601 - Introduction to Professional Issues and Ethics Credits: 1
- CHRD 602 - Research and Evaluation in Counseling and Human Development Credits: 3
  or EDER 610 - Introduction to Research Credits: 3
- CHRD 610 - Developmental Issues in Counseling Credits: 3
- CHRD 661 - Theories of Counseling Credits: 3
- CHRD 701 - Professional Issues and Ethics II Credits: 1
- CHRD 721 - School Counseling Credits: 3
- CHRD 722 - Administration and Management of School Counseling Programs Credits: 3
- CHRD 728 - Child and Adolescent Counseling Credits: 3
- CHRD 731 - Multicultural Counseling and Human Relations Credits: 3
- CHRD 736 - Appraisal of the Individual Credits: 3

- CHRD 741 - Crisis Counseling Credits: 3
- CHRD 742 - Career Counseling and Planning Credits: 3
- CHRD 755 - Clinical Diagnosis and Treatment Planning Credits: 4
- CHRD 766 - Group Counseling Credits: 3
- CHRD 785 - Pre-Practicum Credits: 3
- CHRD 786 - Counseling Practicum Credits: 3-5 (3 credits required)
- CHRD 794 - Internship (COM) Credits: 1-6 (6 credits required)

Select one of the following options

Thesis

- CHRD 798 - Thesis (COM) Credits: 1-6 (5 credits required)
- Electives Credits: 1

Non-Thesis

- Electives Credits: 6

Total Required Credits: 60 (Thesis & Non-Thesis)

Additional Program Requirements

- All Master of Science students are required to purchase and carry professional liability insurance throughout the duration of the program. M.Ed. students will be required to purchase and carry professional liability insurance if enrolled in clinical courses.
- Clinical course registration is completed by the department.
- Students enrolled in the M.S. CHRD program need to complete a practicum and an approved internship. These experiences allow students to learn by doing, with active, close supervision. The practicum and internship experiences carry clock and credit hour completion requirements. For example, for every 3 credits of internship, students are required to complete 20 hours per week of on-site experience. In addition, regular work expectations outside the classroom exist for every credit hour enrolled. Thus, students enrolled in 3 credits of internship or practicum experience will be considered part-time. Students enrolled in 4 credits of internship or 3 credits of practicum plus other courses to total 4 semester credits will be considered full-time.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Formal Application Process

In addition to applying for Graduate School, applicants must also apply to the CHRD program by April 1 for fall admission or by October 1 for spring admission. Admission is competitive; late applications will not be considered. Students have one calendar year from the time of acceptance to begin taking courses otherwise formal re-application to the CHRD program is required.

The CHRD department requires all applicants to submit the documents below by the appropriate admission deadline:

- CHRD Disclosure Statement
- Resume
- A typed, one-page goal statement discussing your aspirations to the counseling field.
- Two completed CHRD Recommendation Forms (do not use the Graduate School reference forms).

Based on the rating score of the applicant's file, the applicant will either be invited to the group screening interview to continue the admissions process or denied admission.

Criminal Background Check Requirement

Applicants who successfully complete the interview will be required to successfully complete and pay for a criminal background check before an official offer of admission is secured.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Curriculum and Instruction (M.Ed.)

Program Coordinator/Contact

Patrick Hales, Associate Professor, Assistant Director of K-12 Teacher Education
Tony Durr, Associate Professor
School of Education
Wenona Hall 108
605-688-5039

Program Information

The Curriculum and Instruction (C&I) degree is designed for individuals who work, or plan to work, in instructional roles across a variety of settings. The program strengthens students' ability to design effective curriculum, align standards, instruction, and assessment, and use evidence and student data to improve learning. With substantial flexibility, students complete a combination of required courses and electives tailored to their professional goals and areas of interest. Courses may be taken as stand-alone professional learning (without pursuing a degree) or applied toward completion of the C&I degree.

The degree does not lead to a South Dakota teaching certificate nor does it lead to an endorsement on the South Dakota teaching certificate.

Each of the required core courses for this program are delivered online in 8-week sessions. Each semester will have two distinct 8-week sessions for courses.

Available Options for Graduate Degrees

Master of Education

- Thesis: 30 Credit Hours
- Non-Thesis: 30 Credit Hours

Core Requirements

- EDER 610 - Introduction to Research Credits: 3
- EDER 612 - Inquiry and Action Research Credits: 3
- EDFN 600 - Educational Theory in Practice Credits: 3
- EDFN 700 - Exceptional Learners Credits: 3
- EDFN 725 - Education in a Pluralistic Society Credits: 3
- EDFN 730 - Current Issues in Education (COM) Credits: 3
- EPSY 740 - Educational Psychology: Cognition, Learning and Applications Credits: 3

Select one of the following options

Thesis

- EDFN 798 - Thesis (COM) Credits: 1-6 (6 credits required)
- ECE, EDER, EDFN, AGED, EDAD, EPSY, FCSE, or HDFS Electives Credits: 3

Non-Thesis

- ECE, EDER, EDFN, AGED, EDAD, EPSY, FCSE, or HDFS Electives Credits: 9

Total Required Credits: 30 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Applicants must provide a resume, goal statement, and two letters of professional reference to Education, Counseling and Human Development. Once all material is received, it is reviewed by the program faculty. Students are assigned an admission status of "unconditional," "conditional" or "not admitted."

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Curriculum and Instruction (M.Ed.) - Career and Technical Education Specialization

Program Coordinator/Contact

Patrick Hales, Associate Professor, Assistant Director of K-12 Teacher Education
Laura Hasselquist, Associate Professor
School of Education
Wenona Hall 108
605-688-5039

Program Information

The Career and Technical Education (CTE) specialization prepares students for leadership and teaching roles in secondary schools, technical colleges, and workforce development agencies. The program develops expertise in CTE pedagogy, competency-based assessment, industry-aligned curriculum design, and research methods specific to work-based learning environments.

The program offers two emphasis areas to meet the needs of diverse learners. The Professional Practice Emphasis is designed for students who hold a current teaching license and wish to deepen their knowledge and leadership capacity in career and technical education. The Teacher Licensure/Certification Emphasis is designed for students seeking to earn their teaching certification while completing the graduate program, providing the foundational coursework and clinical experiences necessary for licensure.

Graduates are prepared to serve as effective educators and leaders who bridge academic and technical learning to meet the evolving needs of students and the workforce.

Core courses are delivered online in 8-week sessions, with two distinct 8-week sessions offered each semester, with the exception of AGED 625, which is offered as a 16-week, full-semester course.

Available Options for Graduate Degrees

Master of Education

- Non-Thesis: 30-33 Credit Hours

Core Requirements

- AGED 625 - Future Directions for Career and Technical Education Credits: 3
- EDFN 600 - Educational Theory in Practice Credits: 3
- EDFN 700 - Exceptional Learners Credits: 3
- EDFN 725 - Education in a Pluralistic Society Credits: 3
- EDFN 750 - Educational Technology Integration Credits: 3
- EPSY 740 - Educational Psychology: Cognition, Learning and Applications Credits: 3
- SEED 502 - Methods in Career and Technical Education (COM) Credits: 2-3 (3 credits required)

Select from the following

Select one of the two emphasis areas:

Professional Practice Emphasis

- EDER 610 - Introduction to Research Credits: 3
- EDFN 580 - Leadership Development in Youth Organizations Credits: 3
- EDFN 730 - Current Issues in Education (COM) Credits: 3

Teacher Licensure/Certification Emphasis

- AIS 511 - South Dakota Indian Studies (COM) Credits: 3
- EDER 711 - Educational Assessment (COM) Credits: 3
- EDFN 688 - Student Teaching (COM) Credits: 1-16 (3 credits required)
- SEED 550 - Reading and Content Literacy (COM) Credits: 2-3 (3 credits required)

Total Required Credits: 30-33 (Non-Thesis)

Academic Requirements

Students in the Teacher Licensure/Certification Emphasis seeking initial teaching certification must maintain certain academic requirements to be eligible for teacher certification.

- maintain a 3.0 gpa or higher
- pass all coursework required by the teacher preparation program
- pass the state designated Praxis content exam
- pass the state designated Praxis pedagogy exam
- complete the required student teaching experience

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Applicants must provide a resume, goal statement, and two letters of professional reference to the Teacher Education Program. Those seeking the certification emphasis must provide a verification of occupational competency for a CTE career area and complete a professional licensure location form. Once all material is received, it is reviewed by the program faculty. Students are assigned an admission status of "unconditional," "conditional" or "not admitted."

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Curriculum and Instruction (M.Ed.) - Literacy Instructional Coaching Specialization

Program Coordinator/Contact

Patrick Hales, Associate Professor, Assistant Director of K-12 Teacher Education
Tony Durr, Associate Professor
School of Education
Wenona Hall 108
605-688-5039

Program Information

The Literacy Instructional Coaching Specialization is designed for K-12 educators looking to enhance their expertise in evidence-based literacy instruction and coaching strategies. This program equips teachers and literacy leaders with the tools they need to support and mentor fellow educators, drive literacy improvement, and ensure student success using Science of Reading aligned practices. Courses are offered online with one required in-person session per course.

Available Options for Graduate Degrees

Master of Education

- Non-Thesis: 30 Credit Hours

Core Requirements

- EDER 610 - Introduction to Research Credits: 3
- EDFN 600 - Educational Theory in Practice Credits: 3
- EDFN 725 - Education in a Pluralistic Society Credits: 3
- EDFN 757 - Critical Issues in Literacy Coaching (COM) Credits: 1
- EDFN 758 - Coaching Using the Science of Learning (COM) Credits: 1
- EDFN 759 - Literacy Coaching Frameworks and Andragogy (COM) Credits: 1
- EDFN 761 - Developing Instructional Capacity (COM) Credits: 1
- EDFN 762 - Literacy Assessment and Learning (COM) Credits: 1
- EDFN 763 - Data-Informed Literacy Coaching (COM) Credits: 1
- EDFN 764 - Literacy Coaching for Differentiated Instruction (COM) Credits: 1
- EDFN 766 - Disciplinary Literacy Coaching (COM) Credits: 1
- EDFN 767 - School-Wide Literacy Intervention (COM) Credits: 1
- EDFN 768 - Literacy Curriculum Evaluation (COM) Credits: 1
- EDFN 769 - Literacy Curriculum Mapping (COM) Credits: 1
- EDFN 770 - Family and Community Literacy Engagement (COM) Credits: 1
- EDFN 771 - Promoting Literacy Policies and Programs (COM) Credits: 1
- EDFN 772 - Integrating Technology in Literacy Coaching (COM) Credits: 1
- EDFN 773 - Literacy Instructional Leadership (COM) Credits: 1
- EDFN 774 - Implementing Literacy Coaching Cycles (COM) Credits: 1
- EDFN 776 - Sustaining Literacy Coaching Cycles (COM) Credits: 1
- EDFN 777 - Practicum: Applying Coaching Cycles (COM) Credits: 1
- EPSY 740 - Educational Psychology: Cognition, Learning and Applications Credits: 3

Total Required Credits: 30 (Non-Thesis)

Additional Admission Requirements

GRE: Not Required
TOEFL iBT: 4

TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Applicants must provide a resume, goal statement, and two letters of professional reference to the School of Education, Counseling and Human Development. Once all material is received, it is reviewed by the program faculty. Students are assigned an admission status of "unconditional," "conditional" or "not admitted."

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Data Science (M.S.)

Program Coordinator/Contact

Donald Vestal, Associate Professor and Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering Hall 209, Box 2225
605-688-6196

Program Information

The M.S. in Data Science is a one-year program that provides graduates with the statistical, mathematical, and computational skills needed to meet the large-scale data science challenges of today's professional world. The curriculum incorporates current techniques in statistics, operations research, predictive modeling, data mining, forecasting, big data programming and management, and data visualization. The program's focus is on application and interpretation of modern data analysis techniques of known value in both the private and public sectors. It is recommended that this program be started in the summer semester. Failure to start in the summer may increase the amount of time necessary to complete the program.

Available Options for Graduate Degrees

Master of Science

- Non-Thesis: 30 Credit Hours

Core Requirements

- INFS 762 - Data Warehousing and Data Mining Credits: 3 (DSU)
- INFS 772 - Programming for Data Analytics Credits: 3 (DSU)
- INFS 774 - Big Data Analytics Credits: 3 (DSU)
- STAT 600 - Statistical Programming Credits: 3
- STAT 601 - Modern Applied Statistics I Credits: 3
- STAT 602 - Modern Applied Statistics II Credits: 3

Electives

Credits: 12

The following courses will be the default elective curriculum beyond the core courses in the M.S. in Data Science program.

- MATH 575 - Operations Research (COM) Credits: 3
- STAT 545 - Nonparametric Statistics (COM) Credits: 3
- STAT 551 - Predictive Analytics I Credits: 3
- STAT 560 - Time Series Analysis (COM) Credits: 3

The following courses are available to students with appropriate mathematical and statistical prerequisite knowledge.

- MATH 675 - Operations Research II Credits: 3
- STAT 553 - Applied Bayesian Statistics Credits: 3
- STAT 651 - Predictive Analytics II Credits: 3
- STAT 684 - Statistical Inference I Credits: 3
- STAT 685 - Statistical Inference II Credits: 3
- STAT 686 - Regression Analysis I Credits: 3
- STAT 687 - Regression Analysis II Credits: 3
- STAT 715 - Multivariate Analysis I Credits: 3
- STAT 721 - Statistical Computing and Simulation Credits: 3
- STAT 731 - Survival Analysis Credits: 3
- STAT 742 - Spatial Statistics Credits: 3
- STAT 792 - Topics (COM) Credits: 1-3 (3 credits required)

Total Required Credits: 30 (Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Two letters of recommendation with at least one from an individual who can address the applicant's technical knowledge background and ability to perform research, a research statement or statement of interest area, and transcripts are required.

In addition to meeting Graduate School admission requirements, applicants for graduate study for the M.S. in Data Science must have:

- Baccalaureate degree from an institution of higher education with full regional accreditation for that degree.
- An undergraduate grade point average of at least 3.0 on 4.0 scale.
- Transcript showing completion of courses in key areas equivalent to:
  - Database design/programming (SAS, Python, or R) including familiarity with SQL (STAT 410-510 or STAT 415-515 or equivalent)
  - Understanding of the principles of programming (CSC 150 or INFO 101 or equivalent)
  - Understanding of statistical principles, including multivariate statistical analysis (STAT 441-541 or equivalent)
- Undergraduate preparatory courses requiring two semesters of calculus, one course in matrix or linear algebra, one introductory course in calculus-based probability and statistics. SDSU courses that would satisfy these requirements are:
  - MATH 123 Calculus I
  - MATH 125 Calculus II
  - MATH 215 Matrix Algebra OR MATH 412 Linear Algebra
  - STAT 381 Introduction to Probability and Statistics

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Economics (M.S.)

Program Coordinator/Contact

David Davis, Professor and Graduate Coordinator
Nicole Klein, Associate Director
Ness School of Management and Economics
Harding Hall 104
605-688-4141

Program Information

The M.S. in Economics provides rigorous training in economic theory, quantitative methods, and applied analysis. The program prepares students for analytical careers in business, government, and policy institutions, as well as for doctoral study in economics or related fields. Core coursework includes advanced microeconomics, macroeconomics, and econometrics, with a strong emphasis on applied economic research. Students complete a six-credit research thesis and may customize their program through elective coursework in areas such as economics, agricultural economics, finance, and management.

The Ness School of Management and Economics offers an accelerated master's program, which allows qualified students to work toward their master's degree in economics while they complete their undergraduate degree. This accelerated program is available to qualified undergraduate students who maintain an overall undergraduate cumulative GPA of at least 3.0.

Accreditation

The Ness School of Management and Economics is accredited by the Association to Advance Collegiate Schools of Business International (AACSB).

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours

Core Requirements

- ECON 703 - Advanced Macroeconomics Credits: 3
- ECON 704 - Advanced Microeconomics Credits: 3
- ECON 705 - Econometrics Credits: 3
- ECON 707 - Research Methodology in Empirical Economics and Management Credits: 1-3 (3 credits required)
- ECON 798 - Thesis (COM) Credits: 1-7 (6 credits required)
- Electives Credits: 12

Total Required Credits: 30 (Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4.5
TOEFL Essentials: 8.0
IELTS: 6.5
Duolingo: 115

Two letters of reference and a letter of intent are required. In the letter of intent, the applicant should identify their interests in the graduate program, address how their skills - including those the applicant attained in their undergraduate program - align with our graduate program, and address any undergraduate coursework in which the applicant earned below a B. The letter of intent should be roughly 500 to 750 words long.

Accelerated Master's Program

The program offers an accelerated master's degree to eligible undergraduate SDSU students who maintain an overall undergraduate cumulative GPA of at least 3.0. These students may begin their graduate studies while they complete their undergraduate degree. Up to twelve (12) graduate level credits may apply to both the undergraduate degree and the graduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students may apply for admission to the accelerated master's degree program once they have completed 60 undergraduate credits. Students interested in the accelerated master's degree should contact the Ness School of Management and Economics Graduate Coordinator to obtain application requirements. Application and admission to the Graduate School is required. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Educational Administration (M.Ed.)

Program Coordinator/Contact

Patrick Hales, Associate Professor, Assistant Director of K-12 Teacher Education
Hamada Elfarargy, Assistant Professor of Educational Leadership
School of Education
Wenona Hall 108
605-688-5039

Program Information

The M.Ed. degree in Educational Administration is designed to meet the needs of individuals who work (or plan to work) with youth of all ages in an administrative capacity. The School of Education, Counseling and Human Development provides professional preparation for those who expect to become qualified administrators in PreK-12 schools where certification is required. The coursework is closely aligned to program and professional standards for building-level education leaders, which may include principals, assistant principals, curriculum directors, and supervisors.

The Educational Administration degree meets the requirements for principal certification in South Dakota. These requirements are aligned with the National Educational Leadership Preparation (NELP) Building Level Standards. This program is appropriate for professionals who wish to serve in administrative roles in schools or related service agencies.

The South Dakota State Board of Education requires that in order to be certified, individuals must have three years of verified teaching experience on a valid certificate in an accredited K-12 school, one year of which includes classroom teaching experience or direct services to students. Applicants should be certified and employed full-time in a certified position (e.g., classroom teacher or school counselor) prior to entering the program. Students must complete the three years of verified teaching experience on a valid certificate prior to completing the M.Ed. program to be eligible for certification as school principals.

South Dakota principal endorsement also requires internship experience at the elementary and secondary levels aligned to NELP standards. Accordingly, students in the Educational Administration program are required to take the non-thesis option, which involves two semesters of internship experience. This plan requires the student to complete a minimum of 30 credit hours in order to graduate.

Accreditation

South Dakota State University's educator preparation programs are approved by the Council for the Accreditation of Educator Preparation (CAEP) and the South Dakota Department of Education. In order to become a licensed/certified educator in some states, students may require additional content courses, tests or other individual state requirements.

Professional Licensure Disclosure Statement

SDSU prepares teacher candidates to meet all requirements for teacher certification in the state of South Dakota. At this time SDSU cannot confirm this program or its courses meet requirements for professional licensure in states outside of South Dakota. Assistance will be provided to candidates in contacting the licensing authority in the student's state and understanding the requirements for licensure prior to enrollment in the South Dakota State University program.

Available Options for Graduate Degrees

Master of Education

- Non-Thesis: 30 Credit Hours

Core Requirements

- EDAD 705 - School Principalship Credits: 3
- EDAD 706 - Instructional Leadership Development Credits: 3
- EDAD 731 - School Finance and Budgeting Credits: 3
- EDAD 736 - School Law and Ethics Credits: 3
- EDAD 741 - School - Community Relations Credits: 3
- EDAD 794 - Internship (COM) Credits: 1-8 (3 credits required)
- EDFN 600 - Educational Theory in Practice Credits: 3
- EDFN 725 - Education in a Pluralistic Society Credits: 3
- ECE, EDER, EDFN, AGED, EDAD, EPSY, FCSE, or HDFS Electives Credits: 6

Total Required Credits: 30 (Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Applicants must provide a resumé, goal statement, and two letters of professional reference to Education, Counseling and Human Development. Once all material is received, it is reviewed by the program faculty. Students are assigned an admission status of "unconditional," "conditional" or "not admitted."

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Electrical Engineering (M.S.)

Program Coordinator/Contact

Rajesh Kavasseri, Interim Department Head
Xiaojun Xian, Assistant Professor and Graduate Coordinator
McComish Department of Electrical Engineering and Computer Science
Daktronics Engineering Hall 214
605-688-4526

Program Information

The program offers a variety of courses that encompass a broad range of Electrical Engineering areas including: alternative energy and power systems, computer engineering, communications, electronic materials, devices and sensors, nano technology, photovoltaic devices and systems, microelectronic circuits and systems, and signal and image processing. The department's graduate faculty conduct active research in these areas using modern research facilities and equipment.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 30 Credit Hours

Core Requirements

- EE 700-Level Electives Credits: 6

Select one of the following options

Thesis

- EE 798 - Thesis (COM) Credits: 1-7 (5-7 credits required)
- Electives Credits: 17-19

Non-Thesis

- Electives Credits: 24

Total Required Credits: 30 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

Two letters of recommendation with at least one from an individual who can address the applicant's technical knowledge background and ability to perform research, a research statement or statement of interest area, and transcripts are required.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Engineering (M.Eng.)

Program Coordinator/Contact

Suzette Burckhard, Assistant Dean of Academic Programs
Jerome J. Lohr College of Engineering
Crothers Engineering Hall 312
605-688-4161

Program Information

The Master of Engineering program is a professional degree designed to grow your capacity to manage and lead in complex technical organizations. The program is over half advanced engineering courses with the remaining supporting courses in management and leadership, and can be completed on-campus or online depending on courses chosen.

The Master of Engineering (M.Eng.) is a terminal or professional degree as it is coursework only – no thesis. There is no laboratory research experience associated with this program. This graduate program is tailored to meet the needs of working professionals at their own pace or for senior-level engineering students who want to earn a graduate degree while still at SDSU. Core classes include project management, safety, and management and leadership. Advanced engineering courses come from civil, electrical, mechanical, or agricultural engineering disciplines as well as supporting areas of computer science, construction management, general engineering, mathematics, and statistics or data science. Given the nature of the degree program, there are no assistantships available.

Available Options for Graduate Degrees

Master of Engineering

- Non-Thesis: 30 Credit Hours

Core Requirements

- ABE, CEE, CM, CSC, EE, GE, ME, MATH, or STAT 500-, 600-,and 700-Level Courses Credits: 15
- GE 525 - Occupational Safety and Health Management Credits: 3
- GE 685 - Management and Leadership in Technical Organizations Credits: 3
- OM 669 - Project Management Credits: 3
- STAT 541 - Statistical Methods II Credits: 3

Select from the following

Select one of the following. Credits: 3

- ABE, CEE, CM, CSC, EE, GE, ME, MATH, or STAT 500-, 600-, and 700-Level Course Credits: 3
- OM 563 - Supply Chain Management Credits: 3
- OM 660 - Operations Management Credits: 3
- OM 760 - Quality Control Credits: 3

Total Required Credits: 30 (Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

English (M.A.)

Program Coordinator/Contact

Jason McEntee, Director
Paul Baggett, Professor and Graduate Coordinator
School of English and Interdisciplinary Studies
Pugsley Continuing Education Center 301, Box 2218
605-688-5191

Program Information

SDSU's School of English and Interdisciplinary Studies offers the M.A. degree in English. There are two emphases available to students:

- Studies in Literature
- Studies in Writing and Rhetoric

Each option will support a variety of educational or professional goals. Students generally complete the program in two to three years.

Available Options for Graduate Degrees

Master of Arts

- Thesis: 30 Credit Hours
- Non-Thesis: 33 Credit Hours

Core Requirements

- ENGL 605 - Seminar in Teaching Composition Credits: 3 *required for all Teaching Assistants*
- ENGL 704 - Introduction to Graduate Studies Credits: 3

Select one of the following options

Thesis

- ENGL 798 - Thesis (COM) Credits: 1-7 (6 credits required)
- Electives Credits: 18

Non-Thesis

- Electives Credits: 27

Total Required Credits: 30 (Thesis), 33 (Non-Thesis)

Additional Admission Requirements

To be considered for admission into the M.A. Program in English, the applicant should have a minimum of 24 semester hours of undergraduate credit in English or receive the consent of the school director.

To be considered for unconditional acceptance and to be eligible for a graduate teaching assistantship, applicants must have at least a 3.0 undergraduate GPA and a 3.25 GPA in their undergraduate English courses.

GRE: Not required
TOEFL iBT: 5.5
TOEFL Essentials: 10.5
IELTS: 7.0
Duolingo: 120

In addition to the materials required by the Graduate School, the School of English and Interdisciplinary Studies requires the following application materials:

- A one-page statement of purpose explaining the applicant's interest in and goals for graduate study. The statement of purpose should indicate whether or not the applicant would like to be considered for a graduate teaching assistantship. The applicant may upload this statement while completing the Graduate School's online application.
- An eight- to ten-page critical writing sample. This sample must engage in critical research and include a works cited page. The applicant may upload this writing sample while completing the Graduate School's online application.
- Two letters of recommendation from faculty at the applicant's undergraduate institution. Letters should come from faculty who are directly familiar with the applicant's academic work. They must address the applicant's scholarly potential and may also speak to the applicant's potential as a graduate teaching assistant. Letters should come directly from the recommenders, who may submit their letters electronically along with the personal recommendation form provided by the Graduate School. The Graduate School will email recommenders detailed instructions for submitting their recommendations using the contact information provided by the applicant.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Geography (M.S.)

Program Coordinator/Contact

Bob Watrel, Department Head
George White, Professor and Graduate Coordinator
Department of Geography and Geospatial Sciences
Wecota Hall 109
605-688-4511

Program Information

The Department of Geography and Geospatial Sciences offers graduate students the opportunity to earn a Master of Science degree. The curriculum, organized through formal courses, seminars, internship experiences, and supervised research, is designed to prepare students for positions in such professional areas as planning, remote sensing, geographic information sciences, government service, research, business, and teaching. The program also is designed to provide students with the education needed to pursue further graduate study. Students seeking this degree are expected to select courses that will provide a sound foundation in geography (philosophical, physical and human, and research techniques) supported, if appropriate, by courses outside the department. Students may also seek out opportunities such as the cooperative program with the USGS-EROS and/or internships, generally available with planning districts, governmental agencies, business, and industry.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 33 Credit Hours

Core Requirements

- GEOG 710 - Evolution of Geographic Thought Credits: 3
- GEOG 714 - Research and Writing Credits: 3
- GEOG 790 - Seminar (COM) Credits: 1-4 (1 credit required) (Geospatial Science)

Select one of the following options

Thesis

- GEOG 798 - Thesis (COM) Credits: 1-7 (5-6 credits required)
- Electives Credits: 17-18

Non-Thesis

- Electives Credits: 26

Total Credits: 30 (Thesis), 33 (Non-Thesis)

Master's Graduation Requirements

Thesis

- Thesis Proposal
- Thesis and Oral Defense

Non-Thesis

- Research Project/Portfolio and Oral Defense

Additional Admission Requirements

GRE: Not Required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

The Department of Geography and Geospatial Sciences has listed the following additional admission requirements:

- Submission of 1-2 page statement describing applicants' interests in the master's program in Geography at SDSU.
- Submission of two (2) letters of recommendation from persons acquainted with the academic ability and professional competency of the applicant.
- A minimum of 9 semester credits of undergraduate coursework in geography, preferably physical geography. An additional 6 credits in the fields cognate to geography are required.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Geography (M.S.) - Geographic Information Sciences Specialization

Program Coordinator/Contact

Bob Watrel, Department Head
George White, Professor and Graduate Coordinator
Department of Geography and Geospatial Sciences
Wecota Hall 109
605-688-4511

Program Information

The Department of Geography and Geospatial Sciences offers graduate students the opportunity to earn a Master of Science degree. The curriculum, organized through formal courses, seminars, internship experiences, and supervised research, is designed to prepare students for positions in such professional areas as planning, remote sensing, geographic information sciences, government service, research, business, and teaching. The program also is designed to provide students with the education needed to pursue further graduate study. Students seeking this degree are expected to select courses that will provide a sound foundation in geography (philosophical, physical and human, and research techniques) supported, if appropriate, by courses outside the department. Students may also seek out opportunities such as the cooperative program with the USGS-EROS and/or internships, generally available with planning districts, governmental agencies, business, and industry.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 33 Credit Hours

Core Requirements

- GEOG 710 - Evolution of Geographic Thought Credits: 3
- GEOG 714 - Research and Writing Credits: 3
- GEOG 790 - Seminar (COM) Credits: 1-4 (1 credit required) (Geospatial Science)

Select from the following

Select nine credits from the following. Credits: 9

- GEOG 571 - Programming for Geospatial Data Analysis Credits: 3
- GEOG 573 - GIS Data Creation/Integration Credits: 2
- GEOG 573L - GIS: Data Creation and Integration Lab Credits: 1
- GEOG 574 - GIS: Vector & Raster Modeling Credits: 2
- GEOG 574L - GIS: Vector and Raster Modeling Lab Credits: 1
- GEOG 575 - GIS Applications Credits: 2
- GEOG 575L - GIS Applications Lab Credits: 1
- GEOG 576 - Web GIS Credits: 2
- GEOG 576L - Web GIS Lab Credits: 1
- GEOG 578 - Mobile GIS Credits: 2
- GEOG 578L - Mobile GIS Lab Credits: 1
- GEOG 579 - AI and Advanced Geospatial Techniques Credits: 2
- GEOG 579L - AI and Advanced Geospatial Techniques Lab Credits: 1
- GEOG 580 - Satellite Remote Sensing Credits: 2
- GEOG 580L - Satellite Remote Sensing Lab Credits: 1
- GEOG 583 - UAS Remote Sensing Credits: 2
- GEOG 583L - UAS Remote Sensing Lab Credits: 1
- GEOG 585 - Advanced Satellite Remote Sensing Credits: 2
- GEOG 585L - Advanced Satellite Remote Sensing Lab Credits: 1
- GEOG 741 - Quantitative Remote Sensory for Terrestrial Monitoring Credits: 3
- GEOG 743 - Geospatial Analysis Credits: 3
- GEOG 750 - Agricultural Remote Sensing Credits: 3
- GEOG 760 - Advanced Methods in Geospatial Modeling: Topical Credits: 3
- GEOG 784 - Machine Learning for Remote Sensing and GIS Credits: 3
- GEOG 786 - Geographic Information Systems Credits: 3

Select one of the following options

Thesis

- GEOG 798 - Thesis (COM) Credits: 1-7 (5-6 credits required)
- Electives will be determined in consultation with the advisor. Credits: 8-9

Non-Thesis

- Electives will be determined in consultation with the advisor. Credits: 17

Total Credits: 30 (Thesis), 33 (Non-Thesis)

Master's Graduation Requirements

Thesis

- Thesis Proposal
- Thesis and Oral Defense

Non-Thesis

- Research Project/Portfolio and Oral Defense

Additional Admission Requirements

GRE: Not Required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

The Department of Geography and Geospatial Sciences has listed the following additional admission requirements:

- Submission of 1-2 page statement describing applicants' interests in the master's program in Geography at SDSU.
- Submission of two (2) letters of recommendation from persons acquainted with the academic ability and professional competency of the applicant.
- A minimum of 9 semester credits of undergraduate coursework in geography, preferably physical geography. An additional 6 credits in the fields cognate to geography are required.

Accelerated Master's Program

The accelerated Master's program will be available to eligible SDSU students. Up to 12 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Global Agricultural Leadership (M.S.)

Program Coordinator/Contact

Rosie Nold, Assistant Dean and Director of Global Agricultural Leadership
College of Agriculture, Food and Environmental Sciences
Berg Agricultural Hall 147
605-688-4893

Program Information

The master's program in Global Agricultural Leadership is a professional program in agriculture. Students will enhance their leadership skills and economics awareness in a complex global agricultural environment. Graduates will complete 30 credit hours as part of the master's program that focuses on agricultural leadership, community development, communication, global awareness, ethics, and agribusiness. They will be equipped to contribute to the vitality of agriculture and to the economic growth of rural communities while enhancing the lives of people worldwide.

The Global Agricultural Leadership program is designed to prepare graduates to achieve more than technical competence and personal confidence in their skills. Students develop connections with industry leaders, are exposed to current and future challenges in agribusiness, and create a network of like-minded peers across disciplines with whom they will grow as future leaders, and who will be valued resources throughout their careers. They develop a much broader and in-depth understanding of agriculture globally and are better positioned to assume leadership roles in their companies and communities.

Available Options for Graduate Degrees

Master of Science

- Non-Thesis: 30 Credit Hours

Core Requirements

- AFES 581 - Domestic Agricultural Travel Experience Credits: 1-4 (1 credit required)
- AFES 582 - International Agricultural Travel Experience Credits: 1-4 (1 credit required)
- AFES 694 - Internship (COM) Credits: 1-3 (3 credits required)
- AFES 750 - Capstone Experience Credits: 4
- AGEC 557 - Business Ethics (COM) Credits: 3
  or CMST 510 - Organizational Communication (COM) Credits: 3
  or GEOG 554 - Sustainable Communities Credits: 3
- AGEC 579 - Agricultural Policy Credits: 3
- AGEC 585 - Farming and Food Systems Economics Credits: 3
- ECON 751 - Advanced Managerial Economics Credits: 3
- GE 685 - Management and Leadership in Technical Organizations Credits: 3
- GEOG 768 - Global Climate Change Credits: 3
- Any 500-, 600-, or 700-level course in an area of interest with Program Director approval Credits: 3

Total Required Credits: 30 (Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

- Two letters of personal reference (one from a faculty member and one from an external source)
- Letter of Intent on how their skillset aligns with the program, and how they anticipate the program will impact their future vocation, agriculture, and society
- Undergraduate transcript
- Application for admission to this program must be received by February 15.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Human Biology (M.S.)

Program Coordinator/Contact

Natalie Thiex, Associate Professor
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Program Information

The M.S. in Human Biology provides graduate-level preparation for students for successful admission to professional schools, including those not admitted directly to professional school from an undergraduate program. The program is designed to provide graduate-level preparation for students who desire admission to professional schools in human healthcare. This includes but is not limited to programs such as: Allopathic Medical Doctor (M.D.), Doctor of Osteopathic Medicine (D.O.), Doctor of Optometry (O.D.), Doctor of Chiropractic (D.C.), Doctor of Dental Surgery (D.D.S), and Master of Science – Physician Assistant Studies (M.S. – PAS). The M.S. program allows for additional opportunities to demonstrate their academic excellence and polish their professional skills. This program directly strengthens the academic capacity of the student with special attention to advanced content knowledge and case based application, professional development and professional skills needed by the healthcare provider.

Academic Requirements

Students must maintain an overall program grade point average of 3.0.

Available Options for Graduate Degrees

Master of Science

- Non-Thesis: 32 Credit Hours

Core Requirements

- BIOL 570 - Cancer Biology (COM) Credits: 3
- BIOL 576 - Advanced Mammalian Physiology Credits: 4
- BIOL 719 - Professional Development Seminar Credits: 1-4 (4 credits required)
- BIOL 721 - Advanced Human Anatomy Credits: 2
- BIOL 721L - Advanced Human Cadaver Dissection Credits: 2
- BIOL 743 - Cell Biology (COM) Credits: 3
- BIOL 788 - Research Problems/Projects (COM) Credits: 1-3 (2 credits required)
- BIOS 662 - Advanced Molecular Biology Credits: 3

Select from the following

Select nine credits from the following. Credits: 9

- BIOL 583 - Developmental Biology (COM) Credits: 3
- BIOL 592 - Topics (COM) Credits: 1-5
- BIOL/ NUTR 782 - Epidemiology Credits: 3
- BIOL or MICR 500- to 700-level course determined by the advisor and the student. Credits: 3
- MICR 524 - Medical and Veterinary Virology Credits: 3
- MICR 533 - Medical Microbiology (COM) Credits: 3
- MICR 539 - Medical and Veterinary Immunology Credits: 3
- NUTR 522 - Advanced Human Nutrition and Metabolism Credits: 4

Total Required Credits: 32 (Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students conditionally admitted to the graduate program. Up to 6 credits applied to the B.S. program may be used to satisfy graduate credit. Students will enroll in the graduate coursework in the spring of their final undergraduate year. Once students complete the graduate coursework in the M.S. in Human Biology with B or above grades, and graduate with a B.S. in Human Biology, including all dual-credit courses, they will by fully accepted into the program.

In order to apply, students must:

1. Be enrolled in the B.S.in Human Biology;
2. Have earned 90 undergraduate credits with a GPA of 2.9 or higher;
3. Meet all degree requirements as stipulated by Regental or University policy;
4. Submit to the a statement of interest identifying how the M.S. in Human Biology will contribute to their academic and career goals;
5. Submit at least two letters of reference regarding his/her ability to participate in the program;
6. Submit scores for the GRE, MCAT, DAT, or OAT; and
7. Submit the application for admission to the graduate school.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Human Sciences (M.S.) - Human Development and Family Science Specialization

Program Coordinator/Contact

Amber Letcher, Interim Director and Professor
School of Counseling, Human Development and Family Science
Thompson Center 105
605-688-4321

Program Information

The Human Development and Family Science Specialization provides students with graduate training in an interdisciplinary field that examines human development across the lifespan in cultural, social, and family contexts. Students will complete advanced coursework in the areas of child, adolescent, and adult development with an emphasis in family and multicultural contexts. The program provides advanced training for individuals working in outreach and advocacy, health, and human services, education, and businesses and corporations.

Available Options for Graduate Degrees

Master of Science

- Thesis: 36 Credit Hours
- Non-Thesis: 36 Credit Hours

Core Requirements

- CHRD/ HDFS 602 - Research and Evaluation in Counseling and Human Development Credits: 3
- ECE 711 - Developmental Theory and Application Credits: 3
  or HDFS 614 - Adult Development Credits: 3
- HDFS 544 - Diverse Families Credits: 3
- HDFS 701 - Current Issues in Human Development and Family Science Credits: 3
- HDFS 742 - Family Theory and Research Credits: 3
- HSC 631 - Biostatistics I Credits: 3

Select from the following

Select 12 credits from the following. Credits: 12

- CHRD/ HDFS 702 - Advanced Human Sexuality Credits: 3
- CHRD 770 - Student Development: Theory and Practice Credits: 3
- ECE 715 - Cognitive Development Credits: 3
- EPSY 723 - Adolescent Psychology Credits: 3
- GERO 520 - Grief and Loss Credits: 3
- HDFS 510 - Parenting Credits: 3
- HDFS 525 - Family Resiliency Credits: 3
- HDFS 535 - Family Policy Credits: 3
- HDFS 551 - Infant and Early Childhood Mental Health Credits: 3
- NUTR 660 - Maternal and Child Nutrition Credits: 3

Select one of the following options

Thesis

- HDFS 798 - Thesis (COM) Credits: 1-7 (6 credits required)

Non-Thesis

- Electives determined in consultation with advisor Credits: 6

Total Required Credits: 36 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: Not Required
TOEFL iBT: 4

TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

- STEP 1: Applicant Applies to the Graduate School
  - Apply to the Graduate School at least two months before the program deadline to allow for processing.
  - Graduate School applications received after the program deadline will be denied and referred to the next semester.
  - The minimum GPA to apply is 2.75, however a 3.0 or higher is desired.
  - GRE is not required.
- STEP 2: Applicant Applies to the Program
  - Applicants to the program must submit the documents below by April 1 for fall admission or October 1 for spring admission. Late or incomplete applications will be denied.
  - Resume
  - A one page, typed goal statement explaining your professional goals and how completion of this degree will assist you in meeting those goals.
  - Two letters of recommendation prepared within the past year; one letter must come from an academic professor.
- STEP 3: Admissions Decision
  - Complete admission files will be reviewed by faculty for an admissions decision. The Graduate School will notify the applicant via email about their admission status.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Interdisciplinary Studies (M.S.)

Program Coordinator/Contact

Jason McEntee, Director
School of English and Interdisciplinary Studies
Pugsley Continuing Education Center 301, Box 2218
605-688-5191

Program Information

The M.S. in Interdisciplinary Sciences program is an innovative, flexible, and highly individualized graduate program designed to meet students' academic and professional goals. Students will work with their advisor to finalize their plan of study in at least two or three disciplines, using classes that are relevant to supporting the student in achieving their educational goals. Students will complete a plan of study with a research/design paper or coursework only option.

Available Options for Graduate Degrees

Master of Science

- Non-Thesis: 33 Credit Hours

Core Requirements

Coursework must be selected from two (2) or three (3) distinct academic areas, excluding pedagogy. If two academic areas are selected, the student must complete no fewer than twelve (12) credit hours in each area and must include a capstone experience. If three academic areas are selected, the student must complete no fewer than nine (9) credit hours and must include a capstone experience. An academic area is defined by courses taught under the same prefix (e.g. BIOL, CMST, ENGL, MCOM, MICR, NRM, OM, PE, SOC, etc.).

- Academic Area "1" Credits: 12
- Academic Area "2" Credits: 12
- Capstone Experience
- Electives Credits: 9

OR

- Academic Area "1" Credits: 9
- Academic Area "2" Credits: 9
- Academic Area "3" Credits: 9
- Capstone Experience
- Electives Credits: 6

Total Required Credits: 33 (Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Applicants must submit a personal statement identifying 2 or 3 specific academic areas to be included on their plan of study.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Mass Communication (M.M.C.)

Program Coordinator/Contact

Rebecca A. Kuehl, Associate Director
Marina Hendricks, Associate Professor and Graduate Coordinator
School of Communication and Journalism
Yeager Hall 211
605-688-4171

Program Information

The Master of Mass Communication (M.M.C.) consists of advanced professional studies. While it has theoretical underpinnings, the primary purpose is to enhance knowledge and skills for application in professional practice. Fifty percent or more of the courses must be skills-based. This degree targets professionals in journalism, mass communication, and related fields and builds on students' current levels of experience and skills, making them more marketable. The Master of Mass Communication prepares students for the increasingly competitive workforce and changing disciplines in mass communications.

Courses for the M.M.C. program are delivered online. The majority are eight weeks long and taken consecutively.

Accreditation

The Master of Mass Communication degree is accredited by the national accrediting body of journalism and mass communication, the Accrediting Council on Education in Journalism and Mass Communications (ACEJMC).

Available Options for Graduate Degrees

Master of Mass Communication

- Non-Thesis: 30 Credit Hours

Core Requirements

At least 50% of coursework on the plan of study must be skills-based coursework. Skills-based courses are designated below.

- MCOM 705 - Introduction to Master of Mass Communication Credits: 3
- MCOM 710 - Cross-Platform Storytelling Credits: 3 (skills-based)
- MCOM 730 - Media Law Case Studies Credits: 3 (skills-based)
- MCOM 746 - Cross-Platform Campaigns Credits: 3 (skills-based)
- MCOM 786 - Conducting Professional Research Credits: 3 (skills-based)
- MCOM 788 - Research Problems/Projects (COM) Credits: 1-6 (3 credits required)
- Electives Credits: 12

Electives

Select from the following list of courses. Other courses may be selected with prior approval.

- CMST 510 - Organizational Communication (COM) Credits: 3
- CMST 540 - Health Communication (COM) Credits: 3
- CMST 541 - Current Issues in Health Communication Credits: 3 (skills-based)
- CMST 592 - Topics (COM) Credits: 1-5
- CMST 792 - Topics (COM) Credits: 1-3
- MCOM 513 - International Media (COM) Credits: 3
- MCOM 574 - Entrepreneurial Media Credits: 3 (skills-based)
- MCOM 592 - Topics (COM) Credits: 1-5 (3 credits required)

- MCOM 620 - Writing for Media Audiences Credits: 3 (skills-based)
- MCOM 653 - Mass Communications Teaching Methods Credits: 1-4 (3 credits required)
- MCOM 692 - Topics (COM) Credits: 1-3 (3 credits required)
- MCOM 761 - Social Media Management Credits: 3 (skills-based)
- MCOM 791 - Independent Study (COM) Credits: 1-3
- MCOM 794 - Internship (COM) Credits: 1-3
- PUBR 592 - Topics (COM) Credits: 1-3

Total Required Credits: 30 (Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 5
TOEFL Essentials: 10.5
IELTS: 7.0
Duolingo: 120

GPA: 3.0 on a 4.0 scale for undergraduate GPA

Preferred qualifications:

- Professional experience and/or previous coursework in fields such as mass communication, journalism, advertising, marketing, public relations and business.
- Priority Deadline: February 1
  - Applications received by February 1 will receive priority consideration; however, application review will continue until the spots are filled.
  - Students will only be considered for Fall admission.
  - All applications received by the priority deadline receive a timely, comprehensive review by the graduate committee.
- Application materials
  - Professional resume
  - Personal statement (max: 2 pages) that addresses
    - Preparation for success in an independent, online graduate program.
    - How professional experience and/or previous coursework prepares you for this program.
    - How this degree will advance your professional goals.
  - Official transcripts
    - Note: If the coursework was completed at a South Dakota Board of Regents (SDBOR) institution, we have access to your transcript, and you do not need to take any action.
  - $35 application fee
- International Applicants may only receive unconditional admission. To receive unconditional admission, international applicants must meet these requirements:
  - A minimum GPA of 3.0 on a 4.0 scale.
  - A **professional academic transcript evaluation** for degrees earned outside the United States. (This requirement cannot be waived unless your highest degree was earned or will be earned in the U.S. prior to enrollment at SDSU).
  - If you are completing your bachelor's degree at the time of application, you may submit an incomplete evaluation. If you are accepted, a complete transcript and/or evaluation with completed degree will be required by the end of your first semester of coursework.
  - Official U.S. transcripts where a degree is earned (or will be earned), and official U.S. transcripts where graduate level coursework has been taken.
  - The School of COJO requires higher English proficiency scores than the minimums set by the SDSU Graduate School. International applicants must achieve a minimum TOEFL iBT score of 5, TOEFL Essentials score of 10.5, or an IELTS score of 7.0.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Mathematics (M.S.)

Program Coordinator/Contact

Donald Vestal, Associate Professor and Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering Hall 209, Box 2225
605-688-6196

Program Information

One major focus of the M.S. in Mathematics program is the development of sophisticated mathematical models and their implementation on high performance computing platforms. The curriculum features a balance of application, computation, and theory with particular emphasis in the areas of operations research, computational science, and the development of probabilistic and deterministic models. Areas of faculty and graduate student research activity include computational biology, computational finance, molecular dynamics simulation, operations research, optimization, and Ramsey theory. The program is particularly effective at preparing graduates to work in business, industry, or government as well as preparing students to continue on to the Computational Science and Statistics Ph.D. or other Ph.D. program.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 30 Credit Hours

Core Requirements

- MATH 575 - Operations Research (COM) Credits: 3
  and MATH 675 - Operations Research II Credits: 3
  or MATH 571 - Numerical Analysis I (COM) Credits: 3
  and MATH 770 - Numerical Linear Algebra Credits: 3
  or MATH 571 - Numerical Analysis I (COM) Credits: 3
  and MATH 771 - Numerical Analysis II Credits: 3
- MATH 625 - Advanced Calculus Credits: 3
- MATH 741 - Measure and Probability Credits: 3
- MATH 779 - Advanced Mathematics Synthesis Credits: 1

Select one of the following options

Thesis

- MATH 798 - Thesis (COM) Credits: 1-7 (5 credits required)
- Electives Credits: 12

Non-Thesis

- Electives Credits: 17

Total Required Credits: 30 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

Two letters of recommendation with at least one from an individual who can address the applicant's technical knowledge background and ability to perform research, a research statement or statement of interest area, and transcripts are required.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Mathematics (M.S.) - Statistics Specialization

Program Coordinator/Contact

Donald Vestal, Associate Professor and Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering Hall 209, Box 2225
605-688-6196

Program Information

One major focus of the M.S. in Mathematics - Statistics Specialization Program is the development of sophisticated mathematical and statistical models and their implementation on high performance computing platforms. The curriculum features a balance of application, computation, and theory with particular emphasis in the areas of operations research, computational science, and the development of probabilistic and deterministic models. Areas of faculty and graduate student research activity include operations research, optimization, bioinformatics, biostatistics, business and financial analytics, forensic statistics, and general statistics. The program is particularly effective at preparing graduates to work in business, industry, or government as well as preparing students to continue on to the Computational Science and Statistics Ph.D. or other Ph.D. program.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 30 Credit Hours

Core Requirements

- MATH 625 - Advanced Calculus Credits: 3
- MATH 741 - Measure and Probability Credits: 3
- MATH 779 - Advanced Mathematics Synthesis Credits: 1
- STAT 684 - Statistical Inference I Credits: 3
- STAT 685 - Statistical Inference II Credits: 3

Select one of the following options

Thesis

- MATH 798 - Thesis (COM) Credits: 1-7 (5 credits required)
- Electives Credits: 12

Non-Thesis

- Electives Credits: 17

Total Required Credits: 30 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

Two letters of recommendation with at least one from an individual who can address the applicant's technical knowledge background and ability to perform research, a research statement or statement of interest area, and transcripts are required.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Mechanical Engineering (M.S.)

Program Coordinator/Contact

Yucheng Liu, Duane Sander Endowed Professor and Department Head
Saikat Basu, Associate Professor and Graduate Coordinator
Department of Mechanical Engineering
Crothers Engineering Hall 221, Box 2219
605-688-5426

Program Information

The Mechanical Engineering Department offers courses for the degree Master of Science in Mechanical Engineering. Also, course offerings can be used in co-major or minor programs for students of other departments. The graduate program in mechanical engineering concentrates on advanced study, including design and research, in such areas as thermofluid science, solid mechanics and dynamics, and industrial and quality control engineering. Students are encouraged to broaden their education by participating in supporting programs in established departments such as mathematics, computer science and other fields of engineering.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 30 Credit Hours

Core Requirements

- ME 700-Level Courses Credits: 6

Select from the following options

Thesis

- ME 798 - Thesis (COM) Credits: 1-9 (6 credits required)
- Electives Credits: 18

Non-Thesis

- Electives Credits: 24

Total Required Credits: 30 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Two letters of recommendation with at least one from an individual who can address the applicant's technical knowledge background and ability to perform research, a research statement or statement of interest area, and transcripts are required.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Nursing (M.S.) - Nurse Administrator Specialization

Program Coordinator/Contact

Cami Veire, Nursing Advisor and Graduate Specialist
Graduate Nursing
SDSU Nursing - Sioux Falls
2400 S Minnesota Ave, Room 182
Sioux Falls, SD 57107
605-688-2165

Program Information

Established in 1979, the M.S. in Nursing at South Dakota State University prepares nurses for advanced practice roles in nursing administration or education.

Accreditation

The baccalaureate degree program in nursing, master's degree program in nursing, Doctor of Nursing Practice program and postgraduate advanced practice

registered nurse certificate program at South Dakota State University are accredited by the Commission on Collegiate Nursing Education.

South Dakota State University College of Nursing Healthcare Simulation Center has full accreditation by the Society for Simulation in Healthcare in teaching/education. This status will be granted from Oct. 25, 2022, through Dec. 31, 2027.

Certification and Licensure

Students must provide evidence of professional registration by submitting a copy of the most current RN license.

Upon Completion of the M.S. in Nursing - Nurse Administrator Specialization, students may be eligible for the following certifications:

National Certification Eligibility	Certifying Body
Nurse Executive - Board Certified (NE-BC)* • Hold a current, active RN license in a state or territory of the United States or hold the professional, legally recognized equivalent in another country. • Hold a baccalaureate or higher degree in nursing. • At least 2000 hours of experience in a leadership, management, or administrative role with a primary responsibility for the daily operations and outcomes of one (1) or more unit(s)/departments within the last 3 years. Complete 30 hours of continuing education in leadership, management, or administration within the last 3 years.	American Nurses Credentialing Center (ANCC)
Nurse Executive - Advanced Board Certified (NEA-BC)* • Hold a current, active RN license in a state or territory of the United States or hold the professional, legally recognized equivalent in another country. • Hold a graduate degree and either the baccalaureate or graduate degree must be in nursing. • At least 2000 hours of experience in a leadership, management, or administration position, with primary responsibility for organization-wide or system-wide operations and outcomes, that include nursing within the last 3 years. Complete 30 hours of continuing education in leadership, management, or administration within the last 3 years.	American Nurses Credentialing Center (ANCC)
Certified Nurse Manager and Leader (CNML)* To be eligible for the Certified Nurse Manager and Leader (CNML) examination, a candidate must meet the target practitioner definition and fulfill one of the following requirements for education / work experience. • A valid and unrestricted license as a Registered Nurse; and • A baccalaureate in nursing degree or higher plus one year of experience in a nurse manager/leader role. OR • A valid and unrestricted license as a Registered Nurse, and A baccalaureate in nursing plus 4 years of experience in an executive nursing role.	American Organization for Nursing Leadership (AONL)
Certified in Executive Nursing Practice (CENP)* To be eligible for the Certified in Executive Nursing Practice (CENP) examination, a candidate must meet the target practitioner definition and fulfill one of the following requirements for education / work experience. • A valid and unrestricted license as a Registered Nurse; and • Master's degree or higher plus 2 years of experience in an executive nursing role. Once of the degrees must be in Nursing. OR • A valid and unrestricted license as a Registered Nurse, and A baccalaureate in nursing plus 4 years of experience in an executive nursing role.	American Organization for Nursing Leadership (AONL)

Available Options for Graduate Degrees

Master of Science

- Thesis: 31 Credit Hours
- Non-Thesis: 31 Credit Hours

Core Requirements

- NURS 615 - Foundations of Advanced Nursing Credits: 3
- NURS 626 - Research in Nursing and Health Care Credits: 3
- NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3
- NURS 675 - Cultivating a Practice of Cultural Humility in Healthcare Credits: 3
- NURS 750 - Transformational Leadership in Nursing Credits: 3
- NURS 760 - Advanced Concepts in Health Promotion and Disease Prevention Credits: 3
- NURS 774 - Nurse Administrator: Practicum Credits: 2
- NURS 774L - Nurse Administrator Practicum Clinical Laboratory Credits: 3
- NURS 860 - Health Operations and Financial Management for Nurse Leaders Credits: 3

Select one of the following options

Thesis

- NURS 798 - Thesis (COM) Credits: 1-7 (5 credits required)

Non-Thesis

- Electives (as approved by academic advisor) Credits: 5

Total Required Credits: 31 (Thesis & Non-Thesis)

Additional Admissions Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

- Current, unencumbered licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to taking first practicum course.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare

Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

- Interview assessment reviewed by graduate faculty.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to 12 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Nursing (M.S.) - Nurse Educator Specialization

Program Coordinator/Contact

Cami Veire, Nursing Advisor and Graduate Specialist
Graduate Nursing
SDSU Nursing - Sioux Falls
2400 S Minnesota Ave, Room 182
Sioux Falls, SD 57107
605-688-2165

Program Information

Established in 1979, the M.S. in Nursing at South Dakota State University prepares nurses for advanced practice roles in nursing administration or education.

Accreditation

The baccalaureate degree program in nursing, master's degree program in nursing, Doctor of Nursing Practice program and postgraduate advanced practice registered nurse certificate program at South Dakota State University are accredited by the Commission on Collegiate Nursing Education.

South Dakota State University College of Nursing Healthcare Simulation Center has full accreditation by the Society for Simulation in Healthcare in teaching/education. This status will be granted from Oct. 25, 2022, through Dec. 31, 2027.

Certification and Licensure

Students must provide evidence of professional registration by submitting a copy of the most current RN license.

After completing the program of study, graduates may be eligible to complete certification through several professional organizations.

National Certification Eligibility	Certifying Body
Certified Nurse Educator* *Individuals must meet eligibility requirements before they can take the CNE examination. An active registered nurse license is necessary. Students must also have a master's or doctoral degree in nursing and full-time experience in a nurse faculty role within the past five years. If the college degree emphasized on nursing instruction, individuals will need two years of experience in a nurse faculty role. Four years of experience is required if the graduate nursing degree did not emphasize on education.	National League for Nursing (NLN)

Available Options for Graduate Degrees

Master of Science

- Thesis: 40 Credit Hours
- Non-Thesis: 35 Credit Hours

Core Requirements

- NURS 615 - Foundations of Advanced Nursing Credits: 3
- NURS 620 - Role Development of the Nurse Educator Credits: 2
- NURS 623 - Pathophysiology Across the Lifespan - Application to Advanced Practice Nursing Credits: 2-4 (2 credits required)
- NURS 626 - Research in Nursing and Health Care Credits: 3
- NURS 630 - Advanced Assessment Across the Lifespan for the CNL/Nurse Educator Credits: 3
- NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3
- NURS 675 - Cultivating a Practice of Cultural Humility in Healthcare Credits: 3
- NURS 710 - Curriculum Development and Program Evaluation in Nursing Credits: 3
- NURS 720 - Teaching and Learning Methodologies in Nursing Credits: 3
- NURS 721 - Assessment and Evaluation in Nursing Education Credits: 3
- NURS 778 - Nurse Educator Didactic Credits: 2
- NURS 778L - Nurse Educator Practicum Credits: 1-3 (3 credits required)
- PHA 645 - Pharmacotherapeutics Across the Lifespan: Application to Advanced Practice Credits: 2-4 (2 credits required)

Select one of the following options

Thesis

- NURS 798 - Thesis (COM) Credits: 1-7 (5 credits required)

Non-Thesis

- Coursework only

Total Required Credits: 40 (Thesis), 35 (Non-Thesis)

Additional Admissions Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

- Current, unencumbered licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to taking Advanced Physical Assessment (Lifespan).
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.
- Interview assessment reviewed by graduate faculty.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to 12 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Nutrition and Dietetics (M.S.)

Program Coordinator/Contact

Jessica Meendering, Director
Megan Northrup, Director for Accelerated Graduate Program in Nutrition and Dietetics
School of Health and Human Sciences
Wagner Hall 425
605-688-5161

Program Information

The School of Health and Human Sciences offers an accelerated bachelor's (B.S.) to master's (M.S.) program with an internship. This program prepares students to sit for the credentialing exam to become a registered dietitian nutritionist (RDN). The program is competency-based and incorporates coursework and 1,000+ hours of supervised experiential learning. The accelerated program provides a B.S. degree in Nutrition and Dietetics; refer to the undergraduate catalog for the progression and curriculum requirements for the B.S. in Nutrition and Dietetics. Completion of the three-year Nutrition and Dietetics Master's of Science (NDMS) professional program awards an M.S. degree in Nutrition and Dietetics.

Students typically apply during the second semester of their sophomore year. Students accepted into the program must meet all prerequisites prior to the fall start date. Students who are accepted into the accelerated pathway will begin their NDMS coursework in the fall of their junior year.

The NDMS program seeks to develop research skills, stimulate independent thought, and provide up-to-date knowledge in nutrition and dietetics. Registered Dietitian Nutritionists (RDN) work in a variety of settings, including healthcare organizations, private practice, foodservice operations including schools, wellness programs, Cooperative Extension, and national and international food production corporations.

Accreditation, Certification, and Licensure

Accreditation

South Dakota State University's NDMS program is accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND), https://www.eatrightpro.org/acend. ACEND is the accrediting agency for the Academy of Nutrition and Dietetics. ACEND can be contacted by phone or mail. Phone: 800/877-1600, ext. 5400 Mail: 120 South Riverside Plaza, Suite 2190, Chicago, IL 60606-6995

Certification

Upon completion of the program, students are eligible to take the national registration examination from the Commission on Dietetics Registration (CDR) to receive the RDN credential.

Licensure

In most states, graduates also must obtain licensure or certification to practice. While state interpretations of statutes may vary, it is ACEND's considered opinion that the program meets the educational requirements for dietetics licensure and certification in all states. However, completing an ACEND-accredited academic program alone does not qualify an individual for licensure or certification as a dietitian in any state. Individuals should review their state's licensing statutes and regulations to understand the specific requirements, including supervised practice and examinations, needed to obtain a dietetics license. For more information about state licensure requirements and certification, visit CDR's State Licensure webpage: https://www.cdrnet.org/licensuremap. South Dakota (SD) is among 46 states that have enacted legislation regulating the practice of dietetics. State licensure and state certification are separate from the registration exam by CDR. The SD codified law, and administrative rules regarding dietetics and nutrition and the state licensure process are found on the SD Legislature Legislative Research Council website: https://sdlegislature.gov/Statutes/Codified_Laws/2059940. The SD Licensed Nutritionist process and application information is available on the SD Board of Medical and Osteopathic Examiners site: http://www.sdbmoe.gov/.

Course Delivery Format

The curriculum is divided into a 2-year undergraduate/prerequisites phase and a 3-year professional program phase. The 2-year undergraduate/prerequisites courses provide a solid knowledge base of chemistry, biology, and nutritional science.

The three year professional program (NDMS) incorporates a solid foundation of nutritional science courses, as well as food service management and community health. During the second year of the professional program, students are enrolled in dual-listed courses that provide credits towards their undergraduate and graduate degrees. Students earn a B.S. in Nutrition and Dietetics after successful completion of the first two years of the professional program and a M.S. in Nutrition and Dietetics after completion of year three in the professional program.

The application of medical nutrition therapy and community nutrition are emphasized throughout years 2 and 3 of the professional program. In the final year (year 3 of professional program), graduate students apply knowledge from previous coursework and implement the nutrition care process during on-site internship at hospitals, nursing homes, food service management operations, WIC, community nutrition sites, and sports nutrition.

The program offers 50-99% of the coursework and supervised experiential learning (SEL) through distance education.

NDMS Progression Requirements

Through didactic coursework and SEL opportunities, the NDMS program will provide opportunities for students to accomplish ACEND Graduate Degree Competencies and Performance Indicators at levels of knows(K), shows(S) and does(D).

Several different types of summative assessments will be utilized, and the student must meet the established threshold for competency completion for each of the assessments. Students must meet competencies to graduate; refer to the NDMS program handbook for more details.

During the accelerated program, students must pass NUTR courses with a 'C' or better to advance to the next semester. Graduate students must maintain a 3.0. Refer to the NDMS program handbook and SDSU Graduate School Policy for more details.

Program Admission

Application Process

All students seeking admission to the NDMS program must apply to the professional program. Applications open the second week of October every year. Applications will not be accepted prior to December 20 to allow applicants to include grades and GPA from the Fall semester. The priority deadline for applications is the third Sunday in January of each year. Priority applicants will be evaluated and notified of admission status by the fourth Monday in February. The applicant's decision is due March 15. Rolling applications will be accepted through August 1 of each year. Please note a spring or summer semester start is not available for the NDMS.

Selection is competitive and based upon performance in prerequisite coursework, written and oral communication skills, quality of the personal statement and references provided. Any student who anticipates successful completion of prerequisites prior to the fall semester is eligible to apply. A maximum of 20 students are accepted into each cohort.

Program Eligibility includes:

- Minimum of a cumulative GPA of 3.0 on a 4.0 scale.
- Minimum cumulative Science GPA of 2.5. Science courses within Science GPA calculation include: CHEM 106 or Higher General Chemistry, CHEM 108 or Higher Biochemistry, BIOL 221 Human Anatomy, BIOL 325 Human Physiology, MICR 231 Microbiology.
- All prerequisite courses must be completed prior to full acceptance into the program. Prerequisite courses include: ENGL 101 Composition I (3 credits), ENGL 201 Composition II (3 credits), CMST 101 Foundations of Communication (3 credits), HDFS 210 Lifespan Development (3 credits), Social Sciences (3 credits), Arts & Humanities (6 credits), MATH 114 Mathematics (3 credits), CHEM106/L General Chemistry Survey (4 credits), BIOL 221/L Human Anatomy (4 credits), BIOL 325/L Physiology (4 credits), MICRO 231/L Microbiology (4 credits), NURS 201 Medical Terminology (1 credit), NUTR 315 Human Nutrition (3 credits)
- The co-requisite courses must be completed prior to start of the fall semester in the second year of the program. Co-requisite courses include: EHS 119 EHS Seminar (2 credits), Elective (1 credit), HLTH 220 Social Determinants of Health (3 credits), NUTR 111 Food People and the Environment (3 credits), CHEM 108/L Organic Biochemistry (5 credits)
- Prospective students who are transfer students from an accredited university other than SDSU must complete a transfer pre-evaluation form for evaluation of transfer credits. This form must be completed prior to the third Sunday in January of each year. The application deadline may be extended based on the number of eligible applications received. Any modified application deadlines after third Sunday in January of each year will be posted on this website.

If the number of unconditionally or conditionally accepted applicants is less than 20 by March 16, then:

- Applications will be accepted on a rolling (first come, first serve) basis with a final application deadline by August 1 of each year.
- Qualified applicants who meet eligibility and prerequisite course requirements will be conditionally accepted and notified as such by the NDMS Program Director within 2 weeks of emailing in their application.

Available Options for Graduate Degrees

Master of Science

- Non-Thesis: 39 Credit Hours

Core Requirements

- NUTR 523 - Medical Nutrition Therapy I Credits: 3
- NUTR 525 - Medical Nutrition Therapy II Credits: 3
- NUTR 560 - Nutrigenomics and Molecular Nutrition Credits: 3
- NUTR 695 - Practicum (COM) Credits: 1-3 (6 credits required) (repeated 2 times for 3 credits each)
- NUTR 708 - Applied Research and Evidence Based Analysis Credits: 3
- NUTR 712 - Advanced Medical Nutrition Therapy Credits: 3
- NUTR 715 - Public Health Nutrition Credits: 3
- NUTR 725 - Nutrition and Human Performance Credits: 3
- NUTR 794 - Internship (COM) Credits: 1-4 (12 credits required) (repeated 3 times for 4 credits each)

Total Required Credits: 39 (Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to 9 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Nutrition and Exercise Sciences (M.S.) - Exercise Science Specialization

Program Coordinator/Contact

Jessica Meendering, Director
Allison Barry, Assistant Professor
School of Health and Human Sciences
Wagner Hall 425
605-688-5161

Program Information

The M.S. in Nutrition and Exercise Sciences provides an opportunity to specialize in Nutritional Sciences or Exercise Science. Students are prepared for careers in clinical, industry, or research fields. A partial list includes strength and conditioning, clinical exercise physiology, cardiac rehabilitation, worksite wellness, fitness center management, extension, sports performance, or community health.

Course Load Information

Students enrolled in six or more state-supported credits within a given semester will be charged the current special discipline fee.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 30 Credit Hours

Core Requirements

- EXS 750 - Advanced Exercise Physiology Credits: 3
- EXS Electives Credits: 9
- HNS 708 - Applied Research and Evidence Based Analysis Credits: 3
- HNS 790 - Seminar (COM) Credits: 1
- NUTR 725 - Nutrition and Human Performance Credits: 3

Select one of the following options

Thesis

- HNS 798 - Thesis (COM) Credits: 1-7 (5 credits required)
- Electives Credits: 6

Non-Thesis

- Electives Credits: 11

Total Required Credits: 30 (Thesis & Non-Thesis)

Additional Admissions Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

- Letter of application stating the following: primary area of interest (dietetics, exercise science, nutrition, etc.); desired research focus; long-term goals outlining career goals; interest in assistantship (teaching or research); if interested in an assistantship describe experiences to support the assistantship; reason(s) for attending graduate school; current professional certifications and credentials; an interview (in person or via phone) is highly encouraged but not required.
- Two recommendations letters from professionals knowledgeable in applicants graduate school potential.

Master's Nutrition and Exercise Sciences Admission Requirements

Entering students for the master's degree will be required to have a bachelor's degree in dietetics, exercise science, nutrition, biology, chemistry, epidemiology, or other related field from an accredited institution. Students with other educational backgrounds may be admitted conditionally. They will be required to complete the necessary coursework to eliminate deficiencies in their background during their first semester in the program.

Prerequisites for the master's degree include STAT 281 or equivalent, NUTR 315, CHEM 106/108 or CHEM 112/114 or equivalent, BIOL 221, BIOL 325, and for students in the Exercise Science Specialization EXS 350 or equivalent.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to 9 credits of graduate-level coursework in the Nutrition and Exercise Sciences (M.S.) - Exercise Science Specialization may be used to satisfy requirements for an undergraduate degree. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Nutrition and Exercise Sciences (M.S.) - Nutritional Sciences Specialization

Program Coordinator/Contact

Jessica Meendering, Director
Elizabeth Droke, Associate Professor
School of Health and Human Sciences
Wagner Hall 425
605-688-5161

Program Information

The M.S. in Nutrition and Exercise Sciences provides an opportunity to specialize in Nutritional Sciences. Students are prepared to pursue a Ph.D. program for a career in industry or academia, or have a terminal master's to pursue a career as a public health nutritionist, research nutritionist, clinical research coordinator, project specialist, R&D associate, data coordinator, instructor, extension agent, WIC nutritionist, or NGO/nonprofit work in food and nutrition. This degree does not prepare one to become a Registered Dietitian Nutritionist. For an individual seeking to become a Registered Dietitian Nutritionist, please refer to the Nutrition and Dietetics (M.S.) program (NMDS).

Course Load Information

Students enrolled in six or more state-supported credits within a given semester will be charged the current special discipline fee.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 30 Credit Hours

Core Requirements

- EXS 750 - Advanced Exercise Physiology Credits: 3
- HNS 790 - Seminar (COM) Credits: 1
- NUTR 708 - Applied Research and Evidence Based Analysis Credits: 3
- NUTR 725 - Nutrition and Human Performance Credits: 3
- NUTR Electives Credits: 9

Select one of the following options

Thesis

- HNS 798 - Thesis (COM) Credits: 1-7 (5-10 credits required)
- Electives Credits: 1-6

Non-Thesis

- HNS 788 - Research Problems/Projects (COM) Credits: 1-7 (3 credits required)
- Electives Credits: 8

Total Required Credits: 30 (Thesis & Non-Thesis)

Additional Admissions Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

- Letter of application stating the following: primary area of interest within nutrition; desired research focus and faculty member; statement of career goals; interest in research assistantship; current professional certifications and credentials.
- An interview (in person or via phone) is highly encouraged but not required.
- Two recommendations letters from professionals knowledgeable in applicants graduate school potential.

Entering students for the master's degree will be required to have a bachelor's degree in dietetics, exercise science, nutrition, biology, epidemiology, or other related field from an accredited institution. Students with other educational backgrounds may be admitted conditionally. They will be required to complete the necessary coursework to eliminate deficiencies in their background during their first semester in the program.

Prerequisites for master's degree include STAT 281 Introduction to Statistics or equivalent, NUTR 315 Human Nutrition, CHEM 106/108 Chemistry Survey/Organic and Biochemistry or CHEM 112/114 General Chemistry I/II or equivalent, BIOL 221 Human Anatomy, and BIOL 325 Physiology. If an applicant has not completed NUTR 422/522 Advanced Human Nutrition and Metabolism (or its equivalent) prior to admission, this course will be required within the applicant's first year.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Operations Management (M.S.)

Program Coordinator/Contact

Ekaterina Koromyslova, Professor and Graduate Coordinator (M.S. Operations Management and MSOM Supply Chain Management Specialization)
David Davis, Professor and Graduate Coordinator (M.S. Economics and MSOM Business Analytics Specialization)
Ness School of Management and Economics
Harding Hall 104
605-688-4141

Program Information

The Master of Science degree in Operations Management (MSOM) is a program for professionals interested in expanding their ability to manage technical functions in an organization as the next logical step in their career path.

The MSOM thesis track is designed for professionals seeking advanced expertise in managing technical and operational functions within organizations. The curriculum emphasizes analytical decision-making and leadership in operational contexts. Core coursework includes operations management, project management, and leadership, complemented by elective coursework in three subject areas, namely resources, operations, and analysis. Students in this track complete a research thesis that integrates theory and applied problem-solving.

The MSOM program also offers two non-thesis specializations that build upon the MSOM core curriculum and emphasize applied, professionally oriented learning. Students complete either program with an integrative, strategic capstone course.

- The Business Analytics specialization focuses on data-driven decision-making and managerial analysis. Coursework includes advanced managerial economics, financial management, and marketing strategy and analytics. Graduates are prepared for roles in business analytics, consulting, management, and related fields.
- The Supply Chain Management specialization emphasizes supply chain design and coordination. Coursework includes supply chain management, transportation and logistics, and warehouse management. The specialization prepares graduates for careers in supply chain operations, logistics management, procurement, and distribution across diverse industries.

Regardless of the option selected, the student works with his/her Major Advisor to develop the program of study plan, make consistent progress toward completion of the degree, and to show proficiency in integrating and applying management concepts through the Thesis Defense or capstone course.

Accreditation

The Ness School of Management and Economics is accredited by the Association to Advance Collegiate Schools of Business International (AACSB).

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours

Core Requirements

- ECON 707 - Research Methodology in Empirical Economics and Management Credits: 1-3 (3 credits required)
- GE 685 - Management and Leadership in Technical Organizations Credits: 3
- OM 660 - Operations Management Credits: 3
- OM 669 - Project Management Credits: 3
- OM 798 - Thesis (COM) Credits: 1-7 (5-7 credits required)
- Electives Credits: 2-4

Select three credits from each topic area:

Resources

- HRM 560 - Human Resource Management (COM) Credits: 3
- OM 535 - Warehouse Management Credits: 3
- OM 563 - Supply Chain Management Credits: 3
- OM 603 - Designing the Work Place for Production Credits: 3
- or approved CSC, ECON, GE, HRM, OM Elective Credits: 3

Operations

- MNET 568 - Manufacturing Plant Management Credits: 3
- OM 515 - Logistics and Transportation Management Credits: 3
- OM 562 - Quality Management Credits: 3
- OM 760 - Quality Control Credits: 3
- or approved DSCI, GE, or OM Elective Credits: 3

Analysis

- ECON 705 - Econometrics Credits: 3
- GE 501 - Engineering Ethics and Economics Credits: 1
- MNET 560 - Engineering Economic Analysis Credits: 2
- OM 620 - Analysis in Operations Management Credits: 3
- OM 767 - Decision Theory Credits: 3
- STAT 541 - Statistical Methods II Credits: 3
- or approved DSCI, ECON, OM, or STAT Elective Credits: 3

Total Required Credits: 30 (Thesis)

Additional Admissions Requirements

GRE: Not required
TOEFL iBT: 4.5
TOEFL Essentials: 8.0
IELTS: 6.5
Duolingo: 115

Two letters of reference and a letter of intent are required. In the letter of intent, the applicant should identify their interests in the graduate program, address how their skills - including those the applicant attained in their undergraduate program - align with our graduate program, and address any undergraduate coursework in which the applicant earned below a B. The letter of intent should be roughly 500 to 750 words long.

Accelerated Master's Program

The program offers an accelerated master's degree to eligible undergraduate SDSU students who maintain an overall undergraduate cumulative GPA of at least 3.0. These students may begin their graduate studies while they complete their undergraduate degree. Up to twelve (12) graduate level credits may apply to both the undergraduate degree and the graduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students may apply for admission to the accelerated master's degree program once they have completed 60 undergraduate credits. Students interested in the accelerated master's degree should contact the Ness School of Management and Economics Graduate Coordinator to obtain application requirements. Application and admission to the Graduate School is required. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Operations Management (M.S.) - Business Analytics Specialization

Program Coordinator/Contact

David Davis, Professor and Graduate Coordinator (M.S. Economics and MSOM Business Analytics Specialization)
Ekaterina Koromyslova, Professor and Graduate Coordinator (M.S. Operations Management and MSOM Supply Chain Management Specialization)
Ness School of Management and Economics
Harding Hall 104
605-688-4141

Program Information

The Business Analytics specialization within the Master of Science in Operations Management is designed for professionals seeking to strengthen their expertise in data-driven decision-making and strategic managerial analysis. This professionally oriented, non-thesis specialization builds upon the MSOM core curriculum with applied, professionally oriented coursework that emphasizes analytical tools and real-world business problem solving.

Students complete advanced coursework in managerial economics, financial management, and marketing strategy and analytics, developing the quantitative and strategic skills needed to translate data into actionable insights. The program culminates in an integrative strategic capstone course that demonstrates mastery of management concepts and applied analytics.

Graduates are prepared for careers in business analytics, consulting, operations, and related management fields. Each student works closely with a Major Advisor to develop a program of study, ensure steady progress toward degree completion, and successfully integrate analytical and management competencies throughout the program.

Accreditation

The Ness School of Management and Economics is accredited by the Association to Advance Collegiate Schools of Business International (AACSB).

Available Options for Graduate Degrees

Master of Science

- Non-Thesis: 30 Credit Hours

Core Requirements

- ECON/ MGMT 751 - Advanced Managerial Economics Credits: 3
- FIN 753 - Financial Management Credits: 3
- GE 685 - Management and Leadership in Technical Organizations Credits: 3
- MGMT 759 - Integrated Operations and Business Systems Management Credits: 3
- MKTG 754 - Marketing Strategy and Analytics Credits: 3
- OM 660 - Operations Management Credits: 3
- OM 669 - Project Management Credits: 3
- Electives Credits: 9

Total Required Credits: 30 (Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4.5
TOEFL Essentials: 8.0
IELTS: 6.5
Duolingo: 115

Two letters of reference and a letter of intent are required. In the letter of intent, the applicant should identify their interests in the graduate program, address how their skills - including those the applicant attained in their undergraduate program - align with our graduate program, and address any undergraduate coursework in which the applicant earned below a B. The letter of intent should be roughly 500 to 750 words long.

Accelerated Master's Program

The program offers an accelerated master's degree to eligible undergraduate SDSU students who maintain an overall undergraduate cumulative GPA of at least 3.0. These students may begin their graduate studies while they complete their undergraduate degree. Up to twelve (12) graduate level credits may apply to both the undergraduate degree and the graduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students may apply for admission to the accelerated master's degree program once they have completed 60 undergraduate credits. Students interested in the accelerated master's degree should contact the Ness School of Management and Economics Graduate Coordinator to obtain application requirements. Application and admission to the Graduate School is required. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Operations Management (M.S.) - Supply Chain Management Specialization

Program Coordinator/Contact

Ekaterina Koromyslova, Professor and Graduate Coordinator (M.S. Operations Management and MSOM Supply Chain Management Specialization)
David Davis, Professor and Graduate Coordinator (M.S. Economics and MSOM Business Analytics Specialization)
Ness School of Management and Economics
Harding Hall 104
605-688-4141

Program Information

The Supply Chain Management specialization within the Master of Science in Operations Management is designed for professionals seeking to advance their expertise in supply chain design, coordination, and strategic operations. This professionally-oriented, non-thesis specialization builds upon the MSOM core curriculum with applied, professionally oriented coursework focused on optimizing the flow of goods, services, and information across complex networks.

Students complete advanced coursework in supply chain management, transportation and logistics, and warehouse management, developing the analytical and managerial skills necessary to improve efficiency, reduce costs, and enhance organizational performance. The program culminates in an integrative strategic capstone course that demonstrates mastery of operations and supply chain concepts.

Graduates are prepared for careers in supply chain operations, logistics management, procurement, and distribution across diverse industries. Each student works closely with a Major Advisor to develop a program of study, maintain consistent progress toward degree completion, and successfully integrate and apply supply chain and management competencies throughout the program.

Accreditation

The Ness School of Management and Economics is accredited by the Association to Advance Collegiate Schools of Business International (AACSB).

Available Options for Graduate Degrees

Master of Science

- Non-Thesis: 30 Credit Hours

Core Requirements

- GE 685 - Management and Leadership in Technical Organizations Credits: 3
- MGMT 759 - Integrated Operations and Business Systems Management Credits: 3
- OM 515 - Logistics and Transportation Management Credits: 3
- OM 535 - Warehouse Management Credits: 3
- OM 563 - Supply Chain Management Credits: 3
- OM 660 - Operations Management Credits: 3
- OM 669 - Project Management Credits: 3
- Electives Credits: 9

Total Required Credits: 30 (Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4.5
TOEFL Essentials: 8.0
IELTS: 6.5
Duolingo: 115

Two letters of reference and a letter of intent are required. In the letter of intent, the applicant should identify their interests in the graduate program, address how their skills - including those the applicant attained in their undergraduate program - align with our graduate program, and address any undergraduate coursework in which the applicant earned below a B. The letter of intent should be roughly 500 to 750 words long.

Accelerated Master's Program

The program offers an accelerated master's degree to eligible undergraduate SDSU students who maintain an overall undergraduate cumulative GPA of at least 3.0. These students may begin their graduate studies while they complete their undergraduate degree. Up to twelve (12) graduate level credits may apply to both the undergraduate degree and the graduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students may apply for admission to the accelerated master's degree program once they have completed 60 undergraduate credits. Students interested in the accelerated master's degree should contact the Ness School of Management and Economics Graduate Coordinator to obtain application requirements. Application and admission to the Graduate School is required. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Pharmaceutical Sciences (M.S.)

Program Coordinator/Contact

Hemachand Tummala, Department Head, Graduate Program Coordinator and Professor
Department of Pharmaceutical Sciences
Brad Laible, Associate Dean for Academic Programs
College of Pharmacy and Allied Health Professions
Avera Health and Science Center 133
605-688-6197

Program Information

The Department of Pharmaceutical Sciences offers courses and research opportunities in pharmaceutical and biomedical sciences leading to the M.S. degree in Pharmaceutical Sciences. The didactic courses, along with the research concentration in a specific area of pharmaceutical sciences, provide a strong foundation for the academic, pharmaceutical/biotech industry, and other research-related careers. The program places a strong emphasis on comprehensive and high-quality graduate education and research experiences for the students. The M.S. degree is offered as thesis and non-thesis options.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 30 Credit Hours

Core Requirements

- PHA 565 - Techniques in Pharmaceutical Research Credits: 3
- PHA 570 - Introduction to Drug Discovery and Development Credits: 3
- PHA 721 - Advanced Concepts in Medicinal Chemistry Credits: 3
- PHA 725 - Advanced Concepts in Biomedical Sciences and Pharmacogenomics Credits: 3
- PHA 740 - Advanced Concepts in Pharmacology Credits: 3
- PHA 760 - Advanced Concepts in Pharmaceutics Credits: 3
- PHA 790 - Seminar (COM) Credits: 1
- STAT 541 - Statistical Methods II Credits: 3

Select one of the following options

Thesis

- PHA 798 - Thesis (COM) Credits: 1-8 (8 credits required)

Non-Thesis

- PHA 769 - Pharmaceutical Sciences Capstone Credits: 2
- Electives Credits: 6

Electives for Non-Thesis Option

Select from the following list of courses. Electives can be taken from graduate-level PHA-prefix courses and related (CHEM, BIOL, etc.).

- BIOL 570 - Cancer Biology (COM) Credits: 3
- BIOL 645L - Microimaging Techniques Laboratory Credits: 1-3
- BIOS 662 - Advanced Molecular Biology Credits: 3
- CHEM 701 - Advanced Organic Chemistry I Credits: 3
- CHEM 706 - Advanced Analytical Chemistry Credits: 3
- CHEM 724 - Structural Determination of Organic Compounds Credits: 3
- CHEM 724L - Structural Determination of Organic Compounds Laboratory Credits: 1
- PHA 738 - Health Informatics Credits: 1
- PHA 743 - Pharmacogenomics Credits: 1
- PHA 752 - Drugs of Abuse and Addiction Credits: 2
- PHA 788 - Research Problems/Projects (COM) Credits: 1-8
- PHA 792 - Topics (COM) Credits: 1-3
- PUBH 767 - Public Health Toxicology Credits: 3
- Other courses as approved by advisor and/or committee

Total Required Credits: 30 (Thesis & Non-Thesis)

Additional Admission Requirements

The following prerequisites are the courses required for admission to the Pharmaceutical Sciences (M.S.) program:

- Two semesters of general chemistry
- Two semesters of organic chemistry
- One semester of biochemistry

A minimum cumulative GPA of 3.0 (scale of 4.0) in the undergraduate program.

Letters of Recommendation - Two personal reference letters from people acquainted with the academic ability and professional competence of the applicant are required.

International students, where English is not the primary language, must submit the scores of any one of the following English proficiency tests. Minimum scores required for admission include,

GRE: Not Required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

The Institutional Code for SDSU is 6653.

A Statement of Personal Goals and Philosophy (SOP) - The statement should be brief and no more than one page.

The admission is based on cumulative GPA, relevant science coursework, letters of recommendation, SOP, primary research/work experience, and the interview.

Admissions are limited to fall term only.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisors before registering for graduate coursework.

For additional information refer to the Master's Degree Requirements.

Physics (M.S.)

Program Coordinator/Contact

Robert McTaggart, Assistant Department Head
Department of Chemistry, Biochemistry and Physics
Daktronics Engineering Hall 255
605-688-5428

Brian Logue, Department Head
Avera Health and Science Center 247
605-688-5151

Program Information

The Master of Science in Physics offers an advanced curriculum designed to deepen students' understanding of the fundamental principles of physics while providing flexibility to explore emerging fields and specialized areas. This program caters to students with a strong background in physics or related disciplines, preparing them for careers in research, industry, or further academic pursuits. The M.S. in Physics supports multiple career options in industry, education, and applied research. Areas of research concentration for the M.S. include materials science, nuclear science, condensed matter, theoretical physics, biophysics, chemical physics, gravitational physics, and astrophysics. It serves an important preparation role for students in physics, engineering, math, and other disciplines who want to pursue the Ph.D. in Physics.

Available Options for Graduate Degrees

Master of Science

- Thesis: 32 Credit Hours
- Non-Thesis: 32 Credit Hours

Core Requirements

- PHYS 721 - Electrodynamics I (COM) Credits: 3
- PHYS 723 - Electrodynamics II (COM) Credits: 3
- PHYS 743 - Statistical Mechanics (COM) Credits: 3
- PHYS 751 - Classical Mechanics (COM) Credits: 3
- PHYS 771 - Quantum Mechanics I (COM) Credits: 3
- PHYS 773 - Quantum Mechanics II (COM) Credits: 3
- PHYS 790 - Seminar (COM) Credits: 1-3 (1 credit required)

Select one of the following options

Thesis

- PHYS 798 - Thesis (COM) Credits: 1-9 (7 credits required)
- Electives Credits: 6

Non-Thesis

- PHYS 788 - Research Problems/Projects (COM) Credits: 1-5 (2 credits required)
- Electives Credits: 11

Electives

Select 6-11 credits from the following list of courses.

- PHYS 533 - Nuclear and Elementary Particle Physics (COM) Credits: 4
- PHYS 537 - Foundations of Health Physics Credits: 3
- PHYS 539 - Condensed Matter Physics (COM) Credits: 3-4
- PHYS 549 - Computational Physics (COM) Credits: 4
- PHYS 581 - Mathematical Physics (COM) Credits: 4
- PHYS 590 - Seminar (COM) Credits: 1-2
- PHYS 591 - Independent Study (COM) Credits: 1-3
- PHYS 592 - Topics (COM) Credits: 1-3
- PHYS 691 - Independent Study (COM) Credits: 1-3
- PHYS 739 - Condensed Matter Physics I (COM) Credits: 3
- PHYS 749 - Condensed Matter Physics II Credits: 3
- PHYS 761 - Nuclear and Particle Physics (COM) Credits: 3
- PHYS 775 - General Relativity (COM) Credits: 3
- PHYS 779 - Group Theory (COM) Credits: 3
- PHYS 783 - Quantum Field Theory (COM) Credits: 3
- PHYS 785 - Astrophysics and Cosmology (COM) Credits: 3
- PHYS 792 - Topics (COM) Credits: 1-3
- Advisor Approved Electives Credits: 1-5

Total Required Credits: 32 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: General and subject score are recommended but not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

The priority deadline for applying for admission for the fall semester is December 1. A secondary deadline is January 15. The department typically does not admit students for the spring semester unless applicants have secured funding for their graduate education. Support can come from three sources:

- Research assistantship from a professor in the department
- Personal or family funds
- Scholarship from the government or an organization

In addition to the materials required by the Graduate School, the Department of Chemistry, Biochemistry and Physics requires the following application materials:

- A one- to two-page personal statement which includes a description of undergraduate research, work experience, or other factors demonstrating a propensity toward graduate studies. The personal statement should also include a statement of the applicant's career goals. The applicant may upload this statement while completing the Graduate School's online application.
- Two letters of recommendation, preferably at least one from faculty at the applicant's undergraduate institution. Letters should come from faculty who are directly familiar with the applicant's academic work. They must address the applicant's scholarly potential and may also speak to the applicant's potential for graduate studies in the discipline. Letters should come directly from the recommenders, who may submit their letters electronically along with the personal recommendation form provided by the Graduate School. The Graduate School will email recommenders detailed instructions for submitting their recommendations using the contact information provided by the applicant.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Plant Science (M.S.)

Program Coordinator/Contact

Karen Sanguinet, Klingbeil Endowed Department Head
Keerthi Mandyam, Associate Professor and Graduate Coordinator
Department of Agronomy, Horticulture and Plant Science
Raven Precision Agriculture Center 140
605-688-4600

Program Information

The Agronomy, Horticulture and Plant Science Department is an integrated department that includes programs in crop production, entomology, horticulture, plant biotechnology, plant breeding, plant pathology, precision farming, soils, water management, and weed science. The primary goals of the department are to conduct research in these areas, to transmit the results to the public, and to help prepare students for an occupation in these disciplines and to become productive members of a community. Graduate training includes classroom instruction, teaching experience, seminars designed to refine oral and written skills, and meaningful experience in laboratory and field research techniques. The department encourages collaborations among disciplines and research programs that support this graduate training.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 32 Credit Hours

Core Requirements

M.S. students are required to have 2 credits of Graduate Seminar, one oral and one in poster format. All students are required to have teaching experience.

- PS 781 - Plant Science Graduate Seminar Credits: 1 (2 credits required) (over two different semesters)
- PS 792 - Topics (COM) Credits: 1-6 (2 credits required) (Teaching Experience)

Select one of the following options

Thesis

- PS 798 - Thesis (COM) Credits: 1-7 (5-10 credits required)
- Approved Electives Credits: 16-21

Non-Thesis

- PS 788 - Research Problems/Projects (COM) Credits: 1-3 (3-4 credits required)
- Approved Electives Credits: 24-25

Total Required Credits: 30 (Thesis), 32 (Non-Thesis)

Additional Admission Requirements

GRE: Recommended, but not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Students must be accepted by an advisor before admission is granted.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Public Health (M.P.H.)

Program Coordinator/Contact

James Amell, Julie Stevens and Dale Evenson Endowed Faculty Scholar and Associate Professor
Department of Allied and Population Health
Brad Laible, Associate Dean for Academic Programs
College of Pharmacy and Allied Health Professions
Avera Health and Science Center 133
605-688-6197

Program Information

The Master of Public Health (M.P.H.) degree program is a collaborative degree offering of South Dakota State University and the University of South Dakota. The M.P.H. degree is the most widely recognized professional credential for leadership and practice in public health. As outlined by the Council on Education for Public Health, which accredits M.P.H. programs, the M.P.H. curriculum covers the five core areas of public health education:

- Biostatistics
- Epidemiology
- Health Services Administration
- Social and Behavioral Sciences
- Environmental Health

Accreditation

The M.P.H. program is accredited by the Council on Education for Public Health.

Available Options for Graduate Degrees

Master of Public Health

- Non-Thesis: 42 Credit Hours

Core Requirements

(Instruction of some courses shared between USD and SDSU campuses)

- PUBH 701 - Biostatistics for Public Health Credits: 3 (USD)
- PUBH 702 - Public Health Theory and Practice (COM) Credits: 3
- PUBH 710 - Epidemiology Credits: 3 (USD)
- PUBH 720 - Public Health Practice (COM) Credits: 3
  or PUBH 721 - Public Health Applied Practice Experience I (COM) Credits: 1
  and PUBH 722 - Public Health Applied Practice Experience II (COM) Credits: 1
  and PUBH 723 - Public Health Applied Practice Experience III (COM) Credits: 1
- PUBH 729 - Leadership and Project Management in Public Health (COM) Credits: 3
- PUBH 730 - Public Health Integrative Learning Experience (COM) Credits: 3
- PUBH 733 - Environmental Health Credits: 3
- PUBH 740 - Introduction to US Health Systems and Policy Credits: 3 (USD)
- PUBH 750 - Social and Behavioral Sciences in Public Health Credits: 3 (USD)
- PUBH 755 - Program Planning and Evaluation Credits: 3
- PUBH 760 - Public Health and Native American Communities Credits: 3 (USD)

Supporting Area Coursework

Students must take at least 9 credit hours of supporting area coursework from either USD or SDSU. 6 credits must be from PUBH prefix courses. Credits: 9

Supporting Area Coursework offered by SDSU

- NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3
- NURS 675 - Cultivating a Practice of Cultural Humility in Healthcare Credits: 3
- NURS 760 - Advanced Concepts in Health Promotion and Disease Prevention Credits: 3
- NUTR 660 - Maternal and Child Nutrition Credits: 3
- NUTR 715 - Public Health Nutrition Credits: 3
- NUTR 724 - Nutrition Education in the Community Credits: 3
- NUTR 760 - Vitamins and Minerals in Human Nutrition Credits: 3
- NUTR 761 - Nutrition and Aging Credits: 3
- PUBH 540 - Health Geography Credits: 3
- PUBH 751 - Public Mental Health Credits: 3
- PUBH 752 - Injury Epidemiology, Prevention and Intervention Credits: 3
- PUBH 753 - Maternal and Child Health Credits: 3
- PUBH 754 - Mixed Methods in Public Health Research Credits: 3
- PUBH 761 - Social Epidemiology Credits: 3
- PUBH 762 - Cultural Perspectives in Public Health Credits: 3
- PUBH 764 - Applied Dissemination and Implementation Research in Health Credits: 3
- PUBH 767 - Public Health Toxicology Credits: 3
- STAT 515 - R Programming Credits: 3
- Other graduate-level electives with advisor approval Credits: 3

Supporting Area Coursework offered by USD

- ACP 754 - Public Policy & Addiction Credits: 3
- HSAD 559 - Health Services for Long-Term Care Credits: 3
- HSAD 560 - Long-Term Care Administration Credits: 3
- HSAD 710 - Contemporary Issues in Health Services Administration Credits: 3
- HSAD 740 - International Health Systems Credits: 3
- HSAD 770 - Managing Health Services Resources Credits: 3
- HSC 565 - Perspective of Child and Adult Maltreatment: A Multidisciplinary Approach Credits: 3
- HSC 575 - Process and Outcomes Evaluation Credits: 3
- HSC 763 - Qualitative Research Methods in the Health Sciences Credits: 3
- MSAS 763 - Professional Writing for Administration Credits: 3
- PSYC 784 - Disaster Mental Health Credits: 3
- PUBH 711 - Topics in Applied Biostatistics Credits: 3
- PUBH 727 - Cancer Epidemiology Credits: 3
- PUBH 743 - Advanced Public Health Communication Strategies Impact Credits: 3
- PUBH 763 - Causal Inference in Public Health Credits: 3
- PUBH 765 - Community Health Assessment and Action Planning Credits: 3
- PUBH 768 - Climate Effects on Public Health Credits: 3
- PUBH 770 - Public Health Immunology Credits: 3

- PUBH 791 - Independent Study (COM) Credits: 1-3
- PUBH 792 - Topics (COM) Credits: 1-3
- SOCW 600 - Social Policy Analysis Credits: 3
- SOCW 601 - History and Philosophy of Social Work Credits: 3
- SOCW 701 - Diversity and Social Justice in Rural and Urban Communities Credits: 3
- Other graduate-level electives with advisor approval Credits: 3

Total Required Credits: 42 (Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

- Successful completion of a baccalaureate degree or an equivalent degree from an institution with full regional accreditation for that degree.
- Through no specific major is required, adequate undergraduate preparation in social, health, or biological sciences is recommended.
- A minimum undergraduate cumulative GPA of 3.0 on conferred degree and/or graduate cumulative GPA of 3.0 or better, based on a 4.0 scale, on all graduate coursework. Each institution may admit students on conditional or provisional status per university policy.
- Complete the Graduate School application along with the $35 application fee.
- Statement of purpose for studying Public Health (include career plans relative to the MPH).
- Two letters of recommendation are required.
- Successfully complete a criminal background check upon acceptance.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Social Science (M.S.)

Program Coordinator/Contact

Tylery Miller, Director
Abigail Tobias-Lauerman, Assistant Professor and Graduate Coordinator
School of Psychology, Sociology and Rural Studies
Psychology, Sociology and Rural Studies 107
605-688-4322

Program Information

Master's students receive advanced training in theory, methods, and the practical application of interdisciplinary knowledge in the social sciences. At South Dakota State University, master's students may choose from two academic tracks: thesis and non-thesis options.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 30 Credit Hours

Core Requirements

- AHSS 701 - Ethical Theory for Social Scientists Credits: 3
- AHSS 702 - Writing for the Social Sciences Credits: 3
- Statistics/Research Electives Credits: 6
- Quantitative Statistics Electives Credits: 6

Select one of the following options

Thesis

- XXX 798 - Thesis Credits: 5
- Electives Credits: 7

Non-Thesis

- Electives Credits: 12

Total Required Credits: 30 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: Required
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

Each applicant should have 2 signed letters of recommendation from individuals familiar with the student's academic record. It is required that applicants also include a writing sample and personal statement. The personal statement should identify the student's academic goals and describe how those goals fit with the faculty's expertise and interests.

Applications are reviewed only in the spring term (with an April 15 deadline) for admission of new students to enroll only in the following fall term.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Sport Management (M.S.)

Program Coordinator/Contact

Jessica Meendering, Director
Bryan Romsa, Associate Professor
School of Health and Human Sciences
Wagner Hall 425
605-688-5161

Program Information

The sport management program at South Dakota State University prepares students to become dynamic leaders in the sport industry. The curriculum and internship experiences will equip students with the skills necessary to lead sport organizations, sport events, and operations of college and professional teams into the future. In addition to their experiential learning opportunities in their coursework, students will gain valuable real-world experiences with our industry partners both on and off campus. Students graduating from the program will have developed management, marketing, communications, finance, ethics and legal issues, and research knowledge and experience that can be directly applied to a wide range of exciting career possibilities in sport.

Available Options for Graduate Degrees

Master of Science

- Thesis: 36 Credit Hours
- Non-Thesis: 36 Credit Hours

Core Requirements

- HNS 783 - Research Methods in Health and Nutritional Sciences Credits: 3
- RECR 770 - Sport and Recreation Administration Credits: 3
- RECR 771 - Seminar in Sport and Recreation Administration Credits: 3
- RECR 772 - Financial Aspects of Sport and Recreation Administration (COM) Credits: 3
- RECR 515 - Sport and Recreation Facility Management Credits: 3
- RECR 586 - Sport Law Credits: 3
- RECR 750 - Foundations of Sport and Recreation Administration Credits: 3
- RECR 760 - Advanced Sport and Recreation Marketing Credits: 3
- RECR 762 - Ethics in Sport and Recreation Credits: 3

Select one of the following options

Thesis

- HNS 798 - Thesis (COM) Credits: 1-7 (6 credits required)
- Electives Credits: 3

Non-Thesis

- HNS 794 - Internship (COM) Credits: 1-7 (3 credits required)
  or HNS 788 - Research Problems/Projects (COM) Credits: 1-7 (3 credits required)
- Electives Credits: 6

Total Required Credits: 36 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Students seeking admission to graduate study must apply electronically by completing the Online Graduate School Application. Applications require the following in order to be complete:

1. Resume or Curriculum Vitae
2. Official transcripts of all previously established academic records (undergraduate and graduate) sent directly to SDSU from the academic institution. Applicants who attended a South Dakota Regental Institution do not need to take any action, as the Graduate School will access any transcripts for you.
3. A one-page personal statement identifying applicant aspirations and goals for the profession. If interested in an assistantship, please also identify what you would like to be considered for, as well as, provide a description of the skills and abilities that would qualify you for the assistantship.
4. Two professional references
5. Submission of $35 application fee, paid through the online application system at the time of application submission.

Applications are due by March 31st. Applicants are encouraged to contact faculty within the program to determine interest and ability to accept graduate students.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Statistics (M.S.)

Program Coordinator/Contact

Donald Vestal, Associate Professor and Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering Hall 209, Box 2225
605-688-6196

Program Information

One major focus of the M.S. in Statistics program is the development of sophisticated statistical models and their implementation on high performance computing platforms. The curriculum features a balance of application, computation, and theory with particular emphasis in the areas of biostatistics/informatics and analytics. Areas of faculty and graduate student research activity include bioinformatics, biostatistics, spatial statistics, precision agriculture, public health, business and financial analytics, forensic statistics, mathematical machine learning, and general statistics. The program is particularly effective at preparing graduates to work in business, industry, or government as well as preparing students to continue on to the Computational Science and Statistics Ph.D. or other Ph.D. program.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours
- Non-Thesis: 30 Credit Hours

Core Requirements

- STAT 684 - Statistical Inference I Credits: 3
- STAT 685 - Statistical Inference II Credits: 3
- STAT 686 - Regression Analysis I Credits: 3
- STAT 687 - Regression Analysis II Credits: 3
- STAT 779 - Advanced Statistics Synthesis Credits: 1

Select one of the following options

Thesis

- STAT 798 - Thesis (COM) Credits: 1-7 (5 credits required)
- Electives Credits: 12

Non-Thesis

- Electives Credits: 17

Total Required Credits: 30 (Thesis & Non-Thesis)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

Two letters of recommendation with at least one from an individual who can address the applicant's technical knowledge background and ability to perform research, a research statement or statement of interest area, and transcripts are required.

Accelerated Master's Program

The accelerated master's program will be available to eligible SDSU students. Up to twelve (12) graduate-level credits may apply to the undergraduate degree as major requirements or electives with approval from the student's academic advisor, department head/school director, and college dean. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Wildlife and Fisheries Sciences (M.S.) - Fisheries Sciences Specialization

Program Coordinator/Contact

Alexander (Sandy) Smart, Interim Department Head and Professor
Joshua Leffler, Assistant Department Head and Professor
Department of Natural Resource Management
Edgar S. McFadden Biostress Laboratory 138
605-688-6121

Program Information

The M.S. degree program in Wildlife and Fisheries Sciences is intended to educate students for management-level positions with state and federal agencies, private companies, and for the pursuit of higher academic degrees. By using specifically identified coursework and mentoring, we strive to assist students in developing their intellectual capabilities in working with natural resources and people. In addition, each student must propose and conduct an original scientific investigation. Placement rates for M.S. graduates into positions as fisheries biologists, wildlife biologists, and other natural resource positions with state and federal agencies is extremely high.

Certification and Licensure

Certification is available through the American Fisheries Society and The Wildlife Society.

Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours

Core Requirements

- NRM 582 - Natural Resource Management Biometry Credits: 2
  and NRM 582L - Natural Resource Management Biometry Lab Credits: 1
  or WL 720 - Quantitative Fisheries Science Credits: 3
  or STAT course numbered 500-level or higher
  or an additional course approved by committee
- NRM 790 - Seminar (COM) Credits: 1 (2 credits required)
- WL 798 - Thesis (COM) Credits: 1-7 (5-10 credits required)
- Additional course credits designed to meet individual interests and needs as required by the student's Advisory Committee. Credits: 15-20

Total Required Credits: 30 (Thesis)

Additional Admission Requirements

GRE: Not Required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Admission to all degree programs requires that a faculty member from the department agrees to serve as the major advisor.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Wildlife and Fisheries Sciences (M.S.) - Wildlife Sciences Specialization

Program Coordinator/Contact

Alexander (Sandy) Smart, Interim Department Head and Professor
Joshua Leffler, Assistant Department Head and Professor
Department of Natural Resource Management
Edgar S. McFadden Biostress Laboratory 138
605-688-6121

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Available Options for Graduate Degrees

Master of Science

- Thesis: 30 Credit Hours

Core Requirements

- NRM 582 - Natural Resource Management Biometry Credits: 2
  and NRM 582L - Natural Resource Management Biometry Lab Credits: 1
  or WL 720 - Quantitative Fisheries Science Credits: 3
  or STAT course numbered 500-level or higher
  or an additional course approved by committee
- NRM 790 - Seminar (COM) Credits: 1 (2 credits required)
- WL 798 - Thesis (COM) Credits: 1-7 (5-10 credits required)
- Additional course credits designed to meet individual interests and needs as required by the student's Advisory Committee. Credits: 15-20

Total Required Credits: 30 (Thesis)

Additional Admission Requirements

GRE: Not Required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Admission to all degree programs requires that a faculty member from the department agrees to serve as the major advisor.

General Requirements

Graduate students should consult with their advisor before registering for graduate coursework. For additional information, refer to the Master's Degree Requirements.

Doctoral Degrees

Agricultural and Biosystems Engineering (Ph.D.)

Program Coordinator/Contact

Kasiviswanathan Muthukumarappan, Maynard A. Klingbeil Endowed Department Head and Distinguished Professor
Lin Wei, Professor and Graduate Coordinator
Department of Agricultural and Biosystems Engineering
Raven Precision Agriculture Center 136
605-688-5666

Program Information

Students who undertake this Ph.D. in Agricultural and Biosystems Engineering graduate degree normally have as their goal a better understanding of the current theories, principles, issues, and problems in agricultural, biological, thermal, fluid, control, bulk materials storage/handling systems, animal systems, precision agriculture and mechanical systems. Graduate studies improve the student's ability to think critically and creatively, and to synthesize, analyze, and integrate ideas for decision-making and problem solving.

This program offers students an opportunity to undertake research and advanced study in specialization areas such as:

- biorenewable energy and bioresource conversion technologies,
- engineering of advanced precision agriculture systems used in production agriculture,
- natural resources engineering for utilization and conservation of soil and water resources,
- advanced manufacturing and quality control technologies focused on composition, properties, and integrity of materials,
- advanced thermal-fluid systems,
- advanced composites,
- advanced animal systems
- bulk materials storage/handling systems,
- precision agriculture, and
- systems modeling.

Financial assistance in the form of research assistantships and project assistantships is available on a highly competitive basis.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

- ABE 790 - Seminar (COM) Credits: 1-3 (2 credits required)
- ABE 898D - Dissertation (COM) Credits: 1-12 (40-60 credits required)
- GSR 601 - Research Regulations Compliance Credits: 1
- STAT 541 - Statistical Methods II Credits: 3
- Electives Credits: 14 (60 Hour Plan), 24 (90 Hour Plan) (*Selected by the individual with committee approval.*)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Three letters of recommendation with at least one from an individual who can address the applicant's technical knowledge background and ability to perform research, a research statement or statement of interest area intent, and transcripts are required.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Animal Science (Ph.D.)

Program Coordinator/Contact

Michael Gonda, Interim Department Head and Professor
Cody Wright, Professor
Department of Animal Science
Animal Science Complex 101
605-688-5165

Program Information

The Department of Animal Science offers graduate programs leading to the Master of Science and Doctor of Philosophy degrees in Animal Science. Faculty and graduate students are actively involved in basic and/or applied research in the fields of nutrition, reproductive physiology, animal breeding and genetics, meat science, gastrointestinal microbiology, and livestock production systems. With the multi-disciplinary approaches towards production efficiency, product enhancement, and natural resources management, graduate students gain strong skill sets. The graduate programs are administered in collaboration with the Departments of Animal Science, Dairy Science, Veterinary and Biomedical Sciences, and Agricultural and Biosystems Engineering. The department is committed to providing graduate students with quality educational and research experiences and preparing them to meet the challenges of a competitive job market upon graduation.

This program allows for considerable latitude in the education and training of students. Identification of a major professor with resources to support the student's thesis project is required for unconditional acceptance into the program. An advisory committee will be formed for each student. The advisory committee will work with the student to design a unique and individualized plan of study to meet the interests and needs of the student. While the training of most students is largely directed to a single discipline represented within one of the participating departments, cross-discipline training is available and encouraged.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

Develop a plan of study and a research proposal by the end of the first year.

60 Credit Plan

- AS 790 - Seminar (COM) Credits: 1 (4 credits required)
- AS, DS, or VET 500-level or higher Electives Credits: 6
- AS 898D - Dissertation (COM) Credits: 1-12 (18 credits required)
- Electives Credits: 32

90 Credit Plan

- AS 790 - Seminar (COM) Credits: 1 (4 credits required)
- AS, DS, or VET 500-level or higher Electives Credits: 6
- AS 898D - Dissertation (COM) Credits: 1-12 (18 credits required)
- Electives Credits: 62

Notes

The Advisory Committee will work with the student to select the discipline specific courses intended to prepare the student in their emphasis area.

Graduate student evaluations will be conducted each semester.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Two letters of reference, a letter of interest and intent, transcripts, and a resume.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Artificial Intelligence Engineering (Ph.D.)

Program Coordinator/Contact

Rajesh Kavasseri, Interim Department Head
Jun Huang, Assistant Professor and Graduate Coordinator
McComish Department of Electrical Engineering and Computer Science
Daktronics Engineering Hall 214
605-688-4526

Program Information

The Ph.D. in Artificial Intelligence Engineering (AIE) program prepares students to conduct original research at the intersection of AI, computer science, and engineering. The program equips doctoral students with deep analytical, computational, hardware, and ethical foundations needed to design and study intelligent technologies that learn from data and support high-stakes human decision-making. Building on strong preparation in computer science, AI, and hardware systems, students advance and apply these skills in domains where the university has established engineering strengths. Through faculty-led research groups, advanced seminars, interdisciplinary collaborations, and industry- or agency-informed projects, students develop and evaluate data-centric, intelligent systems that tightly integrate hardware and software. Graduates are prepared to lead as research scientists, engineering leaders, and faculty, and to strengthen cross-departmental collaboration by translating AI fundamentals into impactful, research-driven applications across these priority areas.

Available Options for Graduate Degrees

Doctor of Philosophy

- 72 Credit Plan

Core Requirements

- AIE 501 - Artificial Intelligence Engineering Credits: 3
- AIE 898D - Dissertation (COM) Credits: 1-9 (30 credits required)
- CSC 705 - Design and Analysis of Computer Algorithms (COM) Credits: 3
- CSC 770 - Software Engineering Management (COM) Credits: 3
- EE 569 - Fundamentals of High-Performance Computing Credits: 3
- GE 701 - Research Colloquium 1 Credits: 1
- GE 702 - Research Colloquium 2 Credits: 1
- GE 703 - Research Colloquium 3 Credits: 1
- Electives Credits: 27

Courses Supporting the Ph.D. Program

Up to 30 credits from a completed master's degree may be applied to a doctoral program at the discretion of the Graduate Student Advisory Committee.

Additional Admission Requirements

GRE: Not Required
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

Three letters of reference (at least one from a faculty member familiar with the applicant's research ability; for applicants with a master's degree, one letter should be from the master's advisor, if available), a statement of research interest and intent with a focus on the proposed area of research, transcripts, and a resume.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Biochemistry (Ph.D.)

Program Coordinator/Contact

Brian Logue, Department Head
Cheng Zhang, Associate Professor
Department of Chemistry, Biochemistry and Physics
Avera Health and Science Center 247
605-688-5151

Program Information

The department's biochemistry faculty research programs focus on the chemistry and biochemistry of cell membranes, multi-scale modeling of signal transduction in macromolecular assemblies, development of FRET-imaging technologies to measure the location and dynamics of direct protein interactions, biophysical chemistry underlying cell-surface control of leukocyte function, structural biology, proteomics, protein function, the cellular biochemistry of disease and cancer, and photobiochemistry.

This program is unique in that a student can chose their dissertation research over a broad range of research projects available in the department or in the laboratories of participating program faculty at the Sanford and Avera Research Institutes in Sioux Falls, SD. The partnerships with the biomedical research programs at these research institutes also provides a unique opportunity for research that translates basic science into clinical treatments that directly impact patients. For additional information about these options review the descriptions of current faculty research interests on the department website.

Research Infrastructure

The Department of Chemistry, Biochemistry, and Physics at South Dakota State University boasts state-of-the-art research infrastructure housed within the Avera Health and Science Center's laboratory and research wing. The department features specialized core facilities to support its innovative research programs, including the Core Mass Spectrometry Facility and the Core Nuclear Magnetic Resonance (NMR) Facility. These cutting-edge facilities are readily available to graduate students, faculty, and even industry partners, providing invaluable hands-on experience and driving forward research in fields ranging from advanced materials to cancer biology. In addition to these core facilities, a wide array of specialized instrumentation is maintained within individual faculty laboratories, ensuring the department possesses ample modern resources to conduct transformative, real-world research.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan

- 90 Credit Plan

Core Requirements

60 Credit Plan

Graduate students in the Ph.D. programs who have completed the M.S. degree in Biochemistry or a related discipline at SDSU or another institution of higher education may choose to follow the 60-credit plan. In this plan, the only courses required are CHEM 790 Seminar (progress and final seminars, 2 cr) and CHEM 898D Dissertation (minimum of 18 cr). Although not required, students following this plan are recommended to take CHEM 760 - Laboratory Rotations (2 cr), CHEM 707 - Chemical Communication Skills (2 cr), GSR 601 - Research Regulations Compliance (1 cr), and four core courses as defined in the 90-credit plan if equivalent content was not covered in the curriculum of a student's prior M.S. program. Students will work with their advisory committee to agree upon their plan of study. The requirements of the 60-credit plan are:

- CHEM 790 - Seminar (COM) Credits: 1 (2 credits required)
- CHEM 898D - Dissertation (COM) Credits: 1-12 (minimum of 18 credits)
- and/or other coursework as required by Graduate Student Advisory Committee

90 Credit Plan

Students are required to complete 12 credits of core coursework covering basic concepts in Biochemistry which provide foundational disciplinary breadth. To support the interdisciplinary nature of the dissertation research project and provide subspecialty depth, 2 credits of laboratory rotations are required, and 6 credits of elective coursework are chosen by the student and their graduate advisory committee. Additionally, students must complete 3 credit hours of seminar, split between literature, progress, and final seminars. Students are also required to complete 1 credit of research regulation compliance and 2 credits of chemical communication skills. The remaining credits in the 90-credit plan of study are dissertation research credits, along with other courses related to a student's research, as agreed upon in consultation with their graduate research advisor and graduate advisory committee.

- BIOL 743 - Cell Biology (COM) Credits: 3
- BIOS 662 - Advanced Molecular Biology Credits: 3
- CHEM 548 - Biophysical Chemistry Credits: 3
- CHEM 705 - Principles of Biochemistry Credits: 3
- CHEM 707 - Chemical Communication Skills Credits: 2
- CHEM 760 - Laboratory Rotations Credits: 2
- CHEM 790 - Seminar (COM) Credits: 1 (3 credits required)
- CHEM 898D - Dissertation (COM) Credits: 1-12 (64 credits required)
- GSR 601 - Research Regulations Compliance Credits: 1
- Electives (Courses must be selected from STEM disciplines) Credits: 6

Candidacy Examinations

The Department uses a comprehensive examination process as its written candidacy examination for the doctorate in Biochemistry. The exam is offered annually with all biochemistry faculty contributing equally to the exam. The exam is to be taken after the student has substantially completed the required coursework and the exam will cover the content presented in the required coursework. The oral candidacy exam takes place within a year of completion of the written candidacy exam. For the oral examination, students are required to develop and write an original research proposal and defend it orally. In order to successfully defend such a proposal, the student must be able to integrate their coursework into the proposed research, and the oral defense reflects that expectation.

Additional Admission Requirements

GRE: General and subject score are recommended but not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

The priority deadline for applying for admission for the fall semester is December 1. A secondary deadline is January 15. The department typically does not admit students for the spring semester unless applicants have secured funding for their graduate education. Support can come from three sources:

- Research assistantship from a professor in the department
- Personal or family funds
- Scholarship from the government or an organization

In addition to the materials required by the Graduate School, the Department of Chemistry, Biochemistry and Physics requires the following application materials:

- A one- to two-page personal statement which includes a description of undergraduate research, work experience, or other factors demonstrating a propensity toward graduate studies. The personal statement should also include a statement of the applicant's career goals. The applicant may upload this statement while completing the Graduate School's online application.
- Two letters of recommendation, preferably at least one from faculty at the applicant's undergraduate institution. Letters should come from faculty who are directly familiar with the applicant's academic work. They must address the applicant's scholarly potential and may also speak to the applicant's potential for graduate studies in the discipline. Letters should come directly from the recommenders, who may submit their letters electronically along with the personal recommendation form provided by the Graduate School. The Graduate School will email recommenders detailed instructions for submitting their recommendations using the contact information provided by the applicant.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.)

Program Coordinator/Contact

Yajun Wu, Interim Department Head
Radhey Kaushik, Professor and Graduate Coordinator
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Program Information

This is a cooperative program leading to the Doctor of Philosophy degree in Biological Sciences. Departments that cooperate in the program are Agricultural and Biosystems Engineering; Agronomy, Horticulture and Plant Science; Animal Science; Biology and Microbiology; Dairy and Food Science; Natural Resource Management; and Veterinary and Biomedical Sciences at South Dakota State University. The master's and doctoral programs in Biological Sciences allow for considerable latitude in the education and training of students. The plan of study can be designed to meet the interests and individual needs of the student. While the training of most students is largely directed to a single discipline represented within one of the participating departments, cross-disciplinary training is available. Generally, identification of a major professor with resources to support the student's dissertation project is required for unconditional acceptance into the program. Therefore, interested persons should make an application for program admission well in advance of the anticipated date of enrollment. Please refer to each departmental section for a listing of the graduate faculty and details regarding the areas of study offered in this program. Inquiries should be made directly to the department representing the discipline of interest. Specializations are available in the following areas:

- Agricultural and Biosystems Engineering Specialization
- Biology Specialization
- Dairy Science Specialization
- Food Science Specialization
- Microbiology Specialization
- Molecular Biology Specialization
- Natural Resource Management Specialization
- Plant Molecular Biology Specialization
- Plant Science Specialization
- Veterinary Microbiology Specialization
- Veterinary Pathobiology Specialization

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- XXX 790 or 890 - Seminar Credits: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1

- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D - Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits

Additional Admission Requirements

GRE: Not a general requirement, but individual departments may require GRE
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

(Individual departments may have different requirements for GRE, TOEFL iBT, TOEFL Essentials, IELTS, and Duolingo.)

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Agricultural and Biosystems Engineering Specialization

Program Coordinator/Contact

Kasiviswanathan Muthukumarappan, Maynard A. Klingbeil Endowed Department Head and Distinguished Professor
Lin Wei, Professor and Graduate Coordinator
Department of Agricultural and Biosystems Engineering
Raven Precision Agriculture Center 136
605-688-5666

Program Information

Graduate work in the Department of Agricultural and Biosystems Engineering leads to Master of Science in Agricultural and Biosystems Engineering and Doctor of Philosophy in Biological Sciences degrees. The PhD in Biological Sciences with a specialization in Agricultural and Biosystems Engineering shares a common core with several other departments. The core requirements are defined in this catalog in the Biological Sciences (Ph.D.) section. Additional classes are selected by the individual with the approval of the committee.

Students who undertake graduate studies in Agricultural and Biosystems Engineering normally have as their goal a better understanding of the current theories, principles, issues, and problems in agricultural and biological systems. Graduate studies improve the student's ability to think critically and creatively, and to synthesize, analyze, and integrate ideas for decision-making and problem solving.

The department offers students an opportunity to undertake research and advanced study biological sciences with in relation to specialization areas such as food and biomaterial processing, physical properties of biological materials, natural resource engineering, structures, indoor environment, waste management and machine design.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

For details see specific program: Biological Sciences (Ph.D.).

- ABE 790 - Seminar (COM) Credits: 1-3 (1 credit required)
- ABE 791 - Independent Study (COM) Credits: 1-3
- ABE 898D - Dissertation (COM) Credits: 1-12 (30 credits required {60 Hour Plan}, 45 credits required {90 Hour Plan})
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- Electives selected by the individual with committee approval

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Personal statement with a focus on area of research interest and prospective faculty to whom interest in working for the degree program.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Biology Specialization

Program Coordinator/Contact

Yajun Wu, Interim Department Head
Radhey Kaushik, Professor and Graduate Coordinator
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Program Information

The Department of Biology and Microbiology provides students with a wide range of opportunities for advanced study. The graduate faculty offers expertise and graduate student advisement in subdisciplines from molecular biology through ecology. Faculty members are very successful in obtaining extramural funds to support graduate student projects. Graduate students have modern research laboratories, equipment, and field research sites available to carry out their research projects. The learning environment, scholarly excellence, and quality of teaching are areas of strength in the department's graduate program.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

For details, see the specific program: Biological Sciences (Ph.D.).

The student, major advisor, and Advisory Committee select the discipline-specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- XXX 790 or 890 - Seminar Credits: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D - Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits

Ph.D. Graduation Requirements

- Yearly evaluation (research progress + coursework)
- Comprehensive written exam (mid-program)
- Comprehensive oral exam (defense of written exam/research progress) (mid-program)
- Oral presentation of Dissertation (public) during last semester of program
- Oral defense of Dissertation (committee) during last semester of program
- Dissertation completion

Additional Admission Requirements

GRE: Scores ranking above the 50th percentile will strengthen the case for admission
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

At least two letters of reference or Personal References must be sent to the Department. A personal statement that includes a description of the applicant's involvement in research, the applicant's research interest, and career goals is also required.

Retention in the program is dependent on the formation of a committee and completion of the review matrix by the end of the first year. In ensuing years, students must have a committee meeting and complete a review annually.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Dairy Science Specialization

Program Coordinator/Contact

Londa Nwadike, David A. Thompson Endowed Department Head
Department of Dairy and Food Science
Alfred Dairy Science Hall 136, Box 2104
605-688-4116

Program Information

The Dairy and Food Science Department provides research opportunities leading to master's and PhD degrees. SDSU is one of the few universities in the US with a Dairy Science program that offers Dairy Production and Manufacturing majors. It is equipped with excellent laboratories, and a state-of-the-art dairy processing plant which has the capability of processing fluid milk, cheese, butter, ice cream, concentrated and dried products, and other products.

Metabolism and surgical facilities in the Animal Science Complex, and specialized laboratory equipment in Chemistry and Biochemistry, Veterinary and Biomedical Sciences, Health and Human Sciences departments, and the Edgar S. McFadden Biostress laboratories, are also available. Graduate students accepted into the program will have opportunities to utilize these facilities to develop basic and/or applied research programs in dairy product processing and development, microbiology, chemistry, food safety, dairy cattle nutrition, management, and metabolism, while interacting with well qualified faculty.

The SDSU Dairy Science program, in collaboration with the Food Science and Nutrition Program at the University of Minnesota and the Food Science and Human Nutrition Program at Iowa State University, comprise the Midwest Dairy Foods Research Center. This provides graduate students in the manufacturing area with a unique opportunity to be involved with current issues and research needs.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

For details see specific program: Biological Sciences (Ph.D.).

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- DS 731 - Laboratory Techniques in Dairy Science Credits: 3
- DS 790 - Seminar (COM) Credits: 1-3 (2 credits required)
- DS 796 - Field Experience (COM) Credits: 1-3 (1 credit required)
- DS 898D - Dissertation (COM) Credits: 1-12 (30-40 credits required)
- GSR 601 - Research Regulations Compliance Credits: 1
- STAT course 500-level or higher Credits: 3
- Electives (as needed to reach 60 or 90 credits) Credits: 11-34

Select from the following

Select at least two courses from the following list of DS courses. Credits: 6-9

Discipline Specific – Dairy Manufacturing

- DS 500 - Dairy Chemistry and Analysis Credits: 3
- DS 500L - Dairy Chemistry and Analysis Lab Credits: 2
- DS 542 - Dairy Product and Process Development Credits: 3
- DS 560 - Dairy Product Processing I Credits: 4
- DS 560L - Dairy Product Processing I Lab Credits: 1
- DS 561 - Dairy Product Processing II Credits: 4
- DS 561L - Dairy Product Processing II Lab Credits: 1
- DS 722 - Advanced Dairy and Food Microbiology Credits: 3

Discipline Specific – Dairy Production

- DS 513 - Physiology of Lactation Credits: 3
- DS 513L - Physiology of Lactation Lab Credits: 1
- DS 580 - Dairy Farm Operations I Credits: 3
- DS 580L - Dairy Farm Operations I Lab Credits: 1
- DS 581 - Dairy Farm Operations II Credits: 3
- DS 581L - Dairy Farm Operations II Lab Credits: 1
- DS 711 - Ruminology Credits: 3

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

At least two letters of reference and a personal statement that includes a description of the applicant's involvement in research, the applicant's research interest, and career goals will be required.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Food Science Specialization

Program Coordinator/Contact

Londa Nwadike, David A. Thompson Endowed Department Head
Department of Dairy and Food Science
Alfred Dairy Science Hall 136, Box 2104
605-688-4116

Program Information

The Food Science program offers excellent opportunities for graduate level coursework and research leading to academic or industry careers in Food Science. Graduate students receive advanced preparation related to food processing, product development, and food safety. Food science is a multi-disciplinary program administered by the Department of Dairy and Food Science, but may also encompass areas such as animal science, food grain processing, and agricultural and biosystems engineering.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

For details see specific program: PhD in Biological Sciences.

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- DS 722 - Advanced Dairy and Food Microbiology Credits: 3
- DS 731 - Laboratory Techniques in Dairy Science Credits: 3
- DS 790 - Seminar (COM) Credits: 1-3 (2 credits required)
- DS 796 - Field Experience (COM) Credits: 1-3 (1 credit required)
- FS 500 - Food Chemistry and Analysis Credits: 3
- FS 500L - Food Chemistry and Analysis Lab Credits: 2
- FS 551 - New Food Product Development Credits: 3
- FS 551L - New Food Product Development Lab Credits: 1
- FS 898D - Dissertation (COM) Credits: 1-12 (30-40 credits required)
- GSR 601 - Research Regulations Compliance Credits: 1
- STAT course 500-level or higher Credits: 3
- Electives (as needed to reach 60 or 90 credits) Credits: 8-38

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

At least two letters of reference and a personal statement that includes a description of the applicant's involvement in research, the applicants research interest, and career goals will be required.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Microbiology Specialization

Program Coordinator/Contact

Yajun Wu, Interim Department Head
Radhey Kaushik, Professor and Graduate Coordinator
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Program Information

The Department of Biology and Microbiology provides students with a wide range of opportunities for advanced study. The graduate faculty offers expertise and graduate student advisement in subdisciplines from molecular biology through ecology. Faculty members are very successful in obtaining extramural funds to support graduate student projects. Graduate students have modern research laboratories, equipment, and field research sites available to carry out their research projects. The learning environment, scholarly excellence, and quality of teaching are areas of strength in the department's graduate program.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

For details, see specific programs: Biological Sciences (Ph.D.).

The student, major advisor, and Advisory Committee select the discipline-specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- XXX 790 or 890 - Seminar Credits: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D - Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits

Ph.D. Graduation Requirements

- Yearly evaluation (research progress + coursework)
- Comprehensive written exam (mid-program)
- Comprehensive oral exam (defense of written exam/research progress) (mid-program)
- Oral presentation of Dissertation (public) during the last semester of the program
- Oral defense of Dissertation (committee) during the last semester of the program
- Dissertation completion

Additional Admission Requirements

GRE: Scores ranking above the 50th percentile will strengthen the case for admission
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

At least two letters of reference or Personal References must be sent to the Department. A personal statement that includes a description of the applicant's involvement in research, the applicant's research interest, and career goals is also required.

Retention in the program is dependent on the formation of a committee and completion of the review matrix by the end of the first year. In ensuing years, students must have a committee meeting and complete a review annually.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Molecular Biology Specialization

Program Coordinator/Contact

Yajun Wu, Interim Department Head
Radhey Kaushik, Professor and Graduate Coordinator
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Program Information

The Department of Biology and Microbiology provides students with a wide range of opportunities for advanced study. The graduate faculty offers expertise and graduate student advisement in subdisciplines from molecular biology through ecology. Faculty members are very successful in obtaining extramural funds to support graduate student projects. Graduate students have modern research laboratories, equipment, and field research sites available to carry out their research projects. The learning environment, scholarly excellence and quality of teaching are areas of strength in the department's graduate program.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

For details, see specific programs: Biological Sciences (Ph.D.).

The student, major advisor, and Advisory Committee select the discipline-specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- XXX 790 or 890 - Seminar Credits: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D - Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits

Ph.D. Graduation Requirements

- Yearly evaluation (research progress + coursework)
- Comprehensive written exam (mid-program)
- Comprehensive oral exam (defense of written exam/research progress) (mid-program)
- Oral presentation of Dissertation (public) during the last semester of the program
- Oral defense of Dissertation (committee) during the last semester of the program
- Dissertation completion

Additional Admission Requirements

GRE: Scores ranking above the 50th percentile will strengthen the case for admission
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

At least two letters of reference or Personal References must be sent to the department. A personal statement that includes a description of the applicant's involvement in research, the applicant's research interest, and career goals is also required.

Retention in the program is dependent on the formation of a committee and completion of the review matrix by the end of the first year. In ensuing years, students must have a committee meeting and complete a review annually.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Natural Resource Management Specialization

Program Coordinator/Contact

Alexander (Sandy) Smart, Interim Department Head and Professor
Joshua Leffler, Assistant Department Head and Professor
Department of Natural Resource Management
Edgar S. McFadden Biostress Laboratory 138
605-688-6121

Program Information

The Natural Resource Management specialization will provide training in ecology, evolution, environmental sciences, and range areas of expertise with a focus on basic and applied research.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

60 Credit Plan

- GSR 601 - Research Regulations Compliance Credits: 1
- NRM 790 - Seminar (COM) Credits: 1 (2 credits required)
- BIOS 898D - Dissertation (COM) Credits: 1-7 (30-40 credits required)
- STAT courses numbered 500-level or higher Credits: 3
- Additional graduate courses approved by advisor and committee and noted on the student's Plan of Study Credits: 14-24

90 Credit Plan

- GSR 601 - Research Regulations Compliance Credits: 1
- NRM 790 - Seminar (COM) Credits: 1 (2 credits required)
- BIOS 898D - Dissertation (COM) Credits: 1-7 (40-50 credits required)
- STAT courses numbered 500-level or higher Credits: 3
- Additional graduate courses approved by advisor and committee and noted on the student's Plan of Study Credits: 34-44

Additional Admission Requirements

GRE: Not Required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Plant Molecular Biology Specialization

Program Coordinator/Contact

Karen Sanguinet, Klingbeil Endowed Department Head
Keerthi Mandyam, Associate Professor and Graduate Coordinator
Department of Agronomy, Horticulture and Plant Science
Raven Precision Agriculture Center 140
605-688-4600

Program Information

The Agronomy, Horticulture and Plant Science Department is an integrated department that includes programs in crop production, entomology, horticulture, plant biotechnology, plant breeding, plant pathology, precision farming, soils, water management, and weed science. The primary goals of the department are to conduct research in these areas, to transmit the results to the public, and to help prepare students for an occupation in these disciplines and to become productive members of a community. Graduate training includes classroom instruction, teaching experience, seminars designed to refine oral and written skills, and meaningful experience in laboratory and field research techniques. The department encourages collaborations among disciplines and research programs that support this graduate training.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

For details see specific programs: Biological Sciences (Ph.D.).

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study. In addition, the student will successfully complete:

- XXX 790 or 890 - Seminar Credits: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D - Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits

Additional Admission Requirements

GRE: recommended, but not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: minimum total score of 6.5
Duolingo: 110

Students must be accepted by an advisor before admission is granted.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Plant Science Specialization

Program Coordinator/Contact

Karen Sanguinet, Klingbeil Endowed Department Head
Keerthi Mandyam, Associate Professor and Graduate Coordinator
Department of Agronomy, Horticulture and Plant Science
Raven Precision Agriculture Center 140
605-688-4600

Program Information

The Agronomy, Horticulture and Plant Science Department is an integrated department that includes programs in crop production, entomology, horticulture, plant biotechnology, plant breeding, plant pathology, precision farming, soils, water management, and weed science. The primary goals of the department are to conduct research in these areas, to transmit the results to the public, and to help prepare students for an occupation in these disciplines and to become productive members of a community. Graduate training includes classroom instruction, teaching experience, seminars designed to refine oral and written skills, and meaningful experience in laboratory and field research techniques. The department encourages collaborations among disciplines and research programs that support this graduate training.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

For details see specific programs: Biological Sciences (Ph.D.).

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study. In addition, the study will successfully complete:

- XXX 790 or 890 - Seminar Credits: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D - Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation

- Electives as needed to reach 60 or 90 credits

Additional Admission Requirements

GRE: recommended, but not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: minimum score of 6.5
Duolingo: 110

Students must be accepted by an advisor before admission is granted.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Veterinary Microbiology Specialization

Program Coordinator/Contact

Angela Pillatzki, Department Head
Stephan Schmitz-Esser, Professor and Graduate Coordinator
Department of Veterinary and Biomedical Sciences
Animal Disease Research and Diagnostic Laboratory 1100
605-688-5172

Program Information

The Department of Veterinary and Biomedical Sciences offers graduate education that is focused on the One Health concept, with major emphasis in infectious diseases of food-producing domestic species and zoonotic diseases. Research projects range from basic (mechanistic) to applied science. The integration of service, research, and education within the department broadens students' graduate program experience. The department has contemporary and well-equipped research laboratories and a state-of-the-art veterinary diagnostic laboratory. Graduate students participate in cutting edge research, obtaining a comprehensive knowledgebase which prepares them well for a variety of career paths focused on One Health and veterinary infectious disease.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

For details see specific programs: Biological Sciences (Ph.D.).

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- XXX 790 or 890 - Seminar Credits: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D - Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits
  Research in pursuit of the dissertation requirement is expected to address a question of fundamental scientific importance and is expected to generate data of publication quality.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Admission to the program is dependent upon admission to the SDSU Graduate School and identification of a suitable mentor. Applicants are not accepted into the program unless an assistantship can be provided. Funding for assistantships comes from a variety of sources including the South Dakota Agricultural Experiment Station, federal granting agencies, and the animal health product industry. Those interested are encouraged to contact the Department to identify opportunities.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Biological Sciences (Ph.D.) - Veterinary Pathobiology Specialization

Program Coordinator/Contact

Angela Pillatzki, Department Head
Stephan Schmitz-Esser, Professor and Graduate Coordinator
Department of Veterinary and Biomedical Sciences
Animal Disease Research and Diagnostic Laboratory 1100
605-688-5172

Program Information

The Department of Veterinary and Biomedical Sciences offers graduate education that is focused on the One Health concept, with major emphasis in infectious diseases of food-producing domestic species and zoonotic diseases. Research projects range from basic (mechanistic) to applied science. The integration of service, research, and education within the department broadens students' graduate program experience. The department has contemporary and well-equipped research laboratories and a state-of-the-art veterinary diagnostic laboratory. Graduate students participate in cutting edge research, obtaining a comprehensive knowledgebase which prepares them well for a variety of career paths focused on One Health and veterinary infectious disease.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

For details see specific programs: Biological Sciences (Ph.D.).

The student, major advisor and Advisory Committee select the discipline specific emphasis area of the biological sciences. The courses will be identified on the student's Plan of Study no later than the end of the first year of study.

- XXX 790 or 890 - Seminar Credits: 1 - Selected with advisory committee approval
- GSR 601 - Research Regulations Compliance Credits: 1
- Minimum of 3 credits of STAT courses numbered 500-level or higher
- XXX 898D - Dissertation Credits: 30-40 - Students are required to present a seminar on their dissertation
- Electives as needed to reach 60 or 90 credits
  Research in pursuit of the dissertation requirement is expected to address a question of fundamental scientific importance and is expected to generate data of publication quality.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Admission to the program is dependent upon admission to the SDSU Graduate School and identification of a suitable mentor. Applicants are not accepted into the program unless an assistantship can be provided. Funding for assistantships comes from a variety of sources including the South Dakota Agricultural Experiment Station, federal granting agencies, and the animal health product industry. Those interested are encouraged to contact the Department to identify opportunities.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Chemistry (Ph.D.)

Program Coordinator/Contact

Brian Logue, Department Head
Cheng Zhang, Associate Professor
Department of Chemistry, Biochemistry and Physics
Avera Health and Science Center 247
605-688-5151

Program Information

The department's chemistry faculty research programs fall into the thematic focus areas of environmental chemistry, green chemistry, chemical sensor development, organic synthesis, materials chemistry, natural products chemistry, and chemical education. Within these multidisciplinary and interdisciplinary focus areas, students can select research projects that involve the traditional subdisciplines of chemistry; analytical, biochemistry, inorganic, organic, and physical. Currently active research projects in the department focus on various aspects of analytical chemistry, drug discovery and delivery, synthesis or photoactive materials including polymers, materials chemistry and self-assembly, chromatography, the chemistry of cell membranes, environmental analysis, green chemistry, chemistry of climate change, photophysical chemistry, natural products synthesis, biophysical chemistry, computational chemistry, and solid-state NMR. For additional information about these options, review the descriptions of current faculty research interests on the department website.

Research Infrastructure

The Department of Chemistry, Biochemistry, and Physics at South Dakota State University boasts state-of-the-art research infrastructure housed within the Avera Health and Science Center's laboratory and research wing. The department features specialized core facilities to support its innovative research programs, including the Core Mass Spectrometry Facility and the Core Nuclear Magnetic Resonance (NMR) Facility. These cutting-edge facilities are readily available to graduate students, faculty, and even industry partners, providing invaluable hands-on experience and driving forward research in fields ranging from advanced materials to cancer biology. In addition to these core facilities, a wide array of specialized instrumentation is maintained within individual faculty laboratories, ensuring the department possesses ample modern resources to conduct transformative, real-world research.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

60 Credit Plan

Graduate students in the Ph.D. programs who have completed the M.S. degree in Chemistry or a related discipline at SDSU or another institution of higher education may choose to follow the 60-credit plan. In this plan, the only courses required are CHEM 790 Seminar (progress and final seminars, 2 cr) and CHEM 898D Dissertation (minimum of 18 cr). Although not required, students following this plan are recommended to take CHEM 760 - Laboratory Rotations (2 cr), CHEM 707 - Chemical Communication Skills (2 cr), GSR 601 - Research Regulations Compliance (1 cr), and four core courses as defined in the 90-credit plan if equivalent content was not covered in the curriculum of a student's prior M.S. program. Students will work with their advisory committee to agree upon their plan of study. The requirements of the 60-credit plan are:

- CHEM 790 - Seminar (COM) Credits: 1 (2 credits required)
- CHEM 898D - Dissertation (COM) Credits: 1-12 (minimum of 18 credits)
- and/or other coursework as required by Graduate Student Advisory Committee

90 Credit Plan

Students are required to complete 12 credits of core coursework covering basic concepts in Chemistry which provide foundational disciplinary breadth. To support the interdisciplinary nature of the dissertation research project and provide subspecialty depth, 2 credits of laboratory rotations are required, and 6 credits of elective coursework are chosen by the student and their graduate advisory committee. Additionally, students must complete 3 credit hours of seminar, split between literature, progress, and final seminars. Students are also required to complete 1 credit of research regulation compliance and 2 credits of chemical communication skills. The remaining credits in the 90-credit plan of study are dissertation research credits, along with other courses related to a student's research, as agreed upon in consultation with their graduate research advisor and graduate advisory committee.

- CHEM 707 - Chemical Communication Skills Credits: 2
- CHEM 760 - Laboratory Rotations Credits: 2
- CHEM 790 - Seminar (COM) Credits: 1 (3 credits required)
- CHEM 898D - Dissertation (COM) Credits: 1-12 (64 credits required)
- GSR 601 - Research Regulations Compliance Credits: 1
- Electives (Courses must be selected from STEM disciplines) Credits: 6

Select from the following

Select four of the following five courses. Credits: 12

- CHEM 701 - Advanced Organic Chemistry I Credits: 3
- CHEM 703 - Advanced Physical Chemistry Credits: 3
- CHEM 704 - Advanced Inorganic Chemistry Credits: 3
- CHEM 705 - Principles of Biochemistry Credits: 3
- CHEM 706 - Advanced Analytical Chemistry Credits: 3

Candidacy Examinations

The Department uses a comprehensive examination process as its written candidacy examination for the doctorate in Chemistry. The exam is offered annually with chemistry faculty of sub-disciplines (e.g., analytical, organic, and physical chemistry) contributing to the exam. The exam is to be taken after the student has substantially completed the required coursework and the exam will cover the content presented in the required coursework. The oral candidacy exam takes place within a year of completion of the written candidacy exam. For the oral examination, students are required to develop and write an original research proposal and defend it orally. In order to successfully defend such a proposal, the student must be able to integrate their coursework into the proposed research, and the oral defense reflects that expectation.

Additional Admission Requirements

GRE: General and subject score are recommended but not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

The priority deadline for applying for admission for the fall semester is December 1. A secondary deadline is January 15. The department typically does not admit students for the spring semester unless applicants have secured funding for their graduate education. Support can come from three sources:

- Research assistantship from a professor in the department
- Personal or family funds
- Scholarship from the government or an organization

In addition to the materials required by the Graduate School, the Department of Chemistry, Biochemistry and Physics requires the following application materials:

- A one- to two-page personal statement which includes a description of undergraduate research, work experience, or other factors demonstrating a propensity toward graduate studies. The personal statement should also include a statement of the applicant's career goals. The applicant may upload this statement while completing the Graduate School's online application.
- Two letters of recommendation, preferably at least one from faculty at the applicant's undergraduate institution. Letters should come from faculty who are directly familiar with the applicant's academic work. They must address the applicant's scholarly potential and may also speak to the applicant's potential for graduate studies in the discipline. Letters should come directly from the recommenders, who may submit their letters electronically along with the personal recommendation form provided by the Graduate School. The Graduate School will email recommenders detailed instructions for submitting their recommendations using the contact information provided by the applicant.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Civil Engineering (Ph.D.)

Program Coordinator/Contact

Guanghui Hua, Department Head
Francis Ting, Professor and Graduate Coordinator
Department of Civil and Environmental Engineering
Crothers Engineering Hall 310, Box 2219
605-688-5427

Program Information

The program is designed to provide breadth and depth within the civil engineering main sub-disciplines including structural, environmental, transportation, geotechnical, hydraulic, and water resources engineering. The department's graduate faculty members conduct research in the fields of bridge engineering, earthquake engineering, traffic operations and safety, transportation infrastructure, breaking waves and river hydraulics, fate and transport of contaminants, water/wastewater treatment processes and biological filtration, and soil stability and deep foundations.

Students seeking a Ph.D. degree in civil engineering will be conducting research in their area of interest under the mentorship of highly qualified and dedicated faculty. Research and teaching assistantships will be offered to qualified students. Students will also be expected to engage in scholarly activities through publishing of peer-reviewed journal papers and dissemination of research results at national conferences.

Available Options for Graduate Degrees

Doctor of Philosophy

- 72 Credit Plan

Core Requirements

- CEE 898D - Dissertation (COM) Credits: 1-12 (36 credits required)
- GE 701 - Research Colloquium 1 Credits: 1
- GE 702 - Research Colloquium 2 Credits: 1
- GE 703 - Research Colloquium 3 Credits: 1
- STAT 541 - Statistical Methods II Credits: 3
- Supporting Electives Credits: 30
  Elective courses will be chosen by the Advisor in consultation with the student and approved by the Graduate Advisory Committee as part of the Plan of Study.

Courses Supporting the Ph.D. Program

Students may apply up to 23 credits of coursework and up to 7 research credits from a previous M.S. degree to the Ph.D. requirements, subject to approval by the student's graduate advisory committee. The 7 research credits transferred must be CEE 798 - Thesis (COM) or equivalent coursework.

Additional Admission Requirements

GRE: General scores recommended
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Three letters of reference with one being from master's advisor if applicable, a letter of research interest and intent, transcripts, and a resume.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Computational Science and Statistics (Ph.D.) - Data Science Specialization

Program Coordinator/Contact

Donald Vestal, Associate Professor and Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering Hall 209, Box 2225
605-688-6196

Program Information

The Computational Science and Statistics Ph.D. program is designed to train students to integrate computational and statistical methodologies to formulate, model, analyze, and solve research problems of interest in a wide variety of applied and theoretical contexts. The Data Science Specialization will emphasize curriculum and research programs that prepare graduates to support local, regional and national industry by analyzing large and complex datasets.

Available Options for Graduate Degrees

Doctor of Philosophy

- 72 Credit Plan

Core Requirements

- CSS, MATH, or STAT Electives (Must be approved by advisor) Credits: 12
- CSS 898D - Dissertation (COM) Credits: 1-36 (24 credits required)
- MATH 515 - Advanced Linear Algebra (COM) Credits: 3
- MATH 571 - Numerical Analysis I (COM) Credits: 3
- MATH 625 - Advanced Calculus Credits: 3
- MATH 770 - Numerical Linear Algebra Credits: 3
- STAT 684 - Statistical Inference I Credits: 3
- STAT 685 - Statistical Inference II Credits: 3
- STAT 686 - Regression Analysis I Credits: 3
- STAT 687 - Regression Analysis II Credits: 3
- STAT 715 - Multivariate Analysis I Credits: 3
- STAT 721 - Statistical Computing and Simulation Credits: 3
- STAT 752 - Advanced Data Science Credits: 3
- STAT 779 - Advanced Statistics Synthesis Credits: 1

Select from the following

Select two credits from the following courses. Credits: 2

- CSS 890 - Seminar (COM) Credits: 1
- GE 701 - Research Colloquium 1 Credits: 1
- GE 702 - Research Colloquium 2 Credits: 1

Courses Supporting the Ph.D. Program

Students may apply up to 24 credits of coursework from a previous M.S. degree to the Ph.D. requirements, subject to approval by the student's graduate advisory committee.

Additional Graduation Requirements

Students must also pass qualifying exams based on the program's core sequences and written and oral comprehensive exams as designed by the student's advisory committee.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

- Three letters of recommendation from individuals familiar with the applicant's academic performance, research potential, or professional experience (such as faculty members, research supervisors, or employers in a relevant field)
- Statement of research interests and intent, clearly outlining the proposed area of research
- Official transcripts from all previous academic institutions
- Current resume or curriculum vitae (CV)

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Computational Science and Statistics (Ph.D.) - Mathematics Specialization

Program Coordinator/Contact

Donald Vestal, Associate Professor and Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering Hall 209, Box 2225
605-688-6196

Program Information

The Computational Science and Statistics Ph.D. program is designed to train students to integrate computational and statistical methodologies to formulate, model, analyze, and solve research problems of interest in a wide variety of

applied and theoretical contexts. The Mathematics Specialization will emphasize curriculum and research programs related to development of computational strategies for modeling and analysis that incorporates large and complex datasets.

Available Options for Graduate Degrees

Doctor of Philosophy

- 72 Credit Plan

Core Requirements

- CSS 774 - Advanced Scientific Machine Learning Credits: 3
- CSS, MATH, or STAT Electives (Must be approved by advisor) Credits: 18
- CSS 898D - Dissertation (COM) Credits: 1-36 (24 credits required)
- MATH 515 - Advanced Linear Algebra (COM) Credits: 3
- MATH 571 - Numerical Analysis I (COM) Credits: 3
- MATH 625 - Advanced Calculus Credits: 3
- MATH 630 - Differential Equations in Computing Credits: 3
- MATH 741 - Measure and Probability Credits: 3
- MATH 751 - Applied Functional Analysis Credits: 3
- MATH 770 - Numerical Linear Algebra Credits: 3
- MATH 773 - Numerical Optimization Credits: 3
- MATH 779 - Advanced Mathematics Synthesis Credits: 1

Select from the following

Select two credits from the following courses. Credits: 2

- CSS 890 - Seminar (COM) Credits: 1
- GE 701 - Research Colloquium 1 Credits: 1
- GE 702 - Research Colloquium 2 Credits: 1

Courses Supporting the Ph.D. Program

Students may apply up to 24 credits of coursework from a previous M.S. degree to the Ph.D. requirements, subject to approval by the student's graduate advisory committee.

Additional Graduation Requirements

Students must also pass qualifying exams based on the program's core sequences and written and oral comprehensive exams as designed by the student's advisory committee.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

- Three letters of recommendation from individuals familiar with the applicant's academic performance, research potential, or professional experience (such as faculty members, research supervisors, or employers in a relevant field)
- Statement of research interests and intent, clearly outlining the proposed area of research
- Official transcripts from all previous academic institutions
- Current resume or curriculum vitae (CV)

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Computational Science and Statistics (Ph.D.) - Statistics Specialization

Program Coordinator/Contact

Donald Vestal, Associate Professor and Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering Hall 209, Box 2225
605-688-6196

Program Information

The Computational Science and Statistics Ph.D. program is designed to train students to integrate computational and statistical methodologies to formulate, model, analyze, and solve research problems of interest in a wide variety of applied and theoretical contexts. The Statistics Specialization will emphasize curriculum and research programs focusing on problems at the boundaries of effectiveness of current modern statistical methods. Students in this specialization will receive a multidisciplinary education combining the curriculums of the Mathematics and Data Science specializations.

Available Options for Graduate Degrees

Doctor of Philosophy

- 72 Credit Plan

Core Requirements

- CSS, MATH, or STAT Electives (Must be approved by advisor) Credits: 9
- CSS 898D - Dissertation (COM) Credits: 1-36 (33 credits required)
- MATH 515 - Advanced Linear Algebra (COM) Credits: 3
- MATH 625 - Advanced Calculus Credits: 3
- MATH 741 - Measure and Probability Credits: 3
- STAT 684 - Statistical Inference I Credits: 3
- STAT 685 - Statistical Inference II Credits: 3
- STAT 686 - Regression Analysis I Credits: 3
- STAT 687 - Regression Analysis II Credits: 3
- STAT 715 - Multivariate Analysis I Credits: 3
- STAT 721 - Statistical Computing and Simulation Credits: 3
- STAT 779 - Advanced Statistics Synthesis Credits: 1

Select from the following

Select two credits from the following courses. Credits: 2

- CSS 890 - Seminar (COM) Credits: 1
- GE 701 - Research Colloquium 1 Credits: 1
- GE 702 - Research Colloquium 2 Credits: 1

Courses Supporting the Ph.D. Program

Students may apply up to 24 credits of coursework from a previous M.S. degree to the Ph.D. requirements, subject to approval by the student's graduate advisory committee.

Additional Graduation Requirements

Students must also pass qualifying exams based on the program's core sequences and written and oral comprehensive exams as designed by the student's advisory committee.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

- Three letters of recommendation from individuals familiar with the applicant's academic performance, research potential, or professional experience (such as faculty members, research supervisors, or employers in a relevant field)
- Statement of research interests and intent, clearly outlining the proposed area of research
- Official transcripts from all previous academic institutions
- Current resume or curriculum vitae (CV)

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Computer Science (Ph.D.)

Program Coordinator/Contact

Rajesh Kavasseri, Interim Department Head
Jun Huang, Assistant Professor and Graduate Coordinator
McComish Department of Electrical Engineering and Computer Science
Daktronics Engineering Hall 214
605-688-4526

Program Information

The McComish Department of Electrical Engineering and Computer Science offers the Ph.D. in Computer Science. The Computer Science program prepares graduates for positions in the design and development of computer languages, systems, and applications in business and industry and for higher academic positions in research and education. The program will emphasize expertise in

fundamental and applied topics of Computer Science such as artificial intelligence, machine learning, data mining and analytics with special applications to domains such as precision agriculture. Areas of research interest within the department currently include Artificial Intelligence, Machine Learning, Computer Vision, Applied Computing, Computer Security, Cloud and Mobile Computing, and Computer Networks.

Available Options for Graduate Degrees

Doctor of Philosophy

- 72 Credit Plan

Core Requirements

(Instruction of some courses shared between DSU and SDSU campuses.)

- CSC 705 - Design and Analysis of Computer Algorithms (COM) Credits: 3
- CSC 710 - Structure and Design of Programming Languages (COM) Credits: 3
- CSC 718 - Operating Systems & Parallel Programming Credits: 3 (DSU)
- CSC 720 - Theory of Computation (COM) Credits: 3
- CSC 722 - Machine Learning Fundamentals Credits: 3 (DSU)
- CSC 770 - Software Engineering Management (COM) Credits: 3
- CSC 898D - Dissertation (COM) Credits: 1-12 (24-30 credits required)
- Choose remaining elective courses (6 - 12 credits) with advisor approval from graduate level CSC, INFA, INFS, MATH, STATS, or other approved areas (supporting dissertation research). Credits: 6-12

Select from the following

Complete 18 credits with two courses from each of the 3 areas listed below - Theory, Systems, Application. Credits: 18

Theory

Must select two minimum. Credits: 6

- CSC 533 - Computer Graphics Credits: 3
- CSC 547 - Artificial Intelligence (COM) Credits: 3
- CSC 574 - Computer Networks Credits: 3
- INFA 723 - Cryptography Credits: 3 (DSU)
- INFS 766 - Advanced Database Credits: 3 (DSU)
- INFS 768 - Predictive Analytics for Decision Making Credits: 3 (DSU)
- MATH 575 - Operations Research (COM) Credits: 3
- MATH 675 - Operations Research II Credits: 3
- STAT 601 - Modern Applied Statistics I Credits: 3
- STAT 602 - Modern Applied Statistics II Credits: 3

Systems

Must select two courses. Credits: 6

- CSC 574 - Computer Networks Credits: 3
  or INFS 750 - IT Infrastructure, Technology and Network Management Credits: 3 (DSU)
- CSC 592 - Topics (COM) Credits: 1-5 (3 credits required) (Advanced High Performance Computing)
- CSC 600 - Accelerated Computer Science Fundamentals Credits: 3
- CSC 716 - Secure Software Engineering Credits: 3 (DSU)
- INFS 760 - Enterprise Modeling and Data Management Credits: 3 (DSU)

Application

Must select two courses. Credits: 6

- CSC 592 - Topics (COM) Credits: 1-5 (3 credits required) (Mobile Applications)
- CSC 592 - Topics (COM) Credits: 1-5 (3 credits required) (Internet Programming)
- CSC 630 - Principles Data Base System Design Credits: 3
- CSC 750 - Recent Advances in Parallel Process Credits: 3
- INFA 701 - Principles of Information Assurance Credits: 3 (DSU)
- INFA 735 - Offensive Security Credits: 3 (DSU)
- INFS 730 - Web Application Development Credits: 3 (DSU)
- INFS 736 - Technology for Mobile Devices Credits: 3 (DSU)
- INFS 764 - Information Retrieval Credits: 3 (DSU)
- INFS 766 - Advanced Database Credits: 3 (DSU)
- MATH 515 - Advanced Linear Algebra (COM) Credits: 3
- MATH 773 - Numerical Optimization Credits: 3

Courses Supporting the Ph.D. Program

The doctoral curriculum assumes that a student enters the program with a master's degree in Computer Science. Students with a Master of Science in Computer Science will be awarded 30 total core and/or elective credits. Students who enter the program with a master's degree in a closely related field may be awarded up to 30 core and elective credits.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

Three letters of reference with one being from master's advisor, a letter of research interest and intent with a focus on area of research interest, transcripts, and a resume.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Electrical Engineering (Ph.D.)

Program Coordinator/Contact

Rajesh Kavasseri, Interim Department Head
Xiaojun Xian, Assistant Professor and Graduate Coordinator
McComish Department of Electrical Engineering and Computer Science
Daktronics Engineering Hall 214
605-688-4526

Program Information

The program offers a variety of courses that encompass a broad range of Electrical Engineering areas including: alternative energy and power systems, computer engineering, communications, electronic materials, devices and sensors, nano technology, photovoltaic devices and systems, microelectronic circuits and systems, and signal and image processing. The department's graduate faculty conduct active research in these areas using modern research facilities and equipment.

Available Options for Graduate Degrees

Doctor of Philosophy

- 72 Credit Plan

Core Requirements

- EE 898D - Dissertation (COM) Credits: 1-6 (30 credits required)
- GE 701 - Research Colloquium 1 Credits: 1
- GE 702 - Research Colloquium 2 Credits: 1
- GE 703 - Research Colloquium 3 Credits: 1
- Electives Credits: 32-33

Select from the following

Select 6-7 credits from the following list. Credits: 6-7

- EE 536 - Photovoltaic Systems Engineering Credits: 3
- EE 536L - Photovoltaic Systems Engineering Laboratory Credits: 1
- EE 554 - Biomedical Instrumentation and Electrical Safety Credits: 3
- EE 560 - Sensors and Measurements Credits: 2
- EE 560L - Sensors and Measurements Lab Credits: 1
- EE 569 - Fundamentals of High-Performance Computing Credits: 3
- EE 575 - Digital Image Processing Credits: 3
- EE 733 - Advanced Power System Analysis Credits: 3

Courses Supporting the Ph.D. Program

Students may apply up to 24 credits of coursework and up to 6 research credits from a previous M.S. degree to the Ph.D. requirements, subject to approval by the student's graduate advisory committee. The 6 research credits transferred must be EE 798 - Thesis (COM) or equivalent coursework.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4.5
TOEFL Essentials: 9.5

IELTS: 6.5
Duolingo: 115

Three letters of recommendation with at least one from an individual who can address the applicant's technical knowledge background and ability to perform research, a research statement or statement of interest area intent, and transcripts are required.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Geospatial Science and Engineering (Ph.D.) - Geography Specialization

Program Coordinator/Contact

Bob Watrel, Department Head
Xiaoyang Zhang, Distinguished Professor and Graduate Coordinator
Department of Geography and Geospatial Sciences and Geospatial Sciences Center of Excellence
Wecota Hall 109
605-688-4511

Program Information

The Geospatial Science and Engineering (GSE) Ph.D. is an interdisciplinary program that combines advanced coursework with cutting-edge research to advance the field of geospatial sciences. The focus is on transforming geospatial data into relevant information through acquisition, processing, characterization, analysis, and modeling in order to understand geographic patterns, processes, and relationships at scales ranging from landscapes to the globe. To achieve these aims, the geospatial sciences integrate the geographic disciplines of cartography, geodesy, geographic information systems, and remote sensing with elements of mathematics, statistics, the natural sciences, the social sciences, and engineering. The resulting array of geospatial concepts, methods, technologies, and datasets are used to address a wide range of pertinent questions about the functioning of the biosphere and its implications for sustainability of natural resources, agricultural productivity, biodiversity, environmental quality, and human welfare in a rapidly-changing world.

The program consists of faculty from the Geospatial Sciences Center of Excellence and the Image Processing Laboratory in the McComish Department of Electrical Engineering and Computer Science. Other participating departments include Agricultural and Biosystems Engineering, Civil and Environmental Engineering, Geography and Geospatial Sciences, and Natural Resource Management. Current faculty research interests include quantitative remote sensing, sensor design and calibration, land cover and land use change, geography, hydrology, landscape ecology, climate change, and fire science as well as applications of geospatial technologies in agriculture, meteorology, natural resource management, public health, and other fields. The program seeks highly motivated students with strong backgrounds in the geospatial sciences or a closely-related field to complement these efforts.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

60 Credit Plan

- GEOG 710 - Evolution of Geographic Thought Credits: 3
  or GSE 740 - Introduction to Geospatial Science and Engineering Credits: 3
- GSE 790 - Seminar (COM) Credits: 1-3 (3 credits required) (Geospatial Science)
  or GEOG 790 - Seminar (COM) Credits: 1-4 (3 credits required) (Geospatial Science)
- GSE 898D - Dissertation (COM) Credits: 1-12 (36 credits required)
- Specialization Coursework Credits: 6
- Supporting Electives (Students should consult their advisors to identify courses suitable for their area of interest.) Credits: 12

90 Credit Plan

- GEOG 710 - Evolution of Geographic Thought Credits: 3
  or GSE 740 - Introduction to Geospatial Science and Engineering Credits: 3
- GSE 790 - Seminar (COM) Credits: 1-3 (3 credits required) (Geospatial Science)
  or GEOG 790 - Seminar (COM) Credits: 1-4 (3 credits required) (Geospatial Science)
- GSE 898D - Dissertation (COM) Credits: 1-12 (36 credits required)
- Specialization Coursework Credits: 6
- Supporting Electives (Students should consult their advisors to identify courses suitable for their area of interest.) Credits: 42

Additional Admission Requirements

Admission to the GSE program is competitive and limited by the availability of personnel, facilities, and funding necessary to provide quality graduate education. GSE is an interdisciplinary program with participating faculty members from several departments. The scope of the geospatial sciences is broad, and individual faculty members will only advise students within their particular area of specialization. Financial support for students is provided by individual faculty members through their research grants or other funding sources. Students can also bring their own funding, which could be obtained through a fellowship program or through the support of their employer. For these reasons, the application process is highly competitive, and meeting the minimum standards does not guarantee admission. In particular, the critical criterion for admission into the PhD program is that a GSE faculty member must agree to serve as the student's advisor.

Before applying to the program, prospective students are strongly encouraged to contact individual faculty to identify prospective advisors, discuss their research interests and educational goals, and determine if graduate research assistantships are available. Prospective students may also contact Dr. Xiaoyang Zhang, the program coordinator, for additional information.

All applications must meet the admission criteria of the Graduate School before being accepted into the GSE program, and formal offers of graduate assistantships will not be made until students have been officially accepted by the Graduate School.

GRE: Required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Two letters of recommendation from persons acquainted with the academic ability and professional competency of the applicant should be sent directly to the GSE graduate coordinator.

Applicants must provide a written describing their research interests and academic goals in pursuing a Ph.D. and identifying one or more faculty members as potential advisors. The letter of intent should be submitted with the other application materials.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Geospatial Science and Engineering (Ph.D.) - Remote Sensing Specialization

Program Coordinator/Contact

Bob Watrel, Department Head
Xiaoyang Zhang, Distinguished Professor and Graduate Coordinator
Department of Geography and Geospatial Sciences and Geospatial Sciences Center of Excellence
Wecota Hall 109
605-688-4511

Program Information

The Geospatial Science and Engineering (GSE) Ph.D. is an interdisciplinary program that combines advanced coursework with cutting-edge research to advance the field of geospatial sciences. The focus is on transforming geospatial data into relevant information through acquisition, processing, characterization, analysis, and modeling in order to understand geographic patterns, processes, and relationships at scales ranging from landscapes to the globe. To achieve these aims, the geospatial sciences integrate the geographic disciplines of cartography, geodesy, geographic information systems, and remote sensing with elements of mathematics, statistics, the natural sciences, the social sciences, and engineering. The resulting array of geospatial concepts, methods, technologies, and datasets are used to address a wide range of pertinent questions about the functioning of the biosphere and its implications for sustainability of natural resources, agricultural productivity, biodiversity, environmental quality, and human welfare in a rapidly-changing world.

The program consists of faculty from the Geospatial Sciences Center of Excellence and the Image Processing Laboratory in the McComish Department of Electrical Engineering and Computer Science. Other participating departments include Agricultural and Biosystems Engineering, Civil and Environmental Engineering, Geography and Geospatial Sciences, and Natural Resource Management. Current faculty research interests include quantitative remote sensing, sensor design and calibration, land cover and land use change, geography, hydrology, landscape ecology, climate change, and fire science as well as applications of geospatial technologies in agriculture, meteorology, natural resource management, public health, and other fields. The program seeks highly motivated students with strong backgrounds in the geospatial sciences or a closely-related field to complement these efforts.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

60 Credit Plan

- GEOG 710 - Evolution of Geographic Thought Credits: 3
  or GSE 740 - Introduction to Geospatial Science and Engineering Credits: 3
- GSE 790 - Seminar (COM) Credits: 1-3 (3 credits required) (Geospatial Science)
  or GEOG 790 - Seminar (COM) Credits: 1-4 (3 credits required) (Geospatial Science)
- GSE 898D - Dissertation (COM) Credits: 1-12 (36 credits required)
- Specialization Coursework Credits: 6
- Supporting Electives (Students should consult their advisors to identify courses suitable for their area of interest) Credits: 12

90 Credit Plan

- GEOG 710 - Evolution of Geographic Thought Credits: 3
  or GSE 740 - Introduction to Geospatial Science and Engineering Credits: 3
- GSE 790 - Seminar (COM) Credits: 1-3 (3 credits required) (Geospatial Science)
  or GEOG 790 - Seminar (COM) Credits: 1-4 (3 credits required) (Geospatial Science)
- GSE 898D - Dissertation (COM) Credits: 1-12 (36 required credits)
- Specialization Coursework Credits: 6
- Supporting Electives (Students should consult their advisors to identify courses suitable for their area of interest.) Credits: 42

Additional Admission Requirements

Admission to the GSE program is competitive and limited by the availability of personnel, facilities, and funding necessary to provide quality graduate education. GSE is an interdisciplinary program with participating faculty members from several departments. The scope of the geospatial sciences is broad, and individual faculty members will only advise students within their particular area of specialization. Financial support for students is provided by individual faculty members through their research grants or other funding sources. Students can also bring their own funding, which could be obtained through a fellowship program or through the support of their employer. For these reasons, the application process is highly competitive, and meeting the minimum standards does not guarantee admission. In particular, the critical criterion for admission into the PhD program is that a GSE faculty member must agree to serve as the student's advisor.

Before applying to the program, prospective students are strongly encouraged to contact individual faculty to identify prospective advisors, discuss their research interests and educational goals, and determine if graduate research assistantships are available. Prospective students may also contact Dr. Xiaoyang Zhang, the program coordinator, for additional information.

All applications must meet the admission criteria of the Graduate School before being accepted into the GSE program, and formal offers of graduate assistantships will not be made until students have been officially accepted by the Graduate School.

GRE: Required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Two letters of recommendation from persons acquainted with the academic ability and professional competency of the applicant should be sent directly to the GSE graduate coordinator.

Applicants must provide a written describing their research interests and academic goals in pursuing a Ph.D. and identifying one or more faculty members as potential advisors. The letter of intent should be submitted with the other application materials.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Mechanical Engineering (Ph.D.)

Program Coordinator/Contact

Yucheng Liu, Duane Sander Endowed Professor and Department Head
Saikat Basu, Associate Professor and Graduate Coordinator
Department of Mechanical Engineering
Crothers Engineering Hall 221, Box 2219
605-688-5426

Program Information

The Ph.D. in Mechanical Engineering is designed to develop the depth of knowledge that will allow students to investigate new concepts and new applications of technology to advance the state of the art in the discipline. It will also provide students with practical training and experience in the scientific methods needed to conduct reliable experiments and to apply and properly validate engineering models of physical systems. Critical thinking and communication skills developed in the program will prepare students for leadership roles. Overall, the knowledge and skills gained will prepare them for life-long careers in highly desirable research and development positions.

Students who undertake this graduate degree normally have as their goal an advanced understanding of the body of knowledge in the discipline, and a desire to make new and substantive contributions to that knowledge. Problems in energy conversion, materials, thermal-fluid systems, automation and control, and mechanical systems are typical applications. Graduate studies improve the student's ability to think critically and creatively, and to synthesize, analyze, and integrate ideas for decision-making and problem solving.

This program offers students an opportunity to undertake research and advanced study in emphasis areas such as:

- advanced manufacturing processes, including research and development of innovative automation and control strategies and techniques such as additive manufacturing/3D printing;
- development of biomedical processes, equipment and systems in support of the growing high-impact regional medical industry;
- engineering of systems used in production agriculture, including technology for precision agriculture;
- biomaterials, renewable energy and bio-resource conversion technologies.
- advanced materials and quality control technologies focused on composition, properties, and integrity of materials,
- systems modeling using computational fluid dynamics and finite element methods leveraging high-performance computing technologies.

Available Options for Graduate Degrees

Doctor of Philosophy

- 72 Credit Plan

Core Requirements

- GSR 601 - Research Regulations Compliance Credits: 1
- ME 790 - Seminar (COM) Credits: 1 (2 credits required)
- ME 898D - Dissertation (COM) Credits: 1-12 (36 credits required)
- Electives** Credits: 33
  All electives must be approved by the student's graduate advisory committee. Up to 12 credits of elective coursework can be taken from other disciplines.

Courses Supporting the Ph.D. Program

Students may apply up to 24 credits of coursework and up to 6 research credits from a previous M.S. degree to the Ph.D. requirements, subject to approval by the student's graduate advisory committee. The 6 research credits transferred must be ME 798 - Thesis (COM) or equivalent.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Three letters of reference with one being from master's advisor, a letter of research interest and intent with a focus on area of research interest, transcripts, and a resume.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Nursing (Ph.D.)

Program Coordinator/Contact

Cami Veire, Nursing Advisor and Graduate Specialist
Graduate Nursing
SDSU Nursing - Sioux Falls
2400 S Minnesota Ave, Room 182
Sioux Falls, SD 57107
605-688-2165

Program Information

The Doctor of Philosophy in Nursing prepares nurse scientists to assume roles as health care researchers, faculty, and health care administrators with an emphasis on health promotion and disease prevention in under-served and rural populations. The Ph.D. program educates nurse scientists in academic, research, practice and policy roles to address healthcare issues in urban, rural, frontier, and reservation areas. The College of Nursing Ph.D. program is open to nurses and non-nurses who seek skills in research contributing to nursing and interdisciplinary science.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

60 Credit Plan

- HSC 631 - Biostatistics I Credits: 3
- HSC 731 - Biostatistics II Credits: 3
- NURS 810 - Doctoral Seminar Credits: 1
- NURS 815 - Philosophical Basis for Nursing Inquiry Credits: 3
- NURS 820 - Theory Development in Nursing Credits: 3
- NURS 825 - Qualitative Research Methods in Nursing Credits: 3
- NURS 830 - Quantitative Methods in Nursing Research Credits: 3
- NURS 835 - Ethical Issues Influencing Practice and Research in Health Credits: 2
- NURS 845 - Measurement and Instrument Evaluation in Health Sciences Research Credits: 3
- NURS 890 - Seminar (COM) Credits: 1 (Doctoral Seminar II)
- NURS 898D - Dissertation (COM) Credits: 1-24 (23-26 credits required)
- Electives Credits: 9-12
  (Must include one additional statistics or research methods course. Methods or statistics will be found in the title. Graduate students must consult with their advisors prior to registration.)

90 Credit Plan

- HSC 631 - Biostatistics I Credits: 3
- HSC 731 - Biostatistics II Credits: 3
- NURS 615 - Foundations of Advanced Nursing Credits: 3
- NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3
- NURS 675 - Cultivating a Practice of Cultural Humility in Healthcare Credits: 3
- NURS 810 - Doctoral Seminar Credits: 1
- NURS 815 - Philosophical Basis for Nursing Inquiry Credits: 3
- NURS 820 - Theory Development in Nursing Credits: 3
- NURS 825 - Qualitative Research Methods in Nursing Credits: 3
- NURS 830 - Quantitative Methods in Nursing Research Credits: 3
- NURS 835 - Ethical Issues Influencing Practice and Research in Health Credits: 2
- NURS 840 - Health Promotion Theory and Research Methods Credits: 3
- NURS 845 - Measurement and Instrument Evaluation in Health Sciences Research Credits: 3
- NURS 890 - Seminar (COM) Credits: 1 (Doctoral Seminar II)
- NURS 898D - Dissertation (COM) Credits: 1-24 (23-26 credits required)
- Electives Credits: 27-30
  (Must include one additional statistics or research methods course. Methods or statistics will be found in the title. Graduate students must consult with their advisors prior to registration.)

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

- Example of scholarly written work.
- Online written and verbal assessment completed through KIRA Talent, reviewed and scored by graduate faculty.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint

For applicants who completed their higher education within the United States:

- Bachelor's degree from an accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree from an accredited program or a related field of study with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a bachelor's degree (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- A degree deemed equivalent (by the World Education Service) to a master's or doctoral degree or a related field of study (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Accelerated Graduate Program

The accelerated graduate program will be available to eligible SDSU students. Up to 9 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Nutrition and Exercise Sciences (Ph.D.)

Program Coordinator/Contact

Jessica Meendering, Director
Elizabeth Droke, Associate Professor
School of Health and Human Sciences
Wagner Hall 425
605-688-5161

Program Information

The Ph.D. in Nutrition and Exercise Sciences is a research-focused doctoral program designed to prepare scholars for careers in academia, industry, government, and health-related research settings. The curriculum emphasizes advanced study and independent research in areas such as public health nutrition, molecular and biochemical nutrition, obesity prevention, enhancing physical activity, longevity in health and wellness, and exercise physiology. Specifically, utilizing these areas to target different populations including children, adolescence, older adults, and first responders. The program aims to develop graduates' skills in conducting original research and, for those pursuing academic careers, gaining teaching experience through assistantships or other instructional roles.

Areas of faculty research focus can be found by reviewing faculty bios on the school webpage.

Course Load Information

Students enrolled in six or more state-supported credits within a given semester will be charged the current special discipline fee.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan

Core Requirements

Advanced Research Methods

Credits: 3

- HNS 783 - Research Methods in Health and Nutritional Sciences Credits: 3
- or other class approved by the committee

Advanced Statistics

Credits: 6

- HSC 631 - Biostatistics I Credits: 3
- HSC 731 - Biostatistics II Credits: 3
- NUTR 782 - Epidemiology Credits: 3
- STAT 541 - Statistical Methods II Credits: 3
- or other class approved by the committee

Other Core Requirements

- EXS 750 - Advanced Exercise Physiology Credits: 3
- GSR 601 - Research Regulations Compliance Credits: 1
- HNS 790 - Seminar (COM) Credits: 1
- HNS 898D - Dissertation (COM) Credits: 1-12 (28-43 credits required)
- NUTR 702 - Macronutrients in Human Nutrition Credits: 3
- Electives Credits: 0-15

Additional Admissions Requirements

GRE: Not Required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Letter of application stating the following: primary area of interest within nutrition or exercise science; desired research focus and faculty mentor; statement of career goals; interest in research assistantship; current professional certifications and credentials.

An interview (in person or via phone) is highly encouraged but not required.

Two recommendations letters from professionals knowledgeable in applicant's graduate school potential.

Prerequisites for Ph.D. degree include master's degree in a health or science-related field (nutrition, dietetics, exercise physiology, public health, etc), and the following courses or equivalents: NUTR 422/522 Advanced Human Nutrition and Metabolism or equivalent and biochemistry from an approved accredited institution.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Pharmaceutical Sciences (Ph.D.)

Program Coordinator/Contact

Hemachand Tummala, Department Head, Graduate Program Coordinator and Professor
Department of Pharmaceutical Sciences
Brad Laible, Associate Dean for Academic Programs
College of Pharmacy and Allied Health Professions
Avera Health and Science Center 133
605-688-6197

Program Information

The Department of Pharmaceutical Sciences offers courses and research opportunities in pharmaceutical and biomedical sciences leading to the Doctor of Philosophy (Ph.D.) degree in Pharmaceutical Sciences. The Department also offers an opportunity for a combination Doctor of Pharmacy (Pharm.D.)/Ph.D. degrees in Pharmaceutical Sciences. The didactic courses, along with the research concentration in a specific area of pharmaceutical sciences, provide a strong foundation for academic, regulatory affairs, the pharmaceutical/biotech industry, and other research-related careers. The program places a strong emphasis on comprehensive and high-quality graduate education and research experience for the students.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

60 Credit Plan

- PHA 790 - Seminar (COM) Credits: 1
- PHA 847 - Grant Proposal and Academic Development Credits: 3
- PHA 898D - Dissertation (COM) Credits: 1-10 (30-50 credits required)
- Other coursework as required by the graduate advisory committee Credits: 6-26

90 Credit Plan

- PHA 565 - Techniques in Pharmaceutical Research Credits: 3
- PHA 721 - Advanced Concepts in Medicinal Chemistry Credits: 3
- PHA 725 - Advanced Concepts in Biomedical Sciences and Pharmacogenomics Credits: 3
- PHA 740 - Advanced Concepts in Pharmacology Credits: 3
- PHA 760 - Advanced Concepts in Pharmaceutics Credits: 3
- PHA 790 - Seminar (COM) Credits: 1
- PHA 847 - Grant Proposal and Academic Development Credits: 3
- PHA 898D - Dissertation (COM) Credits: 1-10 (58 credits required)
- STAT 541 - Statistical Methods II Credits: 3
- Electives Credits: 9*
  *Elective courses may be selected from the pharmacy (PHA) and related disciplines (e.g. BIOS, BIOL, CHEM, ABS, STAT prefixes)

Additional Admission Requirements

The following prerequisites are the courses required for admission to the Pharmaceutical Sciences (Ph.D.) program:

- Two semesters of general chemistry
- Two semesters of organic chemistry
- One semester of biochemistry

A minimum cumulative GPA of 3.0 (scale of 4.0) in the undergraduate program.

Letters of Recommendation - Two personal reference letters from people acquainted with the academic ability and professional competence of the applicant are required.

International students, where English is not the primary language, must submit the scores of any one of the following English proficiency tests. Minimum scores required for admission include,

GRE: Not Required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

The Institutional Code for SDSU is 6653.

A Statement of Personal Goals and Philosophy - The statement should be brief and no more than one page.

Selection Criteria

The Department admits students in all three semesters, contingent upon the availability of funds and research openings in faculty laboratories. The selection is primarily based on the nature and quality of the student's research experience, and its fit to the available projects, their motivation and commitment to graduate studies as relayed in essay/personal statement and interview, and their communication skills.

General Requirements

Graduate students must consult with their advisors before registering for graduate coursework.

For additional information refer to the Doctor of Philosophy Degree Requirements.

Physics (Ph.D.)

Program Coordinator/Contact

Robert McTaggart, Assistant Department Head
Department of Chemistry, Biochemistry and Physics
Daktronics Engineering Hall 255
605-688-5428

Brian Logue, Department Head
Avera Health and Science Center 247
605-688-5151

Program Information

The Doctor of Philosophy in Physics offers an advanced curriculum designed to deepen students' understanding of the fundamental principles of physics while providing flexibility to explore emerging fields and specialized areas. This program caters to students with a strong background in physics or related disciplines, preparing them for careers in research, industry, or further academic pursuits. It extends and strengthens the knowledge of physics beyond what is offered in the M.S. in Physics. The Ph.D. in Physics supports multiple career options in industry, education, and applied research. Areas of research concentration for the Ph.D. include materials science, nuclear science, condensed matter, theoretical physics, image processing, remote sensing, biophysics, chemical physics, gravitational physics, and astrophysics.

Available Options for Graduate Degrees

Doctor of Philosophy

- 72 Credit Plan

Core Requirements

- PHYS 721 - Electrodynamics I (COM) Credits: 3
- PHYS 723 - Electrodynamics II (COM) Credits: 3
- PHYS 743 - Statistical Mechanics (COM) Credits: 3
- PHYS 751 - Classical Mechanics (COM) Credits: 3
- PHYS 761 - Nuclear and Particle Physics (COM) Credits: 3
- PHYS 771 - Quantum Mechanics I (COM) Credits: 3
- PHYS 773 - Quantum Mechanics II (COM) Credits: 3
- PHYS 790 - Seminar (COM) Credits: 1-3 (3 credits required)
- PHYS 898D - Dissertation (COM) Credits: 1-9 (36 credits required)

Select from the following

Select 12 credits from the following list. Credits: 12

- PHYS 533 - Nuclear and Elementary Particle Physics (COM) Credits: 4
- PHYS 537 - Foundations of Health Physics Credits: 3
- PHYS 539 - Condensed Matter Physics (COM) Credits: 3-4
- PHYS 549 - Computational Physics (COM) Credits: 4
- PHYS 581 - Mathematical Physics (COM) Credits: 4
- PHYS 590 - Seminar (COM) Credits: 1-2
- PHYS 591 - Independent Study (COM) Credits: 1-3
- PHYS 592 - Topics (COM) Credits: 1-3
- PHYS 691 - Independent Study (COM) Credits: 1-3
- PHYS 739 - Condensed Matter Physics I (COM) Credits: 3
- PHYS 749 - Condensed Matter Physics II Credits: 3
- PHYS 775 - General Relativity (COM) Credits: 3
- PHYS 779 - Group Theory (COM) Credits: 3
- PHYS 783 - Quantum Field Theory (COM) Credits: 3
- PHYS 785 - Astrophysics and Cosmology (COM) Credits: 3
- PHYS 792 - Topics (COM) Credits: 1-3
- Advisor Approved Electives Credits: 1-5

Candidacy Examinations

The Department uses a comprehensive examination process as its written candidacy examination for the doctorate in Physics. The exam is offered annually with physics faculty contributing to the exam. The examination problems are based on the material covered by the core courses, including Classical Mechanics, Statistical Mechanics, Electrodynamics, and Quantum Mechanics (including Nuclear and Particle Physics). The exam is to be taken after the student has substantially completed the required coursework and the exam will cover the content presented in the required coursework. The oral candidacy exam takes place within a year of completion of the written candidacy exam. For the oral examination, students are required to develop and write an original research proposal and defend it orally. In order to successfully defend such a proposal, the student must be able to integrate their coursework into the proposed research, and the oral defense reflects that expectation.

Additional Admission Requirements

GRE: General and subject score are recommended but not required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

The priority deadline for applying for admission for the fall semester is December 1. A secondary deadline is January 15. The department typically does not admit students for the spring semester unless applicants have secured funding for their graduate education. Support can come from three sources:

- Research assistantship from a professor in the department
- Personal or family funds
- Scholarship from the government or an organization

In addition to the materials required by the Graduate School, the Department of Chemistry, Biochemistry and Physics requires the following application materials:

- A one- to two-page personal statement which includes a description of undergraduate research, work experience, or other factors demonstrating a propensity toward graduate studies. The personal statement should also include a statement of the applicant's career goals. The applicant may upload this statement while completing the Graduate School's online application.
- Two letters of recommendation, preferably at least one from faculty at the applicant's undergraduate institution. Letters should come from faculty who are directly familiar with the applicant's academic work. They must address the applicant's scholarly potential and may also speak to the applicant's potential for graduate studies in the discipline. Letters should come directly from the recommenders, who may submit their letters electronically along with the personal recommendation form provided by the Graduate School. The Graduate School will email recommenders detailed instructions for submitting their recommendations using the contact information provided by the applicant.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Plant Science (Ph.D.)

Program Coordinator/Contact

Karen Sanguinet, Klingbeil Endowed Department Head
Keerthi Mandyam, Associate Professor and Graduate Coordinator
Department of Agronomy, Horticulture and Plant Science
Raven Precision Agriculture Center 140
605-688-4600

Program Information

The Agronomy, Horticulture and Plant Science Department is an integrated department that includes programs in crop production, entomology, horticulture, plant biotechnology, plant breeding, plant pathology, precision farming, soils, water management, and weed science. The primary goals of the department are to conduct research in these areas, to transmit the results to the public, and to help prepare students for an occupation in these disciplines and to become productive members of a community. Graduate training includes classroom instruction, teaching experience, seminars designed to refine oral and written skills, and meaningful experience in laboratory and field research techniques. The department encourages collaborations among disciplines and research programs that support this graduate training.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

Ph.D. students required to have 3 credits of Graduate Seminar, at least one oral and one in poster format. All students are required to have at least one teaching experience during their Ph.D. program.

- PS 781 - Plant Science Graduate Seminar Credits: 1 (3 credits required) (over three different semesters)
- PS 792 - Topics (COM) Credits: 1-6 Teaching Experience (1 credit required)

Additional Admission Requirements

GRE: Recommended, but not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Students must be accepted by an advisor before admission is granted.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Social Science (Ph.D.)

Program Coordinator/Contact

Tyler Miller, Director
Abigail Tobias-Lauerman, Assistant Professor and Graduate Coordinator
School of Psychology, Sociology and Rural Studies
Psychology, Sociology and Rural Studies 107
605-688-4322

Program Information

The Ph.D. program in Social Science is designed to prepare students for professional careers in teaching, research and creative activity, as well as applied or practice-oriented roles in academic, government, and industry settings. The program emphasizes interdisciplinary studies focused on rural life, and students are encouraged to identify areas of interest that align with faculty expertise.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

60 Credit Plan

- Social Theory Electives Credits: 6
- XXX 898D - Dissertation Credits: 18
- Electives Credits: 36

90 Credit Plan

- AHSS 701 - Ethical Theory for Social Scientists Credits: 3
- AHSS 702 - Writing for the Social Sciences Credits: 3
- Social Theory Electives Credits: 6
- Statistics/Research Electives Credits: 6
- Quantitative Statistics Electives Credits: 6
- XXX 898D - Dissertation Credits: 18
- Electives Credits: 48

Additional Admission Requirements

GRE: Not Required
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

Each applicant should have 2 signed letters of recommendation from individuals familiar with the student's academic record. It is required that applicants also include a writing sample and personal statement. The personal statement should identify the student's academic goals and describe how those goals fit with the faculty's expertise and interests.

Applications are reviewed only in the spring term (with an April 15 deadline) for admission of new students to enroll only in the following fall term.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Social Science (Ph.D.) - Environment and Rural Development Specialization

Program Coordinator/Contact

Tyler Miller, Director
Abigail Tobias-Lauerman, Assistant Professor and Graduate Coordinator
School of Psychology, Sociology and Rural Studies
Psychology, Sociology and Rural Studies 107, Box 2120
605-688-4322

Program Information

The Environment and Rural Development Specialization within the Ph.D. in Social Science prepares social scientists to conduct interdisciplinary research addressing complex social, economic, and environmental challenges that influence the growth and sustainability of rural communities. The specialization integrates perspectives across the social sciences to examine factors shaping rural development and environmental conditions.

Areas of study may include the natural and built environment, natural resources, infrastructure, industry, and economic activity. Consistent with the university's land-grant mission, the specialization emphasizes applying research to education, service, and innovation that promotes improved quality of rural life.

Graduates are prepared for careers in higher education, government, and the private sector, particularly in roles requiring advanced research, analytical, and methodological expertise.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

60 Credit Plan

- SOC 740 - Rural Community Development Credits: 3
- Environment and Rural Development Electives Credits: 9
- Social Theory Electives Credits: 6
- XXX 898D - Dissertation Credits: 18
- Electives Credits: 24

90 Credit Plan

- AHSS 701 - Ethical Theory for Social Scientists Credits: 3
- AHSS 702 - Writing for the Social Sciences Credits: 3
- SOC 740 - Rural Community Development Credits: 3
- Environment and Rural Development Electives Credits: 9
- Social Theory Electives Credits: 6
- Statistics/Research Electives Credits: 6
- Quantitative Statistics Electives Credits: 6
- XXX 898D - Dissertation Credits: 18
- Electives Credits: 36

Additional Admission Requirements

GRE: Not Required
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

Each applicant should have 2 signed letters of recommendation from individuals familiar with the student's academic record. It is required that applicants also include a writing sample and personal statement. The personal statement should identify the student's academic goals and describe how those goals fit with the faculty's expertise and interests.

Applications are reviewed only in the spring term (with an April 15 deadline) for admission of new students to enroll only in the fall term.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Social Science (Ph.D.) - Rural Well-being Specialization

Program Coordinator/Contact

Tyler Miller, Director
Abigail Tobias-Lauerman, Assistant Professor and Graduate Coordinator
School of Psychology, Sociology and Rural Studies
Psychology, Sociology and Rural Studies 107
605-688-4322

Program Information

The Rural Well-being Specialization within the Ph.D. in Social Science prepares social scientists to engage in interdisciplinary research focused on complex social challenges that impact the health and quality of life of rural people and their communities. The specialization integrates perspectives across the social sciences to examine factors influencing rural well-being.

Areas of study may include culture, communication, food access, education, engagement in the arts and humanities, healthcare, housing, recreation, safety, transportation, and the availability of professional services. Consistent with the university's land-grant mission, the specialization emphasizes applying research to education, service, and innovation that promotes improved quality of rural life.

Graduates are prepared for careers in higher education, government, and the private sector, particularly in roles requiring advanced research, analytical, and methodological expertise.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

60 Credit Plan

- HSC 502 - Rural Healthcare Matters Credits: 3
- Rural Well-being Electives Credits: 9
- Social Theory Electives Credits: 6
- XXX 898D - Dissertation Credits: 18
- Electives Credits: 24

90 Credit Plan

- AHSS 701 - Ethical Theory for Social Scientists Credits: 3
- AHSS 702 - Writing for the Social Sciences Credits: 3
- HSC 502 - Rural Healthcare Matters Credits: 3
- Rural Well-being Electives Credits: 9
- Social Theory Electives Credits: 6
- Statistics/Research Electives Credits: 6
- Quantitative Statistics Electives Credits: 6
- XXX 898D - Dissertation Credits: 18
- Electives Credits: 36

Additional Admission Requirements

GRE: Not Required
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

Each applicant should have 2 signed letters of recommendation from individuals familiar with the student's academic record. It is required that applicants also include a writing sample and personal statement. The personal statement should identify the student's academic goals and describe how those goals fit with the faculty's expertise and interests.

Applications are reviewed only in the spring term (with an April 15 deadline) for admission of new students to enroll only in the fall term.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Wildlife and Fisheries Sciences (Ph.D.)

Program Coordinator/Contact

Alexander (Sandy) Smart, Interim Department Head and Professor
Joshua Leffler, Assistant Department Head and Professor
Department of Natural Resource Management
Edgar S. McFadden Biostress Laboratory 138
605-688-6121

Program Information

The Ph.D. degree program in Wildlife and Fisheries Sciences is intended to educate students for upper-level management, research and administrative positions with state and federal agencies, private companies, and academic institutions. Academic career opportunities also exist for Ph.D. graduates in all the Departmental disciplines, preparing students for the responsibilities of teaching, research, and service, required for faculty positions with universities and colleges. By building on the educational foundation that students obtain from B.S. and M.S. degree work, we endeavor to raise them to a higher intellectual plateau. While coursework is involved, this educational experience is primarily based on research and mentoring. This degree requires original thought and research contributions, synthesis and development of information, and contributions to the world and its natural resources.

Certification and Licensure

Certification is available through the American Fisheries Society and The Wildlife Society.

Available Options for Graduate Degrees

Doctor of Philosophy

- 60 Credit Plan
- 90 Credit Plan

Core Requirements

60 Credit Plan

- GSR 601 - Research Regulations Compliance Credits: 1
- NRM 582 - Natural Resource Management Biometry Credits: 2
  and NRM 582L - Natural Resource Management Biometry Lab Credits: 1
  or WL 720 - Quantitative Fisheries Science Credits: 3
  or STAT course numbered 500-level or higher
  or an additional course approved by committee
- NRM 790 - Seminar (COM) Credits: 1 (2 credits required)
- WL 898D - Dissertation (COM) Credits: 1-12 (30-40 credits required)
- Additional course credits designed to meet individual interests and needs as required by the student's Advisory Committee. Credits: 14-24

90 Credit Plan

- GSR 601 - Research Regulations Compliance Credits: 1
- NRM 582 - Natural Resource Management Biometry Credits: 2
  and NRM 582L - Natural Resource Management Biometry Lab Credits: 1
  or WL 720 - Quantitative Fisheries Science Credits: 3
  or STAT course numbered 500-level or higher
  or an additional course approved by committee
- NRM 790 - Seminar (COM) Credits: 1 (2 credits required)
- WL 898D - Dissertation (COM) Credits: 1-12 (40-50 credits required)
- Additional course credits designed to meet individual interests and needs as required by the student's Advisory Committee. Credits: 33-44

Additional Admission Requirements

GRE: Not Required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Admission to all degree programs requires that a faculty member from the department agrees to serve as the major advisor.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Philosophy Degree Requirements.

Professional Doctoral Degrees

Nursing (D.N.P.)

Program Coordinator/Contact

Cami Veire, Nursing Advisor and Graduate Specialist
Graduate Nursing
SDSU Nursing - Sioux Falls
2400 S Minnesota Ave, Room 182
Sioux Falls, SD 57107
605-688-2165

Program Information

The DNP program was established in 2009. The purpose of the DNP program is to prepare Advanced Practice Registered Nurses (APRNs) to transform clinical practice as expert clinicians and leaders with a special focus on rural and underserved populations.

The program is open to registered nurses with a master's degree in nursing with certification and licensure as a CNP, CRNA, CNS, and CNM. The program is designed for part-time study (including summers) and requires 31-40 course credits.

Accreditation

The baccalaureate degree program in nursing, master's degree program in nursing, Doctor of Nursing Practice program and postgraduate advanced practice registered nurse certificate program at South Dakota State University are accredited by the Commission on Collegiate Nursing Education.

South Dakota State University College of Nursing Healthcare Simulation Center has full accreditation by the Society for Simulation in Healthcare in teaching/education. This status will be granted from Oct. 25, 2022, through Dec. 31, 2027.

Certification and Licensure

Students must provide evidence of professional registration by submitting a copy of the most current RN and APRN license.

Available Options for Graduate Degrees

Doctor of Nursing Practice

- Post Master's to DNP: 31-40 Credit Hours

Core Requirements

Post Master's to D.N.P.

For additional information, refer to the Graduate Nursing Department webpage.

*NURS 875 credits are taken to reach 1000 hours and may vary by student. This program is taken by students that are already advanced practice nurses (master's prepared) so their master's education practicum hours are applied to their DNP.

- HSC 631 - Biostatistics I Credits: 3
- NURS 750 - Transformational Leadership in Nursing Credits: 3
- NURS 772 - Healthcare Technology and Informatics Credits: 3
- NURS 783 - Healthcare System Management and Evaluation Credits: 3
- NURS 789 - DNP Capstone I Credits: 1
- NURS 835 - Ethical Issues Influencing Practice and Research in Health Credits: 2
- NURS 850 - Philosophical and Theoretical Foundations for Evidence-Based Care Credits: 3
- NURS 855 - Translational Research in Health Care Credits: 3
- NURS 860 - Health Operations and Financial Management for Nurse Leaders Credits: 3
- NURS 875 - DNP Intensive Credits: 1-9 (0-9 credits required) *
- NURS 880 - DNP Project (COM) Credits: 1-8 (6 credits required)
- NURS 889 - DNP Capstone II Credits: 1

Total Required Credits: 31-40 (Post Master's to D.N.P.)

Additional Admissions Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the Post Master to Doctor of Nursing Practice (who possess current certification as a NP, CRNA, CNM or CNS) must have:

- Current, unencumbered licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- National certification and licensure as a NP, CRNA, CNM, or CNS.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Interview assessment reviewed by graduate faculty.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree in nursing (from an ACEN or CCNE accredited program) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- A degree deemed equivalent (by the World Education Service) to a Master's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Nursing Practice Degree Requirements.

Nursing (D.N.P.) - Clinical Nurse Leader Specialization

Program Coordinator/Contact

Cami Veire, Nursing Advisor and Graduate Specialist
Graduate Nursing
SDSU Nursing - Sioux Falls
2400 S Minnesota Ave, Room 182
Sioux Falls, SD 57107
605-688-2165

Program Information

The Nursing (D.N.P.) - Clinical Nurse Leader Specialization program prepares nurses to assume advanced roles as Clinical Nurse Leaders (CNLs) to transform clinical practice as expert clinicians and leaders, focusing on rural and underserved populations.

Accreditation

The baccalaureate degree program in nursing, master's degree program in nursing, Doctor of Nursing Practice program and postgraduate advanced practice registered nurse certificate program at South Dakota State University are accredited by the Commission on Collegiate Nursing Education.

South Dakota State University College of Nursing Healthcare Simulation Center has full accreditation by the Society for Simulation in Healthcare in teaching/education. This status will be granted from Oct. 25, 2022, through Dec. 31, 2027.

Certification and Licensure

Students must provide evidence of professional registration by submitting a copy of the most current RN license.

Upon completion of the Clinical Nurse Leader Specialization, students may be eligible for the following certifications:

National Certification Eligibility	Certifying Body
Clinical Nurse Leader (CNL)* *requires graduation from a CNL master's education program or a student in their last term of a CNL education program that meets the	Commission on Nurse Certification (CNC)

National Certification Eligibility	Certifying Body
criteria delineated in the CNL Competencies and Curricular Expectations for Clinical Nurse Leader[SM] Education and Practice are eligible to sit for this certification examination.	

Available Options for Graduate Degrees

Doctor of Nursing Practice

- Post Master's to DNP: 28 Credit Hours
- B.S.N. to DNP: 64 Credit Hours

Core Requirements

Post Master's to DNP

For additional information, refer to the Graduate Nursing Department webpage.

- HSC 502 - Rural Healthcare Matters Credits: 3
- HSC 631 - Biostatistics I Credits: 3
- NURS 644 - Introduction to the Clinical Nurse Leader Role Credits: 1
- NURS 644L - Introduction to the Clinical Nurse Leader Role Practicum Credits: 3
- NURS 750 - Transformational Leadership in Nursing Credits: 3
- NURS 772 - Healthcare Technology and Informatics Credits: 3
- NURS 783 - Healthcare System Management and Evaluation Credits: 3
- NURS 784 - Quality Metrics for the CNL Credits: 2
- NURS 784L - Quality Metrics for the CNL Practicum Credits: 2
- NURS 800 - Introduction to the DNP-CNL Project Credits: 1
- NURS 800L - Introduction to the DNP-CNL Project Practicum Credits: 2
- NURS 870 - DNP Project Proposal Development Credits: 2

Total Required Credits: 28 (Post Master's to DNP)

B.S.N. to DNP

For additional information, refer to the Graduate Nursing Department webpage.

- HSC 502 - Rural Healthcare Matters Credits: 3
- HSC 631 - Biostatistics I Credits: 3
- NURS 615 - Foundations of Advanced Nursing Credits: 3
- NURS 623 - Pathophysiology Across the Lifespan - Application to Advanced Practice Nursing Credits: 2-4 (2 credits required)
- NURS 626 - Research in Nursing and Health Care Credits: 3
- NURS 630 - Advanced Assessment Across the Lifespan for the CNL/Nurse Educator Credits: 3
- NURS 644 - Introduction to the Clinical Nurse Leader Role Credits: 1
- NURS 644L - Introduction to the Clinical Nurse Leader Role Practicum Credits: 3
- NURS 645 - CNL Improvement Science: A Microsystem Approach Credits: 3
- NURS 645L - CNL Improvement Science: A Microsystem Approach Practicum Credits: 2
- NURS 646 - CNL Clinical Immersion and Project Credits: 1
- NURS 646L - CNL Clinical Immersion and Project Practicum Credits: 5
- NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3
- NURS 675 - Cultivating a Practice of Cultural Humility in Healthcare Credits: 3
- NURS 750 - Transformational Leadership in Nursing Credits: 3
- NURS 760 - Advanced Concepts in Health Promotion and Disease Prevention Credits: 3
- NURS 772 - Healthcare Technology and Informatics Credits: 3
- NURS 783 - Healthcare System Management and Evaluation Credits: 3
- NURS 784 - Quality Metrics for the CNL Credits: 2
- NURS 784L - Quality Metrics for the CNL Practicum Credits: 2
- NURS 800 - Introduction to the DNP-CNL Project Credits: 1
- NURS 800L - Introduction to the DNP-CNL Project Practicum Credits: 2
- NURS 860 - Health Operations and Financial Management for Nurse Leaders Credits: 3
- NURS 870 - DNP Project Proposal Development Credits: 2
- PHA 645 - Pharmacotherapeutics Across the Lifespan: Application to Advanced Practice Credits: 2-4 (2 credits required)

Total Required Credits: 64 (B.S.N. to DNP)

Additional Admissions Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Additional Admission Requirements for Master's to Doctor of Nursing Practice

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the Master's to Doctor of Nursing Practice – Clinical Nurse Leader Specialization must have:

- Current, unencumbered licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to taking Advanced Physical Assessment (Lifespan).
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.
- Interview assessment reviewed by graduate faculty.

For Master's to DNP applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an Accreditation Commission for Education in Nursing- or Commission on Collegiate Nursing Education-accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0-point grading system.
- Master's degree in nursing (from an Accreditation Commission for Education in Nursing- or Commission on Collegiate Nursing Education-accredited program) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0-point grading system.

For Master's to DNP applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a bachelor's degree in nursing (within the United States education system) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0-point grading system.
- A degree deemed equivalent (by the World Education Service) to a master's degree in nursing (within the United States education system) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0-point grading system.

Additional Admission Requirements for Bachelor's to Doctor of Nursing Practice

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the Bachelor's to Doctor of Nursing Practice – Clinical Nurse Leader Specialization must have:

- Current, unencumbered licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to taking Advanced Physical Assessment (Lifespan).
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Interview assessment reviewed by graduate faculty.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Accelerated Graduate Program

The accelerated graduate program will be available to eligible SDSU students. Up to 12 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Nursing Practice Degree Requirements.

Nursing (D.N.P.) - Family Nurse Practitioner Specialization

Program Coordinator/Contact

Cami Veire, Nursing Advisor and Graduate Specialist
Graduate Nursing
SDSU Nursing - Sioux Falls
2400 S Minnesota Ave, Room 182
Sioux Falls, SD 57107
605-688-2165

Program Information

The DNP program was established in 2009. The purpose of the DNP program is to prepare Advanced Practice Registered Nurses (APRNs) to transform clinical practice as expert clinicians and leaders with a special focus on rural and underserved populations.

Accreditation

The baccalaureate degree program in nursing, master's degree program in nursing, Doctor of Nursing Practice program and postgraduate advanced practice registered nurse certificate program at South Dakota State University are accredited by the Commission on Collegiate Nursing Education.

South Dakota State University College of Nursing Healthcare Simulation Center has full accreditation by the Society for Simulation in Healthcare in teaching/education. This status will be granted from Oct. 25, 2022, through Dec. 31, 2027.

Certification and Licensure

Students must provide evidence of professional registration by submitting a copy of the most current RN license.

After completing the program of study, graduates may be eligible to complete certification through several professional organizations.

Specialization	National Certification Eligibility
Family Nurse Practitioner Specialization	ANCC and AANPCB certification examinations American Nurses Credentialing Center (ANCC) American Academy of Nurse Practitioners Certification Board (AANPCB)

Available Options for Graduate Degrees

Doctor of Nursing Practice

- Post Master's to DNP: 57 Credit Hours
- B.S.N. to DNP: 78 Credit Hours

Core Requirements

Post Master's to DNP

For additional information, refer to the Graduate Nursing Department webpage.

- HSC 631 - Biostatistics I Credits: 3
- NURS 750 - Transformational Leadership in Nursing Credits: 3
- NURS 764 - Introduction to FNP Credits: 5
- NURS 765 - FNP Integration: Practicum I Credits: 4
- NURS 765L - FNP Integration Practicum I Lab Credits: 1
- NURS 768 - FNP Integration: Practicum II Credits: 4
- NURS 771 - FNP Integration: Practicum III Credits: 6
- NURS 772 - Healthcare Technology and Informatics Credits: 3
- NURS 776 - FNP Integration: Practicum IV Credits: 6
- NURS 783 - Healthcare System Management and Evaluation Credits: 3
- NURS 789 - DNP Capstone I Credits: 1
- NURS 835 - Ethical Issues Influencing Practice and Research in Health Credits: 2
- NURS 850 - Philosophical and Theoretical Foundations for Evidence-Based Care Credits: 3
- NURS 855 - Translational Research in Health Care Credits: 3
- NURS 860 - Health Operations and Financial Management for Nurse Leaders Credits: 3
- NURS 880 - DNP Project (COM) Credits: 1-8 (6 credits required)
- NURS 889 - DNP Capstone II Credits: 1

Total Required Credits: 57 (Post Master's to DNP)

B.S.N. to DNP

For additional information, refer to the Graduate Nursing Department webpage.

- HSC 631 - Biostatistics I Credits: 3
- NURS 615 - Foundations of Advanced Nursing Credits: 3
- NURS 623 - Pathophysiology Across the Lifespan - Application to Advanced Practice Nursing Credits: 2-4 (4 credits required)
- NURS 631 - Advanced Assessment Across the Lifespan Credits: 3
- NURS 631L - Advanced Assessment - Lifespan Clinical Laboratory Credits: 1
- NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3
- NURS 750 - Transformational Leadership in Nursing Credits: 3
- NURS 760 - Advanced Concepts in Health Promotion and Disease Prevention Credits: 3
- NURS 764 - Introduction to FNP Credits: 5
- NURS 765 - FNP Integration: Practicum I Credits: 4
- NURS 765L - FNP Integration Practicum I Lab Credits: 1
- NURS 768 - FNP Integration: Practicum II Credits: 4
- NURS 771 - FNP Integration: Practicum III Credits: 6
- NURS 772 - Healthcare Technology and Informatics Credits: 3
- NURS 776 - FNP Integration: Practicum IV Credits: 6
- NURS 783 - Healthcare System Management and Evaluation Credits: 3
- NURS 789 - DNP Capstone I Credits: 1
- NURS 835 - Ethical Issues Influencing Practice and Research in Health Credits: 2
- NURS 850 - Philosophical and Theoretical Foundations for Evidence-Based Care Credits: 3
- NURS 855 - Translational Research in Health Care Credits: 3
- NURS 860 - Health Operations and Financial Management for Nurse Leaders Credits: 3
- NURS 880 - DNP Project (COM) Credits: 1-8 (6 credits required)
- NURS 889 - DNP Capstone II Credits: 1

Total Required Credits: 78 (B.S.N. to DNP)

Additional Admissions Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Additional Admissions Requirements for Post Master's to Doctor of Nursing Practice

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the Post Master's to Doctor of Nursing Practice - Family Nurse Practitioner Specialization must have:

- Current, unencumbered licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- Students who have not previously completed Advanced Physical Assessment (Lifespan), Advanced Pathophysiology (Lifespan), Advanced Pharmacology / Pharmacotherapeutics (Lifespan) or equivalent coursework will be required to complete those courses as part of this program. All previous coursework will need to be evaluated for equivalency and approved by the Associate Dean for Graduate Nursing.
- 1500 hours of documented nursing practice experience prior to taking Advanced Physical Assessment (Lifespan).
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Interview assessment reviewed by graduate faculty.

- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree in nursing (from an ACEN or CCNE accredited program) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- A degree deemed equivalent (by the World Education Service) to a Master's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Additional Admission Requirements for Bachelor's to Doctor of Nursing Practice

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the Bachelor's to Doctor of Nursing Practice - Family Nurse Practitioner Specialization must have:

- Current, unencumbered licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to taking Advanced Physical Assessment (Lifespan).
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Interview assessment reviewed by graduate faculty.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Accelerated Graduate Program

The accelerated graduate program will be available to eligible SDSU students. Up to 6 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Nursing Practice Degree Requirements.

Nursing (D.N.P.) - Psychiatric Mental Health Nurse Practitioner Specialization

Program Coordinator/Contact

Cami Veire, Nursing Advisor and Graduate Specialist
Graduate Nursing
SDSU Nursing - Sioux Falls
2400 S Minnesota Ave, Room 182
Sioux Falls, SD 57107
605-688-2165

Program Information

The DNP program was established in 2009. The purpose of the DNP program is to prepare Advanced Practice Registered Nurses (APRNs) to transform clinical practice as expert clinicians and leaders with a special focus on rural and underserved populations.

Accreditation

The baccalaureate degree program in nursing, master's degree program in nursing, Doctor of Nursing Practice program and postgraduate advanced practice registered nurse certificate program at South Dakota State University are accredited by the Commission on Collegiate Nursing Education.

South Dakota State University College of Nursing Healthcare Simulation Center has full accreditation by the Society for Simulation in Healthcare in teaching/education. This status will be granted from Oct. 25, 2022, through Dec. 31, 2027.

Certification and Licensure

Students must provide evidence of professional registration by submitting a copy of the most current RN license.

After completing the program of study, graduates are eligible to complete certification through the American Nurses Credentialing Center (ANCC).

National Certification Eligibility	Certifying Body
Psychiatric-Mental Health Nurse Practitioner (Across the Lifespan) Certification (PMHNP-BC)	American Nurses Credentialing Center (ANCC)
Psychiatric-Mental Health Nurse Practitioner Certification (PMHNP)	American Academy of Nurse Practitioners (AANP)

Available Options for Graduate Degrees

Doctor of Nursing Practice

- Post Master's to DNP: 45-57 Credit Hours
- B.S.N. to DNP: 78 Credit Hours

Core Requirements

Post Master's to DNP

For additional information, refer to the Graduate Nursing Department webpage.

**Practicum credits taken to reach 1000 clinical hours.

- HSC 631 - Biostatistics I Credits: 3
- NURS 732 - Psychopharmacology and Neurobiology Across the Lifespan Credits: 2
- NURS 733 - Psychopathological Disorders Across the Lifespan Credits: 2
- NURS 734 - Theories and Interventions for Individuals and Groups Credits: 2
- NURS 734L - Theories and Interventions for Individuals and Groups Practicum Credits: 1
- NURS 735 - Advanced Psychiatric Assessment and Differential Diagnosis Across the Lifespan Credits: 2
- NURS 736 - Psychiatric/Mental Health Advanced Practice Across the Lifespan I Credits: 1-5 **
- NURS 737 - Psychiatric/Mental Health Advanced Practice Across the Lifespan II Credits: 1-5 **
- NURS 749 - PMHNP Integration Practice Initiation Credits: 1-5 **
- NURS 750 - Transformational Leadership in Nursing Credits: 3
- NURS 772 - Healthcare Technology and Informatics Credits: 3
- NURS 783 - Healthcare System Management and Evaluation Credits: 3
- NURS 789 - DNP Capstone I Credits: 1
- NURS 835 - Ethical Issues Influencing Practice and Research in Health Credits: 2
- NURS 849 - PMHNP Integration Synthesis Credits: 1
- NURS 849L - PMHNP Integration Synthesis Practicum Credits: 1
- NURS 850 - Philosophical and Theoretical Foundations for Evidence-Based Care Credits: 3
- NURS 855 - Translational Research in Health Care Credits: 3
- NURS 860 - Health Operations and Financial Management for Nurse Leaders Credits: 3
- NURS 880 - DNP Project (COM) Credits: 1-8 (6 credits required)
- NURS 889 - DNP Capstone II Credits: 1

Total Required Credits: 45-57 (Post Master's to DNP)

B.S.N. to DNP

For additional information, refer to the Graduate Nursing Department webpage.

- HSC 631 - Biostatistics I Credits: 3

- NURS 615 - Foundations of Advanced Nursing Credits: 3
- NURS 623 - Pathophysiology Across the Lifespan - Application to Advanced Practice Nursing Credits: 2-4 (4 credits required)
- NURS 631 - Advanced Assessment Across the Lifespan Credits: 3
- NURS 631L - Advanced Assessment - Lifespan Clinical Laboratory Credits: 1
- NURS 670 - Health Policy, Legislation, Economics and Ethics Credits: 3
- NURS 732 - Psychopharmacology and Neurobiology Across the Lifespan Credits: 2
- NURS 733 - Psychopathological Disorders Across the Lifespan Credits: 2
- NURS 734 - Theories and Interventions for Individuals and Groups Credits: 2
- NURS 734L - Theories and Interventions for Individuals and Groups Practicum Credits: 1
- NURS 735 - Advanced Psychiatric Assessment and Differential Diagnosis Across the Lifespan Credits: 2
- NURS 736 - Psychiatric/Mental Health Advanced Practice Across the Lifespan I Credits: 1-5 (5 credits required)
- NURS 737 - Psychiatric/Mental Health Advanced Practice Across the Lifespan II Credits: 1-5 (5 credits required)
- NURS 749 - PMHNP Integration Practice Initiation Credits: 1-5 (5 credits required)
- NURS 750 - Transformational Leadership in Nursing Credits: 3 (5 credits required)
- NURS 760 - Advanced Concepts in Health Promotion and Disease Prevention Credits: 3
- NURS 772 - Healthcare Technology and Informatics Credits: 3
- NURS 783 - Healthcare System Management and Evaluation Credits: 3
- NURS 789 - DNP Capstone I Credits: 1
- NURS 835 - Ethical Issues Influencing Practice and Research in Health Credits: 2
- NURS 849 - PMHNP Integration Synthesis Credits: 1
- NURS 849L - PMHNP Integration Synthesis Practicum Credits: 1
- NURS 850 - Philosophical and Theoretical Foundations for Evidence-Based Care Credits: 3
- NURS 855 - Translational Research in Health Care Credits: 3
- NURS 860 - Health Operations and Financial Management for Nurse Leaders Credits: 3
- NURS 880 - DNP Project (COM) Credits: 1-8 (6 credits required)
- NURS 889 - DNP Capstone II Credits: 1
- PHA 645 - Pharmacotherapeutics Across the Lifespan: Application to Advanced Practice Credits: 2-4 (4 credits required)

Total Required Credits: 78 (B.S.N. to DNP)

Additional Admissions Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5
Duolingo: 110

Additional Admissions Requirements for Post Master's to Doctor of Nursing Practice

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the Post Master's to Doctor of Nursing Practice - Psychiatric Mental Health Nurse Practitioner must have:

- Current, unencumbered licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- Students who have not previously completed Advanced Physical Assessment (Lifespan), Advanced Pathophysiology (Lifespan), Advanced Pharmacology / Pharmacotherapeutics (Lifespan) or equivalent coursework will be required to complete those courses as part of this program. All previous coursework will need to be evaluated for equivalency and approved by the Associate Dean for Graduate Nursing.
- 1500 hours of documented nursing practice experience prior to taking Advanced Physical Assessment (Lifespan).
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Interview assessment reviewed by graduate faculty.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree in nursing (from an ACEN or CCNE accredited program) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- A degree deemed equivalent (by the World Education Service) to a Master's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Additional Admission Requirements for Bachelor's to Doctor of Nursing Practice

In addition to meeting the Graduate School admission requirements, applicants for graduate study for the B.S.N. to Doctor of Nursing Practice - Psychiatric Mental Health Nurse Practitioner Specialization must have:

- Current, unencumbered licensure as a Registered Nurse in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to taking Advanced Physical Assessment (Lifespan).
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Interview assessment reviewed by graduate faculty.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Accelerated Graduate Program

The accelerated graduate program will be available to eligible SDSU students. Up to 12 credits applied to the undergraduate degree may be used to satisfy graduate credit. Students must follow SDSU Policy 2:22 Use of Graduate Credit for Undergraduate Degree Requirements.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework. For additional information, refer to the Doctor of Nursing Practice Degree Requirements.

Pharmacy (Pharm.D.)

Program Coordinator/Contact

Brad Laible, Associate Dean for Academic Programs
James Clem, Associate Dean of Student Services
College of Pharmacy and Allied Health Professions
Avera Health and Science Center 133
605-688-6197

Program Information

The College of Pharmacy and Allied Health Professions offers a six-year course of study (2-year pre-pharmacy and 4-year professional program phase) leading to an entry level Doctor of Pharmacy degree. The Pharm.D. is a professional degree which enables graduates to pursue a wide range of career opportunities and

prepares them for future changes in the profession. The program provides unique opportunities for students who want to make a significant contribution to the health care needs of today's society.

Refer to the Undergraduate Catalog for the course requirements for the first two years of the professional program.

Accreditation

The Pharm.D. program is accredited by the Accreditation Council for Pharmacy Education, 190 S. LaSalle Street, Suite 2850, Chicago, IL 60603-3499.

Certification and Licensure

Graduates with a Doctor of Pharmacy degree are eligible to apply for licensure in any state. Licensure as a pharmacist requires graduation with the Pharm.D. degree from an accredited pharmacy program, a certified period of supervised internship experience and successful completion of the North American Pharmacist Licensure Examination and the Multistate Pharmacy Jurisprudence Examination in order to practice as a pharmacist.

These requirements vary slightly from state to state. Students interested in practicing in a particular state should contact the Board of Pharmacy of that state for information concerning requirements.

Course Delivery Format

The curriculum is divided into a 2-year pre-pharmacy and a 4-year Pharm.D. professional program phase. The pre-pharmacy courses provide a solid knowledge base and ability to use critical thought processes in the biological and physical sciences.

The four years of the Pharm.D. professional program incorporate a solid foundation of pharmaceutical science courses as well as a comprehensive sequence of therapeutics and professional practice courses. Students earn a B.S. in Pharmaceutical Sciences after successful completion of the first two years of the Pharm.D. professional program. The application of drug knowledge, basic science, and critical thinking to resolve problems of drug distribution and patient care are emphasized throughout the curriculum. In their first three years of the Pharm.D. program, students gain initial practice experience through introductory pharmacy practice experiences in settings such as community and hospital pharmacies.

In the final year of the Pharm.D. program, students have an opportunity to apply knowledge and pharmacy care principles to pharmacy practice situations in a series of advanced pharmacy practice experiences in a variety of patient care settings which include patient care areas of hospitals, nursing homes, community pharmacies, hospital pharmacies, Indian Health Service facilities, and clinic pharmacies.

Program Admission

Preparation for the Major

In high school the student should take an academic curriculum in preparation for entrance to college. A sound foundational education in science and mathematics courses is an essential part of preparation for the study of pharmacy. Good written and verbal communication skills are important. Students planning to transfer from another college or university should consult with the College of Pharmacy and Allied Health Professions early in their academic careers to plan coursework that will transfer and meet the admission requirements.

Application Process

All students seeking admission to the 4-year professional program leading to the Doctor of Pharmacy degree must submit an application for the professional program. Applications are available from the College of Pharmacy and Allied Health Professions website. The priority deadline for applying for admission for the fall semester is February 1. Limitations in the size of the physical facilities, the number of faculty, and the number of advanced pharmacy practice experience sites make it necessary to limit the class size in the professional program. Each student admitted into the professional program is required to authorize and pay for a criminal background check. The background check report is automatically sent to the student and to the College and must be approved by the Admissions Committee.

Selection is competitive and based upon several factors including pre-pharmacy coursework, written and oral communication skills, knowledge of the profession, residency status and other factors. Any student who anticipates successful completion of the pre-pharmacy mathematics, science and communication requirements prior to fall semester is eligible to apply.

Notification of acceptance into the professional program will be made by March 15 for students that apply by the February 1 priority deadline. Students admitted to the professional program must submit a non-refundable pharmacy major fee to secure their position for the fall semester.

Early Assurance Pathway

Admission to the Pharm.D. Program by Early Assurance will require a student to:

- Submit an undergraduate admission application to SDSU
- Meet SDSU Freshmen Admission Requirements
- Submit an application for Early Assurance during senior year of high school
- Successfully complete an interview prior to the start of the Freshman year.

Progression into the 4-year core Pharm.D. curriculum will require:

- Overall cumulative GPA > 3.0
- By the end of the fall semester that precedes the beginning of the desired Pharm.D. start date, students must have completed 7 of the 10 required math and science courses with a grade point average of at least 2.7 and no grade lower than C. Required courses are general chemistry, organic chemistry, general biology, calculus, microbiology, anatomy, physiology, statistics, and seminar pre-pharmacy coursework. Refer to the Additional Admissions Requirements section below for a list of courses.
- In their fourth semester, successful candidates must earn a grade of 'C' or better in the remaining required math and science courses and successfully pass an impromptu writing assessment.
    - Any student who is unable to meet the grade requirements listed above, will lose their place in the professional program. Students who lose their place in this manner may re-take courses to try to meet the academic requirements and re-apply through the traditional 4-year Pharm.D. application process.

Traditional Pathway

Applicants to the Doctor of Pharmacy (Pharm.D.) program will submit:

- The completed application
- Official transcripts
- Contact information for two references
- A short essay on the topic of "Why I want to obtain a Doctor of Pharmacy Degree at SDSU"
- A completed shadowing form
- Documentation of ACT, SAT, or PCAT scores is optional

The program requires an interview with the Pharmacy Admissions Committee before we make the final selections for the new Fall class. Those selected are required to send a non-refundable deposit to secure enrollment for the fall semester. Students must pass a criminal background check before final approval for admission into the professional program.

Curriculum Notes

- Eligible for B.S. in Pharmaceutical Sciences after completion of all general education requirements, 300- and 400-level required PHA courses, and general elective credits for a total of 138 credits.
- Successful completion of capstone activities are required as part of the degree requirements for both the B.S. in Pharmaceutical Sciences and the Doctor of Pharmacy degrees.
- P3 year courses are taught in Sioux Falls.
- Introductory Pharmacy Practice Experiences (IPPEs) occur throughout the P1 – P3 years and may be completed during summer, fall, and spring semesters
- Advanced Pharmacy Practice Experiences (APPEs) occur in the P4 year and are completed during summer, fall, and spring semesters.

Pharmacy Regulations

Students in the College of Pharmacy and Allied Health Professions are governed by the regulations which apply to all students at SDSU but are also governed by requirements established by the College. These requirements are presented in detail in the Pharmacy Student Handbook and include:

Progression

Progression standards for students in the Pharm.D. program are set to ensure graduates are prepared to provide pharmacy services to the public. The integrated curriculum relies on information and skills garnered in previous courses and therefore, students' success depends on achieving a minimum level of performance in each course. Minimum level of performance is defined as a grade of C or better based on University Catalog grade definitions. A grade of D is defined in terms of "insufficient" and "inadequate" according to the University Catalog. A grade of F is defined in terms of "failure." D, F, and U (unsatisfactory) grades do not represent a minimum level of performance needed to develop skills, abilities, and knowledge of a general practitioner.

Refused Status - A student will be placed on refused status if the student:

a. Earns a D, F, or U in a pharmacy course.

b. Does not complete the Pharm.D. program within six years of starting the professional program.

Class Standing Requirements

Standing - In order for students to enroll in the fall semester of the pharmacy program, students must meet the class standing requirement. These are defined as follows (note: "completion" means a passing grade in each pharmacy course and maintaining semester and cumulative PHA GPA requirements):

P1 Year Standing - The student must have been admitted into the professional program.

P2 Year Standing - Completion of all PHA 300 level required courses and PHA 119/101 and PHA 219.

P3 Year Standing - Completion of all PHA 400 level required courses. PHA 610, a bachelor's degree, and all capstone activities are required to begin the fall semester. Completion of all required PHA 700, non-advanced pharmacy practice experience courses are required to progress to the subsequent semester.

P4 Year Standing - Completion of all PHA 600-700 level required, non-advanced pharmacy practice experience courses, and 300 hours of IPPE.

Available Options for Graduate Degrees

Doctor of Pharmacy (Pharm.D.)

- 80 Credit Hours

Core Requirements

Must have a bachelor's degree to begin the P3, 600-700 level courses.

- PHA 610 - Introductory Practice Experience II Credits: 3 [2]
- PHA 714 - Community Pharmacy Care Practice Experience Credits: 5
- PHA 716 - Hospital/Health-System Pharmacy Practice Experience Credits: 5
- PHA 719L - Pharmacy Capstone Credits: 1
- PHA 724 - U.S. Health Care Systems Credits: 2
- PHA 726L - Integrated Pharmacy Laboratory III Credits: 1
- PHA 727 - Professional Resources Management Credits: 4
- PHA 741 - Public and Population Health Credits: 2
- PHA 742 - Self Care Pharmacotherapeutics II Credits: 2
- PHA 756 - Pharmacotherapeutics III Credits: 4
- PHA 757 - Pharmacotherapeutics IV Credits: 4
- PHA 761 - Pharmacotherapeutics V Credits: 5
- PHA 762 - Pharmacotherapeutics VI Credits: 5
- PHA 763L - Pharmacy Skills Laboratory V Credits: 1
- PHA 764L - Pharmacy Skills Laboratory VI Credits: 1
- PHA 772 - Internal Medicine I Practice Experience Credits: 5
- PHA 774 - Ambulatory Care I Practice Experience Credits: 5

Assigned Advanced Pharmacy Practice Experiences

Select 10 credits from the following. Advanced Pharmacy Practice Experiences (APPEs) are completed during summer sessions, fall, and spring semesters. Credits: 10

- PHA 700 - Directed Studies Practice Experience Credits: 4-5
- PHA 706 - Critical Care Practice Experience Credits: 5
- PHA 707 - Infectious Disease Practice Experience Credits: 5
- PHA 711 - Oncology Practice Experience Credits: 5
- PHA 770 - Pediatrics Practice Experience Credits: 5
- PHA 773 - Internal Medicine II Practice Experience Credits: 5
- PHA 775 - Psychiatry Practice Experience Credits: 5
- PHA 776 - Ambulatory Care II Practice Experience Credits: 5
- PHA 777 - Pharmacogenomics Practice Experience Credits: 5

Elective Advanced Pharmacy Practice Experiences

Select 10 credits from the following. Credits: 10

- PHA 700 - Directed Studies Practice Experience Credits: 4-5
- PHA 701 - Home Health/Hospice Practice Experience Credits: 5
- PHA 702 - Indian Health Services Practice Experience Credits: 5
- PHA 703 - Pharmacy Administration Practice Experience Credits: 5
- PHA 705 - Clinical Research Practice Experience Credits: 5
- PHA 712 - Nuclear Pharmacy Practice Experience Credits: 5
- PHA 713 - Managed Care Practice Experience Credits: 5
- PHA 715 - Community Pharmacy Systems Practice Experience Credits: 5
- PHA 717 - Community Health and Patient Monitoring Practice Experience Credits: 5
- PHA 718 - Long Term Care Practice Experience Credits: 5
- PHA 778 - Compounding Practice Experience Credits: 5
- PHA 779 - Academic Practice Experience Credits: 5
- PHA 780 - International Pharmacy Practice Experience Credits: 5
- APPEs not utilized from list of Assigned APPEs

Pharmacy Electives

Pharmacy electives, PHA 700-level, non-APPE and/or select from the following list of public health courses. Credits: 5

- PHA 738 - Health Informatics Credits: 1
- PHA 743 - Pharmacogenomics Credits: 1
- PHA 744 - End of Life Care Credits: 1
- PHA 745 - Ambulatory Care Practice Credits: 2
- PHA 746 - Professional Pharmacy Leadership Skills Credits: 1
- PHA 748 - Topics in Neonatal and Pediatric Pharmacotherapy Credits: 1
- PHA 749 - Care of the Geriatric Patient Credits: 1
- PHA 750 - Critical Care Therapeutics Credits: 2
- PHA 751 - Cultural Perspectives in Pharmacy Practice Credits: 1
- PHA 752 - Drugs of Abuse and Addiction Credits: 2
- PHA 753 - Women and Children's Health Credits: 2
- PHA 754 - Complementary and Alternative Medicine Credits: 1
- PHA 758 - Institutional Practice Based Research I Credits: 1
- PHA 759 - Institutional Practice Based Research II Credits: 1
- PHA 766 - Oncology Pharmacotherapeutics Credits: 1
- PUBH 701 - Biostatistics for Public Health Credits: 3 (USD)
- PUBH 702 - Public Health Theory and Practice (COM) Credits: 3
- PUBH 750 - Social and Behavioral Sciences in Public Health Credits: 3 (USD)
- PUBH 755 - Program Planning and Evaluation Credits: 3

Total Required Credits: 80

Notes

[1] Students must meet progression standards and capstone requirements in order to advance within the program.

[2] PHA 610 must be completed during the summer between the P2 and P3 years.

Additional Admission Requirements

Early Assurance Pathway

Admission to the Pharm.D. Program by Early Assurance will require a student to:

- Submit an undergraduate admission application to SDSU
- Meet SDSU Freshmen Admission Requirements
- Submit an application for Early Assurance during senior year of high school
- Successfully complete an interview prior to the start of the Freshman year.

Progression into the 4-year core Pharm.D. curriculum will require:

- Overall cumulative GPA > 3.0
- By the end of the fall semester that precedes the beginning of the desired Pharm.D. start date, students must have completed 7 of the following 10 required math and science courses (listed immediately below) with a grade point average of at least 2.7 and no grade lower than C.
  - BIOL 151 - General Biology I (COM) [SGR #6] Credits: 3
  - BIOL 151L - General Biology I Lab (COM) [SGR #6] Credits: 1
  - BIOL 221 - Human Anatomy (COM) Credits: 3
  - BIOL 221L - Human Anatomy Lab (COM) Credits: 1
  - BIOL 325 - Physiology (COM) Credits: 3
  - BIOL 325L - Physiology Lab (COM) Credits: 1
  - CHEM 112 - General Chemistry I (COM) [SGR #6] Credits: 3
  - CHEM 112L - General Chemistry I Lab (COM) [SGR #6] Credits: 1
  - CHEM 114 - General Chemistry II (COM) [SGR #6] Credits: 3
  - CHEM 114L - General Chemistry II Lab (COM) [SGR #6] Credits: 1
  - CHEM 326 - Organic Chemistry I (COM) Credits: 3
  - CHEM 326L - Organic Chemistry I Lab (COM) Credits: 1
  - CHEM 328 - Organic Chemistry II (COM) Credits: 3
  - CHEM 328L - Organic Chemistry II Lab (COM) Credits: 1

- MATH 121 - Survey of Calculus (COM) [SGR #5] Credits: 4
- MATH 121L - Survey of Calculus Lab Credits: 1
- MICR 231 - General Microbiology (COM) [SGR #6] Credits: 3
- MICR 231L - General Microbiology Lab (COM) [SGR #6] Credits: 1
- STAT 281 - Introduction to Statistics (COM) [SGR #5] Credits: 3

- In their fourth semester, successful candidates must earn a grade of 'C' or better in the remaining required math and science courses and successfully pass an impromptu writing assessment.
  - Any student who is unable to meet the grade requirements listed above, will lose their place in the professional program. Students who lose their place in this manner may re-take courses to try to meet the academic requirements and re-apply through the traditional 4-year Pharm.D. application process.

Traditional Pathway

Applicants to the Doctor of Pharmacy (Pharm.D.) program will submit:

- The completed application
- Official transcripts
- Contact information for two references
- A short essay on the topic of "Why I want to obtain a Doctor of Pharmacy Degree at SDSU"
- A completed shadowing form
- Documentation of ACT, SAT, or PCAT scores is optional

The program requires an interview with the Pharmacy Admissions Committee before we make the final selections for the new fall class. Those selected are required to send a non-refundable deposit to secure enrollment for the fall semester. Students must pass a criminal background check before final approval for admission into the professional program. Applicants receive notification of acceptance into the professional program by March 15.

For more information see frequently asked questions (FAQ).

General Requirements (Pharm.D.)

For additional information see Doctor of Pharmacy Degree Requirement.

Professional Program in Veterinary Medicine

Program Coordinator/Contact

Lisa Lunn, Associate Dean and Director Professional Program in Veterinary Medicine
Department of Veterinary and Biomedical Sciences
Animal Disease Research and Diagnostic Laboratory 103, Box 2175
605-688-6645

Program Information

The University of Minnesota College of Veterinary Medicine (UMN CVM) and South Dakota State University (SDSU) have partnered together to create the Professional Practice in Veterinary Medicine (PPVM) program. This 2+2 program focuses on careers in food animal or mixed animal medicine in rural communities. The SDSU Professional Program in Veterinary Medicine is designed to prepare future veterinarians to serve in critical roles across the spectrum of animal health, environmental health, and public health.

SDSU will admit a class of up to 20 students to complete their first two years of veterinary school at South Dakota State University in Brookings, South Dakota. The cohort will transfer and complete their last two years at the UMN CVM in St. Paul, MN, and graduate with a Doctor of Veterinary Medicine (DVM) degree, issued by the UMN. The collaborative program will meet all accreditation requirements of the American Veterinary Medical Association Council on Education for the UMN CVM accredited program. Once students complete the required pre-veterinary curriculum, they can apply to the Professional Program.

While at SDSU, students will have a rigorous, yet enriched learning experience. The class size is designed to provide the opportunity for students to have supportive learning communities and hands-on practical experience working with food and companion animals, as well as making it possible to work closely in a world-class diagnostic facility with dedicated faculty and scientific researchers. The integrated DVM curriculum uses active learning and builds the relationship between the basic sciences and the clinical cases graduates will see in their practices. During the first three years of the DVM program, students focus on the study of the normal animal, the pathogenesis of diseases, and the prevention, alleviation, and clinical therapy of diseases. The program concludes with 13 months of clinical rotations in the University of Minnesota Veterinary Medical Center, where students learn methods of veterinary care and develop skills needed for professional practice. Students can choose from more than 65 rotations, ranging from Acupuncture to Zoological Medicine. The fourth year includes up to 10 weeks of externship experiences at off-campus sites of the student's choice.

DVM students attend class full time, Monday through Friday, from approximately 8 a.m. to 5 p.m. Students do not have classes during the summer semesters between their first and second, and second and third years of the program. Students attend class for one full calendar year, including summer semester, during their fourth year.

Certification and Licensure

The DVM degree from the SDSU PPVM and UMN CVM qualifies graduates to take the licensing exam in every state provided they pass the national exam and meet the state non-academic guidelines (background check, etc).

DVM students must pass both state and national board licensing exams in order to practice. The national exam is called the North American Veterinary Licensing Examination and is offered in the fall and the spring. Those wishing to practice in South Dakota must also take the South Dakota Board of Veterinary Medicine licensing exam. Information regarding licensure in other states can be found International Council for Veterinary Assessment.

Additional licensing requirements may vary from state to state. Please check with any state you are considering practicing in for specific details.

Core Requirements

- VET 600 - Jackrabbit Orientation and Leadership Experience (JOALE) Credits: 1
- VET 601 - Microscopic Anatomy I Credits: 1
- VET 601L - Microscopic Anatomy I Lab Credits: 1
- VET 602 - Integrated Biochemistry and Physiology Credits: 7
- VET 603 - Anatomy I Credits: 2
- VET 603L - Anatomy I Lab Credits: 2
- VET 604 - Clinical Skills I Credits: 1
- VET 605 - Professional Development I Credits: 1
- VET 606 - Critical Scientific Reading Credits: 1
- VET 607 - Immunology Credits: 3
- VET 608 - Rural Veterinary Practice I Credits: 1
- VET 621 - Professional Development II Credits: 1
- VET 622 - Anatomy II Credits: 2
- VET 622L - Anatomy II Lab Credits: 2
- VET 623 - Clinical Skills II Credits: 1
- VET 624 - Physiology II Credits: 4
- VET 625 - Basic Pathology Credits: 2
- VET 626 - Agents of Disease I Credits: 4
- VET 627 - Preventative Medicine Credits: 4
- VET 628 - Microscopic Anatomy II Credits: 1
- VET 628L - Microscopic Anatomy II Lab Credits: 1
- VET 629 - Clinical Correlations I Credits: 1
- VET 630 - Veterinary Genetics and Genomics Credits: 1
- VET 631 - Non-Traditional Pets Credits: 1
- VET 632 - Rural Veterinary Practice II Credits: 1
- VET 640 - Agents of Disease II Credits: 5
- VET 641 - Pharmacology I Credits: 2
- VET 642 - Systemic Pathology Credits: 5
- VET 643 - Clinical Pathology I Credits: 3
- VET 644 - Clinical Skills III Credits: 1
- VET 645 - Clinical Epidemiology Credits: 2
- VET 646 - Public Health Credits: 2
- VET 647 - Small Animal Medicine I Credits: 2
- VET 648 - Diagnostic Laboratory Methods Credits: 1
- VET 648L - Diagnostic Laboratory Methods Lab Credits: 1
- VET 649 - Large Animal Medicine I Credits: 2
- VET 650 - Professional Development III Credits: 1
- VET 651 - Rural Veterinary Practice III Credits: 1
- VET 660 - Small Animal Medicine II Credits: 5
- VET 661 - Small Animal Surgery I Credits: 2
- VET 661L - Small Animal Surgery I Lab Credits: 1
- VET 662 - Large Animal Surgery I Credits: 3
- VET 663 - Veterinary Imaging I Credits: 3
- VET 664 - Pharmacology II Credits: 2

- VET 665 - Clinical Skills IV Credits: 1
- VET 666 - Clinical Pathology II Credits: 2
- VET 666L - Clinical Pathology II Lab Credits: 1
- VET 667 - Avian Core Credits: 2
- VET 668 - Large Animal Medicine II Credits: 3
- VET 669 - Dermatology Credits: 2
- VET 670 - Clinical Correlations II Credits: 1
- VET 671 - Thrive Through Life Credits: 4
- VET 672 - Professional Development IV Credits: 1
- VET 673 - Rural Veterinary Practice IV Credits: 1

Additional Admission Requirements

GRE: Not Required
TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

An electronic application for admission must be submitted through VMCAS.

Official copies of all transcripts must be sent directly to VMCAS.

Three electronic Letters of Reference must be submitted as part of the VMCAS application on behalf of the applicant. It is strongly recommended that at least one letter is written by a DVM.

Specific prerequisite coursework must be completed prior to enrollment. Prerequisite courses must be equivalent to the SDSU courses indicated in this planner: Approved Preveterinary Coursework. Students from other universities will be directed to follow the comprehensive area college prerequisite guides developed by the University of Minnesota for a list of approved prerequisites.

Preference will be given to applicants from South Dakota and Minnesota and the states adjoining South Dakota and/or Minnesota which includes Iowa, Montana, Nebraska, North Dakota, Wisconsin, and Wyoming.

General Requirements

Graduate students must consult with their advisor before registering for graduate coursework.

Certificates

Academic Advising Certificate

Program Coordinator/Contact

Alison Boughn, Assistant Director
Katelyn Romsa, Associate Professor
School of Counseling, Human Development and Family Science
Thompson Center 105
605-688-4321

Program Information

The graduate certificate in Academic Advising will provide students a grounding in the foundational elements and essential competencies needed for effective advising practice. Academic advising is a practice-based profession intended to aid students in achieving educational, career, and personal goals through the use of the full range of institutional and community resources. The curriculum is aligned with the National Academic Advising Association (NACADA) Pillars of Academic Advising, which are guiding principles affirming the role of advising in higher education that anticipate the needs of 21st century students, academic advisors, and institutions. Topics will include student development theory, multicultural issues, career development, interpersonal relations for advising, and current issues of academic advising. The Academic Advising certificate will prepare individuals for a career in higher education such as:

- Academic advising
- Student success coaching
- Student affairs
- Career counseling
- Academic and career planning

The certificate is intended for students entering the field and for those experienced in the field. The program includes components to assist students in connecting with existing advising networks and professional organizations to support their practice and link them to new and emerging practices that may benefit their work. The Academic Advising Certificate will be offered as a stand-alone credential for those who already hold a bachelor's degree from a regionally accredited institution or may be offered in combination with the Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization or Counseling and Human Resource Development (M.S.) - College Counseling Specialization.

Certificate Requirements

- CHRD 685 - Academic Advising Theory and Practice Credits: 3
- CHRD 770 - Student Development: Theory and Practice Credits: 3
- CHRD 773 - Current Issues in Academic Advising and Student Affairs Credits: 3
- CHRD 785 - Pre-Practicum Credits: 3

Total Required Credits: 12

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Advanced Graduate Mathematics Certificate

Program Coordinator/Contact

Donald Vestal, Associate Professor and Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering Hall 209, Box 2225
605-688-6196

Program Information

The Advanced Graduate Mathematics Certificate is a program designed for current high school mathematics teachers who are either enrolled in or have completed a master's degree, are interested in getting credentials to teach concurrent dual credit math courses, and have already completed nine credit hours of graduate mathematics courses through the Graduate Mathematics Certificate or another avenue (for example the SDSU Data Science Certificate) in order to meet HLC requirements. The 18-credit sequence of the Graduate Mathematics Certificate and Advanced Graduate Mathematics Certificate would allow them to do that.

Certificate Requirements

All courses used to meet the certificate requirements are MATH or STAT prefixed courses and must include at least one analytic and one abstract course in the collection of three courses (nine credits). One course from a non-SDBOR University may be substituted. Courses cannot be used to fulfill the requirements of both the Graduate Mathematics Certificate and the Advanced Graduate Mathematics Certificate.

Abstract Component - Select one of the following:

- MATH 513 - Abstract Algebra I Credits: 3
- MATH 514 - Abstract Algebra II Credits: 3
- MATH 536 - Number Theory and Cryptography Credits: 3
- MATH 537 - Cryptography and Codes Credits: 3
- MATH 561 - Geometry Credits: 3
- MATH 713 - Advanced Algebra I Credits: 3
- MATH 714 - Advanced Algebra II Credits: 3
- MATH 716 - Theory of Algebraic Structures I Credits: 3

Analytic Component - Select one of the following:

- MATH 523 - Advanced Calculus I Credits: 3
- MATH 524 - Advanced Calculus II Credits: 3
- MATH 571 - Numerical Analysis I (COM) Credits: 3
- MATH 622 - Difference Equations Credits: 3
- MATH 625 - Advanced Calculus Credits: 3
- MATH 721 - Complex Variables Credits: 3
- MATH 723 - Real Variables I Credits: 3
- MATH 724 - Real Variables II Credits: 3
- MATH 741 - Measure and Probability Credits: 3

- MATH 751 - Applied Functional Analysis Credits: 3

Graduate Math Elective

- Any MATH or STAT content course 500-level or higher not used as the Abstract or Applied Mathematics course for this Certificate. Credits: 3

Total Required Credits: 9

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Analytical Business Management Certificate

Program Coordinator/Contact

David Davis, Professor and Graduate Coordinator
Nicole Klein, Associate Director
Ness School of Management and Economics
Harding Hall 104
605-688-4141

Program Information

The certificate in Analytical Business Management provides students with core business skills in economics, finance, and data driven decision-making. This certificate is designed to strengthen your analytical toolkit and help you understand how organizations make strategic, financial, and managerial choices. Whether pursued on its own or paired with a graduate program the certificate equips students with the quantitative and managerial foundations essential for informed leadership in any professional field.

Certificate Requirements

- ECON/ MGMT 751 - Advanced Managerial Economics Credits: 3
- FIN 753 - Financial Management Credits: 3
- Any ACCT, AGEC, BADM, BLAW, DSCI, ECON, FIN, HRM, MGMT, MKTG graduate level courses Credits: 6

Total Required Credits: 12

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Animal Science Certificate

Program Coordinator/Contact

Michael Gonda, Interim Department Head and Professor
Cody Wright, Professor
Department of Animal Science
Animal Science Complex 101
605-688-5165

Program Information

The Animal Science Certificate program is designed to provide students with courses in the major disciplinary areas of animal science. The goal of the program is to provide foundation courses across many facets of animal science, serving as a basis for further study in one of the disciplines or in a particular animal species. Because the courses are delivered online, they allow for greater flexibility and access to course content than traditional classroom-based courses. The Animal Science Certificate program will be marketed to working professionals who wish to further their education but lack the flexibility to devote themselves to a full-time graduate program.

The online graduate certificate program in Animal Science has been developed to support continuing education needs of the workforce in food animal agriculture. The consortium offering the certificate is affiliated with the Innovative Digital Education Alliance (IDEA) and is governed by its structure. The institutions involved in this effort consist of South Dakota State University, Clemson University, North Carolina State University, North Dakota State University, and the University of Georgia.

Certificate Requirements

- AS 541 - Advanced Meat Science Credits: 3
- AS 720 - Advanced Selection of Domestic Animals Credits: 3
- AS 732 - Advanced Physiology of Reproduction Credits: 3

Select one of the following courses

- AS 712 - Ruminant Nutrition Credits: 3
- AS 736 - Monogastric Nutrition Credits: 3
- AS 760 - Advanced Equine Nutrition Credits: 3
- AS 770 - Advanced Beef Production Credits: 3
- AS 780 - Evaluation and Use of Breeds in Livestock Credits: 3

Total Required Credits: 12

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Applied Physics Certificate

Program Coordinator/Contact

Robert McTaggart, Assistant Department Head
Department of Chemistry, Biochemistry and Physics
Daktronics Engineering Hall 255
605-688-5428

Brian Logue, Department Head
Avera Health and Science Center 247
605-688-5151

Program Information

The Applied Physics Certificate provides knowledge and practical experience for students to have an advanced experience with health physics, nuclear physics, or condensed matter physics. Individuals who complete this certificate will be well prepared to advance in their career paths in applied areas of physics, including laboratory management. The certificate will provide training in key elements for success in (Materials Physics track) areas of physics related to chemistry, materials science, engineering, nanotechnology, atomic physics, or biophysics or (Nuclear Physics track) in the regulatory and management aspects of ionizing radiation.

Certificate Requirements

Select one of the following two options

Materials (Condensed Matter) Physics Track

- PHYS 521 - Electromagnetism (COM) Credits: 4
- PHYS 539 - Condensed Matter Physics (COM) Credits: 3-4 (4 credits required)
- PHYS 581 - Mathematical Physics (COM) Credits: 4

Nuclear/Health Physics Track

- NE 535 - Introduction to Nuclear Engineering Credits: 3
- PHYS 533 - Nuclear and Elementary Particle Physics (COM) Credits: 4
- PHYS 537 - Foundations of Health Physics Credits: 3
- PHYS Elective Credits: 3

Total Required Credits: 12

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5

IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Athletic Academic Advising Certificate

Program Coordinator/Contact

Alison Boughn, Assistant Director
Katelyn Romsa, Associate Professor
School of Counseling, Human Development and Family Science
Thompson Center 105
605-688-4321

Program Information

The graduate certificate in Athletic Academic Advising will provide students with a grounding in the foundational elements and essential competencies needed for effective athletic academic advising practice. Athletic academic advising is a practice-based profession and an academic discipline that is intended to aid student-athletes in achieving education, career, and personal goals using the full range of institutional and community resources. The curriculum is aligned with the National Academic Advising Association (NACADA) Pillars of Academic Advising, which are guiding principles affirming the role of advising in higher education that anticipate the needs of student-athletes, academic advisors, and institutions. Topics will include student development theory, multicultural issues, career development, interpersonal relations for advising, sport administration, NCAA, and current issues of athletic academic advising. The Athletic Academic Advising Certificate will prepare individuals for a career in higher education such as:

- Student athlete services
- Student-athlete development
- Academic Advising for student-athletes
- Student affairs
- Career counseling and development

The certificate is intended for students entering the field and for those experienced in the field. The program includes components to assist students in connecting with existing advising networks and professional organizations to support their practice and link them to new and emerging practices that may benefit their work. The Athletic Academic Advising Certificate will be offered as a stand-alone credential for those who already hold a bachelor's degree from a regionally accredited institution or may be offered in combination with the Counseling and Human Resource Development (M.Ed.) - Administration of Student Affairs Specialization, Counseling and Human Resource Development (M.S.) - College Counseling Specialization, or Sport Management (M.S.).

Certificate Requirements

- CHRD 685 - Academic Advising Theory and Practice Credits: 3
- CHRD 770 - Student Development: Theory and Practice Credits: 3
- CHRD 773 - Current Issues in Academic Advising and Student Affairs Credits: 3
- RECR 770 - Sport and Recreation Administration Credits: 3

Total Required Credits: 12

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Biotechnology Certificate

Program Coordinator/Contact

Yajun Wu, Interim Department Head
Radhey Kaushik, Professor and Graduate Coordinator
Department of Biology and Microbiology
Alfred Dairy Science Hall 228, Box 2104A
605-688-6141

Program Information

The Biotechnology Certificate provides a solid foundation in the application of biological, biochemical, and genetic processes in the development of agricultural, environmental, clinical, and industrial high-value products, including the commercial exploitation of microorganisms, plants, and animals for biotechnological applications. The program will provide graduates with a competitive advantage and the necessary background to be successful in careers in the biotech industry.

Certificate Requirements

- BIOL 570 - Cancer Biology (COM) Credits: 3
- MICR 524 - Medical and Veterinary Virology Credits: 3
  or MICR 539 - Medical and Veterinary Immunology Credits: 3
- MICR 550 - Application of Microbiology & Biotechnology Credits: 3
- MICR 667 - Bacteriology Credits: 3

Total Required Credits: 12

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Chemistry Education Certificate

Program Coordinator/Contact

Brian Logue, Department Head
Matt Miller, Professor
Melody Jewell, Senior Lecturer
Department of Chemistry, Biochemistry and Physics
Avera Health and Science Center 247
605-688-5151

Program Information

The graduate Chemistry Education Certificate is designed to provide current high school science teachers with graduate credit hours in chemistry, giving them the foundation needed to teach AP Chemistry, dual enrollment chemistry, and/or general chemistry at the college level. The program may also benefit community college instructors and others seeking graduate-level chemistry teaching credentials. In South Dakota, professional teaching certificates are renewed every five years and require six education-related credits; this program offers a pathway for teachers to fulfill those requirements while advancing their professional qualifications.

Certificate Requirements

- CHEM 770 - Atomic Theory and Bonding Credits: 3
- CHEM 771 - Intermolecular Interactions and Phases of Matter Credits: 3
- CHEM 772 - Thermodynamics Credits: 3
- CHEM 773 - Equilibria and Acid-Base Chemistry Credits: 3
- CHEM 774 - Kinetics, Nuclear, and Electrochemistry Credits: 3
- CHEM 775 - Organic and Biochemistry Credits: 3

Total Required Credits: 18

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 7.5

IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Data Science Certificate

Program Coordinator/Contact

Donald Vestal, Associate Professor and Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering Hall 209, Box 2225
605-688-6196

Program Information

The graduate certificate in data science provides training in a wide range of powerful data science analysis and computation methodologies that have proven to be extremely valuable in today's data rich businesses and organizations. Even better, it is completely online, making it a great option for working professionals wishing to enhance their skills in this critical area.

Certificate Requirements

- STAT 541 - Statistical Methods II Credits: 3
- STAT 600 - Statistical Programming Credits: 3
- STAT 601 - Modern Applied Statistics I Credits: 3
- STAT 602 - Modern Applied Statistics II Credits: 3

Total Required Credits: 12

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Family Financial Planning Certificate

Program Coordinator/Contact

Nicole Klein, Associate Director
Axton Betz-Hamilton, Associate Professor
Ness School of Management and Economics
Harding Hall 104
605-688-4141

Program Information

Family financial planning is an emerging area with job opportunities in areas related to insurance, real estate, investments, retirement, tax and estate planning. Financial planners are increasingly in demand as Americans seek advisers to help manage their income, assets, and debts.

Certificate Requirements

- FIN 531 - Family Investment Planning Credits: 3
- FIN 532 - Family Insurance Planning Credits: 3
- FIN 533 - Family Estate Planning Credits: 3
- FIN 534 - Family Retirement Planning Credits: 3
- FIN 535 - Family Tax Planning Credits: 3
- FIN 539 - Family Financial Planning Capstone Credits: 3

Total Required Credits: 18

Notes

Students without a background in financial planning should take FIN 500 - Fundamentals of Family Financial Planning.

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Foundations of Operations Management Certificate

Program Coordinator/Contact

Ekaterina Koromyslova, Professor
Nicole Klein, Associate Director
Ness School of Management and Economics
Harding Hall 104
605-688-4141

Program Information

The Foundations of Operations Management Certificate focuses on the hands-on management of processes, projects, and systems that support day-to-day organizational performance. Emphasizing operations, supply chain, quality, and project management, the certificate develops practical skills to support effective execution and continuous improvement in diverse organizational settings. The certificate is well suited for professionals seeking practice-oriented operational expertise.

Certificate Requirements

- GE 685 - Management and Leadership in Technical Organizations Credits: 3
- FIN 753 - Financial Management Credits: 3
  or OM 620 - Analysis in Operations Management Credits: 3
  or OM 650 - Manufacturing Systems Management Credits: 3
  or OM 760 - Quality Control Credits: 3
  or MNET 568 - Manufacturing Plant Management Credits: 3
- OM 660 - Operations Management Credits: 3
- OM 669 - Project Management Credits: 3

Total Required Credits: 12

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Geographic Information Sciences Certificate

Program Coordinator/Contact

Bob Watrel, Department Head
George White, Professor and Graduate Coordinator
Department of Geography and Geospatial Sciences
Wecota Hall 109
605-688-4511

Program Information

The certificate in Geographic Information Sciences prepares students to utilize their knowledge of geographic applications, and various geospatial technologies to meet the challenges of today's society. The program includes the necessary courses to prepare the graduate to function in geographic information science and allows students to develop their knowledge and skills in this area. The certificate targets people seeking a different level of learning outside of a traditional degree format, although any student can obtain the certificate to bolster their resume.

Certificate Requirements

- GEOG 573 - GIS Data Creation/Integration Credits: 2

- GEOG 573L - GIS: Data Creation and Integration Lab Credits: 1
- GEOG 574 - GIS: Vector & Raster Modeling Credits: 2
- GEOG 574L - GIS: Vector and Raster Modeling Lab Credits: 1

Select from the following

Select six credits from the following. Credits: 6

- GEOG 515 - Environmental Geography and Sustainability Credits: 3
- GEOG 554 - Sustainable Communities Credits: 3
- GEOG 575 - GIS Applications Credits: 2
- GEOG 575L - GIS Applications Lab Credits: 1
- GEOG 578 - Mobile GIS Credits: 2
- GEOG 578L - Mobile GIS Lab Credits: 1
- GEOG 579 - AI and Advanced Geospatial Techniques Credits: 2
- GEOG 579L - AI and Advanced Geospatial Techniques Lab Credits: 1
- GEOG 580 - Satellite Remote Sensing Credits: 2
- GEOG 580L - Satellite Remote Sensing Lab Credits: 1
- GEOG 583 - UAS Remote Sensing Credits: 2
- GEOG 583L - UAS Remote Sensing Lab Credits: 1
- GEOG 585 - Advanced Satellite Remote Sensing Credits: 2
- GEOG 585L - Advanced Satellite Remote Sensing Lab Credits: 1
- GEOG 768 - Global Climate Change Credits: 3
- GEOG 786 - Geographic Information Systems Credits: 3

Total Required Credits: 12

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Geospatial Intelligence Certificate

Program Coordinator/Contact

Bob Watrel, Department Head
Department of Geography and Geospatial Sciences
109 Wecota Hall
605-688-4511

Program Information

Geospatial Intelligence (GEOINT) is a broad field that encompasses the intersection of geospatial data with social, political, environmental, and numerous other factors. Geospatial Intelligence refers to the use of geospatial technologies to extract information for decision advantage in humanitarian response, strategic defense, security or investigative analysis. The Geospatial Intelligence Certificate focuses on geospatial techniques (GIS, remote sensing, data management, etc.) and analytical courses to provide students with foundational knowledge for success in the GEOINT community. This certificate is open to all students with an interest in a credential for working in national security, emergency management, or public safety careers.

Accreditation

The Geospatial Intelligence Certificate is accredited by the United States Geospatial Intelligence Foundation (USGIF).

Certificate Requirements

- GEOG 547 - Geography of the Future (COM) Credits: 3 (Capstone)
  or GEOG 790 - Seminar (COM) Credits: 1-4 (3 credits required) (Capstone)
- GEOG 573 - GIS Data Creation/Integration Credits: 2
- GEOG 573L - GIS: Data Creation and Integration Lab Credits: 1
- GEOG 580 - Satellite Remote Sensing Credits: 2
- GEOG 580L - Satellite Remote Sensing Lab Credits: 1

Select from the following

Select six credits from the following list. Credits: 6

- GEOG 571 - Programming for Geospatial Data Analysis Credits: 3
- GEOG 574 - GIS: Vector & Raster Modeling Credits: 2
- GEOG 574L - GIS: Vector and Raster Modeling Lab Credits: 1
- GEOG 575 - GIS Applications Credits: 2
- GEOG 575L - GIS Applications Lab Credits: 1
- GEOG 576 - Web GIS Credits: 2
- GEOG 576L - Web GIS Lab Credits: 1
- GEOG 578 - Mobile GIS Credits: 2
- GEOG 578L - Mobile GIS Lab Credits: 1
- GEOG 579 - AI and Advanced Geospatial Techniques Credits: 2
- GEOG 579L - AI and Advanced Geospatial Techniques Lab Credits: 1
- GEOG 583 - UAS Remote Sensing Credits: 2
- GEOG 583L - UAS Remote Sensing Lab Credits: 1
- GEOG 741 - Quantitative Remote Sensory for Terrestrial Monitoring Credits: 3
- GEOG 760 - Advanced Methods in Geospatial Modeling: Topical Credits: 3
- GEOG 784 - Machine Learning for Remote Sensing and GIS Credits: 3
- GEOG 786 - Geographic Information Systems Credits: 3

Total Required Credits: 15

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Graduate Mathematics Certificate

Program Coordinator/Contact

Donald Vestal, Associate Professor and Graduate Coordinator
Department of Mathematics and Statistics
Chicoine Architecture, Mathematics and Engineering Hall 209, Box 2225
605-688-6196

Program Information

The online Graduate Mathematics Certificate and the Advanced Graduate Mathematics Certificate are programs (each has 9 graduate math credits) designed for current high school mathematics teachers that are either enrolled in or have completed a master's degree that would like to become concurrent dual credit math instructors.

Certificate Requirements

All courses used to meet the certificate requirements are MATH or STAT prefixed courses and must include at least one analytic and one abstract course in the collection of three courses (nine credits). One course from a non-SDBOR University may be substituted. Courses cannot be used to fulfill the requirements of both the Graduate Mathematics Certificate and the Advanced Graduate Mathematics Certificate.

Abstract Component - Select one of the following:

- MATH 513 - Abstract Algebra I Credits: 3
- MATH 514 - Abstract Algebra II Credits: 3
- MATH 536 - Number Theory and Cryptography Credits: 3
- MATH 537 - Cryptography and Codes Credits: 3
- MATH 561 - Geometry Credits: 3
- MATH 713 - Advanced Algebra I Credits: 3
- MATH 714 - Advanced Algebra II Credits: 3
- MATH 716 - Theory of Algebraic Structures I Credits: 3

Analytic Component - Select one of the following:

- MATH 523 - Advanced Calculus I Credits: 3
- MATH 524 - Advanced Calculus II Credits: 3
- MATH 571 - Numerical Analysis I (COM) Credits: 3
- MATH 622 - Difference Equations Credits: 3

- MATH 625 - Advanced Calculus Credits: 3
- MATH 721 - Complex Variables Credits: 3
- MATH 723 - Real Variables I Credits: 3
- MATH 724 - Real Variables II Credits: 3
- MATH 741 - Measure and Probability Credits: 3
- MATH 751 - Applied Functional Analysis Credits: 3

Graduate Math Elective

- Any MATH or STAT content course 500-level or higher not used as the Abstract or Applied Mathematics course for this Certificate. Credits: 3

Total Required Credits: 9

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Additional Information

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Grassland Management Certificate

Program Coordinator/Contact

Alexander (Sandy) Smart, Interim Department Head and Professor
Joshua Leffler, Assistant Department Head and Professor
Department of Natural Resource Management
Edgar S. McFadden Biostress Laboratory 138
605-688-6121

Program Information

Grasslands represent a fundamental resource of the region that determines the environmental and economic future of the Great Plains. Many of the managers or advisors on these grasslands have B.S. degrees in natural resources or agriculture and want to further develop their expertise in grassland management through university programs. However, constraints associated with their work schedule and responsibilities limit their ability to pursue conventional on-campus coursework and graduate degrees. The Grassland Management graduate certificate program was developed to address the needs of working professionals as well as other students interested in distance education opportunities. Students will interact with their institutional advisors to develop a plan of study most beneficial to the student. Coursework may be transferred in on a case-by-case basis with the approval of the student's advisor.

This program is delivered fully online through the Innovative Digital Education Alliance (IDEA), a national consortium of universities offering programs and courses in agriculture disciplines. IDEA's fully online program provides flexibility, enabling students to balance career advancement with professional, social, and financial commitments.

Certificate Requirements

Complete a minimum of 12 credits from the following courses:

- RANG 510 - Grassland Monitor and Assessment Credits: 2
- RANG 520 - Watershed Management Credits: 3
- RANG 521 - Grassland Fire Ecology Credits: 3
- RANG 530 - Ecology of Invasive Species Credits: 3
- RANG 540 - Grassland Plant Identification Credits: 2
- RANG 710 - Principles of Forage Quality Credits: 3
- RANG 750 - Grazing Ecology and Management Credits: 3

Total Required Credits: 12

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Literacy Instructional Coaching Certificate

Program Coordinator/Contact

Patrick Hales, Associate Professor, Assistant Director of K-12 Teacher Education
Tony Durr, Associate Professor
School of Education
Wenona Hall 108
605-688-5039

Program Information

The Literacy Instructional Coaching Certificate, offered collaboratively by Dakota State University and South Dakota State University, is designed for K-12 educators looking to enhance their expertise in evidence-based literacy instruction and coaching strategies. This certificate equips teachers and literacy leaders with the tools they need to support and mentor fellow educators, drive literacy improvement, and ensure student success using Science of Reading aligned practices. Courses are offered online with one required in-person session per course.

Certificate Requirements

- EDFN 757 - Critical Issues in Literacy Coaching (COM) Credits: 1
- EDFN 758 - Coaching Using the Science of Learning (COM) Credits: 1
- EDFN 759 - Literacy Coaching Frameworks and Andragogy (COM) Credits: 1
- EDFN 761 - Developing Instructional Capacity (COM) Credits: 1
- EDFN 762 - Literacy Assessment and Learning (COM) Credits: 1
- EDFN 763 - Data-Informed Literacy Coaching (COM) Credits: 1
- EDFN 764 - Literacy Coaching for Differentiated Instruction (COM) Credits: 1
- EDFN 766 - Disciplinary Literacy Coaching (COM) Credits: 1
- EDFN 767 - School-Wide Literacy Intervention (COM) Credits: 1
- EDFN 768 - Literacy Curriculum Evaluation (COM) Credits: 1
- EDFN 769 - Literacy Curriculum Mapping (COM) Credits: 1
- EDFN 770 - Family and Community Literacy Engagement (COM) Credits: 1
- EDFN 771 - Promoting Literacy Policies and Programs (COM) Credits: 1
- EDFN 772 - Integrating Technology in Literacy Coaching (COM) Credits: 1
- EDFN 773 - Literacy Instructional Leadership (COM) Credits: 1
- EDFN 774 - Implementing Literacy Coaching Cycles (COM) Credits: 1
- EDFN 776 - Sustaining Literacy Coaching Cycles (COM) Credits: 1
- EDFN 777 - Practicum: Applying Coaching Cycles (COM) Credits: 1

Total Required Credits: 18

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Post-Graduate Adult-Gerontology Acute Care Nurse Practitioner Certificate

Program Coordinator/Contact

Cami Veire, Nursing Advisor and Graduate Specialist
Graduate Nursing
SDSU Nursing - Sioux Falls
2400 S Minnesota Ave, Room 182
Sioux Falls, SD 57107
605-688-2165

Program Information

Advanced nursing practice in adult-gerontology acute care focuses on providing advanced nursing care to adult, older adult and elderly patients with acute, chronic, and critical conditions. This certificate prepares graduates to work in many

different clinical settings providing advanced nursing care to patients in critical conditions, with chronic or episodic illnesses and/or with acute medical needs. These settings include but are not limited to clinics, physicians' offices, hospitals, retirement homes, hospices, and private practices.

Accreditation

The baccalaureate degree program in nursing, master's degree program in nursing, Doctor of Nursing Practice program and postgraduate advanced practice registered nurse certificate program at South Dakota State University are accredited by the Commission on Collegiate Nursing Education.

South Dakota State University College of Nursing Healthcare Simulation Center has full accreditation by the Society for Simulation in Healthcare in teaching/education. This status will be granted from Oct. 25, 2022, through Dec. 31, 2027.

Certification and Licensure

Upon completion of the Post-Graduate Adult-Gerontology Acute Care Nurse Practitioner Certificate, students may be eligible for the following certification:

National Certification Eligibility	Certifying Body
Adult-Gerontology Acute Care Nurse Practitioner Certification (AGACNP-BC®)	American Nurses Credentialing Center (ANCC)

Certificate Requirements

- NURS 738 - AGACNP Integration I Credits: 3
- NURS 739 - AGACNP Integration II Credits: 3
- NURS 741 - AGACNP Practicum Credits: 1-9 (9 credits required)

Total Required Credits: 15

Notes

For additional information, refer to the Graduate Nursing Department webpage.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5
IELTS: 6.5 total band
Duolingo: 110

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

- Current, unencumbered licensure as a Registered Nurse and FNP in the United States or its' territories prior to enrollment in first graduate nursing course.
- Completed graduate level courses in Advanced Physical Assessment (Lifespan), Advanced Pathophysiology (Lifespan), Advanced Pharmacology / Pharmacotherapeutics (Lifespan) with a course grade of 3.0. A gap analysis review will be completed on the courses to determine if the courses meet the program requirements. Applicants should send the course syllabi for each course along with an unofficial transcript to Graduate Nursing to initiate the review.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Interview assessment reviewed by graduate faculty.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, COVID-19 vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree in nursing (from an ACEN or CCNE accredited program) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- A degree deemed equivalent (by the World Education Service) to a Master's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- International students: prior to admission: eligible to practice nursing in your country of residence — and RN licensure in one of the 50 states in the United States. We suggest the same state in which you will fulfill your clinical/research requirements; RN licensure in state(s) where you will satisfy clinical requirements or conduct research, if applicable to your course of study.
- Meet the technical standards.

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Post-Graduate Psychiatric Mental Health Nurse Practitioner Certificate

Program Coordinator/Contact

Cami Veire, Nursing Advisor and Graduate Specialist
Graduate Nursing
SDSU Nursing - Sioux Falls
2400 S Minnesota Ave, Room 182
Sioux Falls, SD 57107
605-688-2165

Program Information

Advanced nursing practice in psychiatric mental health covers both outpatient and inpatient care, children through elderly individuals, and mild depression and anxiety to significantly disabling conditions including substance abuse, bipolar disorders and schizophrenia. This certificate prepares graduates to provide much needed high-quality mental health care to all populations and conditions in a variety of rural and urban settings.

Accreditation

The baccalaureate degree program in nursing, master's degree program in nursing, Doctor of Nursing Practice program and postgraduate advanced practice registered nurse certificate program at South Dakota State University are accredited by the Commission on Collegiate Nursing Education.

South Dakota State University College of Nursing Healthcare Simulation Center has full accreditation by the Society for Simulation in Healthcare in teaching/education. This status will be granted from Oct. 25, 2022, through Dec. 31, 2027.

Certification and Licensure

After completing the program of study, graduates are eligible to complete certification through the American Nurses Credentialing Center (ANCC).

National Certification Eligibility	Certifying Body
Psychiatric-Mental Health Nurse Practitioner (Across the Lifespan) Certification (PMHNP-BC)	American Nurses Credentialing Center (ANCC)

Certificate Requirements

- NURS 732 - Psychopharmacology and Neurobiology Across the Lifespan Credits: 2
- NURS 733 - Psychopathological Disorders Across the Lifespan Credits: 3
- NURS 734 - Theories and Interventions for Individuals and Groups Credits: 2
- NURS 735 - Advanced Psychiatric Assessment and Differential Diagnosis Across the Lifespan Credits: 2
- NURS 736 - Psychiatric/Mental Health Advanced Practice Across the Lifespan I Credits: 1-5 (4 credits required) **
- NURS 737 - Psychiatric/Mental Health Advanced Practice Across the Lifespan II Credits: 1-5 (5 credits required) **

Total Required Credits: 18

Notes

For additional information, refer to the Graduate Nursing Department webpage.

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4
TOEFL Essentials: 8.5

IELTS: 6.5
Duolingo: 110

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

- Current, unencumbered licensure as a Registered Nurse (and if applicable, APRN and licensure) in the United States or its' territories prior to enrollment in first graduate nursing course.
- 1500 hours of documented nursing practice experience prior to taking Advanced Physical Assessment (Lifespan).
- Completed graduate level courses in Advanced Physical Assessment (Lifespan), Advanced Pathophysiology (Lifespan), Advanced Pharmacology / Pharmacotherapeutics (Lifespan) with a course grade of 3.0.
- Completed and verified application to the Graduate Nursing program via NursingCAS website.
- Interview assessment reviewed by graduate faculty.
- Completed Compliance requirements: Clear Background check, clear FBI rolled fingerprint, clear drug screen, Basic Life Support for Healthcare Providers, ACLS certification for FNP specialization, professional liability insurance, influenza vaccine, and TB test.

For applicants who completed their higher education within the United States:

- Bachelor's degree in nursing from an ACEN or CCNE accredited program with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- Master's degree in nursing (from an ACEN or CCNE accredited program) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

For applicants who completed their higher education outside the United States:

- A degree deemed equivalent (by the World Education Service) to a Bachelor's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.
- A degree deemed equivalent (by the World Education Service) to a Master's degree in nursing (within the United States Education System) with a minimum cumulative preferred GPA of 3.0 or higher on a 4.0 point grading system.

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Power Systems Engineering Certificate

Program Coordinator/Contact

Rajesh Kavasseri, Interim Department Head
Xiaojun Xian, Assistant Professor and Graduate Coordinator
McComish Department of Electrical Engineering and Computer Science
Daktronics Engineering Hall 214
605-688-4526

Program Information

The Power Systems Engineering graduate certificate provides focused preparation in the analysis, design, operation, and control of electric power systems. Students learn core concepts in power system modeling, protection, stability, and smart-grid technologies that integrate power, computer, and communication systems.

Power systems engineers play a critical role in ensuring the reliability and resiliency of the electric grid. As utilities modernize and incorporate renewable energy, advanced controls, and increased electrification, demand for engineers with specialized power systems expertise continues to grow. National and regional workforce data show steady expansion in energy-related industries, reinforcing the need for advanced, stackable credentials in this field.

Certificate Requirements

- EE 534 - Power Systems Analysis Credits: 3
- EE 534L - Power Systems Analysis Lab Credits: 1
- EE 547 - Advanced Power Systems (COM) Credits: 3
- EE 733 - Advanced Power System Analysis Credits: 3

Total Required Credits: 10

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Precision Agriculture Certificate

Program Coordinator/Contact

Kasiviswanathan Muthukumarappan, Klingbeil Endowed Department Head
Lin Wei, Associate Professor and Graduate Coordinator
Department of Agricultural and Biosystems Engineering
Raven Precision Agriculture Center 136
605-688-5666

Karen Sanguinet, Klingbeil Endowed Department Head
Keerthi Mandyam, Associate Professor and Graduate Coordinator
Department of Agronomy, Horticulture and Plant Science
Raven Precision Agriculture Center 140
605-688-5123

Program Information

The certificate in Precision Agriculture provides knowledge and practical experience for students to have an advanced experience with precision farming and its protocols. Individuals that complete this certificate will be well prepared to advance in their career paths in the modern agricultural industry that utilizes advanced precision technology. Agriculture is experiencing a fast-paced evolution as technology continues to develop. Precision agriculture has emerged with an array of new and exciting – and increasingly high-tech – tools. The integration of computer technology with farm equipment, farm sensors, GPS navigation, satellite imagery and drone imagery are quickly revolutionizing agricultural production. Given the strong interest in advanced agricultural practices utilizing precision techniques, individuals with the type of training provided by this certificate program will be in high demand. Individuals may currently be in or pursuing careers in agronomy, agribusiness organizations, ranch management, geographic information science, geography, Game, Fish and Parks (GFP), Bureau of Land Management (BLM), environmental non-government organizations (NGOs), or sustainability.

Certificate Requirements

- GEOG 573 - GIS Data Creation/Integration Credits: 2
- GEOG 573L - GIS: Data Creation and Integration Lab Credits: 1
- GEOG 575 - GIS Applications Credits: 2
- GEOG 575L - GIS Applications Lab Credits: 1
- PRAG 510 - Soil Geography and Land Use Interpretation Credits: 2
- PRAG 510L - Soil Geography and Land Use Interpretation Lab Credits: 1
- PRAG 523 - Soil Fertility and Plant Nutrient Management Credits: 3

Total Required Credits: 12

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Public Health Certificate

Program Coordinator/Contact

James Amell, Julie Stevens and Dale Evenson Endowed Faculty Scholar and Associate Professor
Department of Allied and Population Health
Brad Laible, Associate Dean for Academic Programs
College of Pharmacy and Allied Health Professions
Avera Health and Science Center 133
605-688-6197

Program Information

The Public Health Certificate is a collaborative degree offering of South Dakota State University and the University of South Dakota. This certificate covers the five core areas of public health:

- Biostatistics
- Epidemiology
- Health Services Administration
- Social and Behavioral Sciences
- Environmental Health

Certificate Requirements

- PUBH 701 - Biostatistics for Public Health Credits: 3 (USD)
- PUBH 702 - Public Health Theory and Practice (COM) Credits: 3
- PUBH 710 - Epidemiology Credits: 3 (USD)

Select from the following

Select two courses (six credits) from the following list. Credits: 6

- PUBH 733 - Environmental Health Credits: 3
- PUBH 740 - Introduction to US Health Systems and Policy Credits: 3 (USD)
- PUBH 750 - Social and Behavioral Sciences in Public Health Credits: 3 (USD)
- PUBH 755 - Program Planning and Evaluation Credits: 3
- PUBH 760 - Public Health and Native American Communities Credits: 3 (USD)

Total Required Credits: 15

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

- Completed Graduate Application.
- $35 application fee
- Official transcripts verifying receipt of an undergraduate degree from an institution with full regional accreditation for that degree.
- Two letters of recommendation.
- Statement of purpose for studying Public Health (include career plans relative to public health).
- A minimum undergraduate cumulative GPA of 3.0 on conferred degree and/or graduate cumulative GPA of 3.0 or better, based on a 4.0 scale, on all graduate coursework. The Admission Committee conducts a full review of all applications and a 3.0 GPA is the preferred minimum. However, the Committee will consider other aspects and strong applications not meeting the minimum GPA will be considered. Each institution may admit students on conditional or provisional status per university policy.

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Real Estate Certificate

Program Coordinator/Contact

Nicole Klein, Associate Director
Brittany J. McKnight, Assistant Professor
Ness School of Management and Economics
Harding Hall 104
605-688-4141

Program Information

The Real Estate Certificate provides students with foundational skills associated with various high-level professions in the real estate industry. The graduate certificate provides specialized knowledge to individuals who wish to become professionals in the real estate industry.

Certificate Requirements

- BLAW 554 - Real Estate Finance Credits: 3
- BLAW 555 - Advanced Real Property Valuation Credits: 3
  or CM 573 - Construction Law and Contracts Credits: 3
- BLAW 590 - Seminar (COM) Credits: 1-3 (3 credits required)
- ECON/ MGMT 751 - Advanced Managerial Economics Credits: 3

Total Required Credits: 12

Additional Admission Requirements

GRE: Not required
TOEFL iBT: 4.5
TOEFL Essentials: 9.5
IELTS: 6.5
Duolingo: 115

Two letters of reference and a letter of intent are required. In the letter of intent, the applicant should identify their interests in the graduate program, address how their skills - including those the applicant attained in their undergraduate program - align with our graduate program, and address any undergraduate coursework in which the applicant earned below a B. The letter of intent should be roughly 500 to 750 words long.

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.

Surface Mount Technology Certificate

Program Coordinator/Contact

Suzette Burckhard, Interim Department Head
Department of Construction and Concrete Industry Management
Solberg Hall 116
605-688-6417

Program Information

The Surface Mount Technology (SMT) Certificate will provide knowledge and skills in lean manufacturing methods, materials and equipment for production of printed circuit boards, quality management, statistical control, inspection of processes and products, and SMT processes and methods. The certificate will aid those entering or already working in the field of component manufacturing especially in companies that manufacture printed circuit boards.

Certificate Requirements

- MNET 567 - Principles of Surface Mount Technology Credits: 3
- MNET 568 - Manufacturing Plant Management Credits: 3
- MNET 569 - Immersive Experience in Surface Mount Technology Credits: 3
- OM 562 - Quality Management Credits: 3

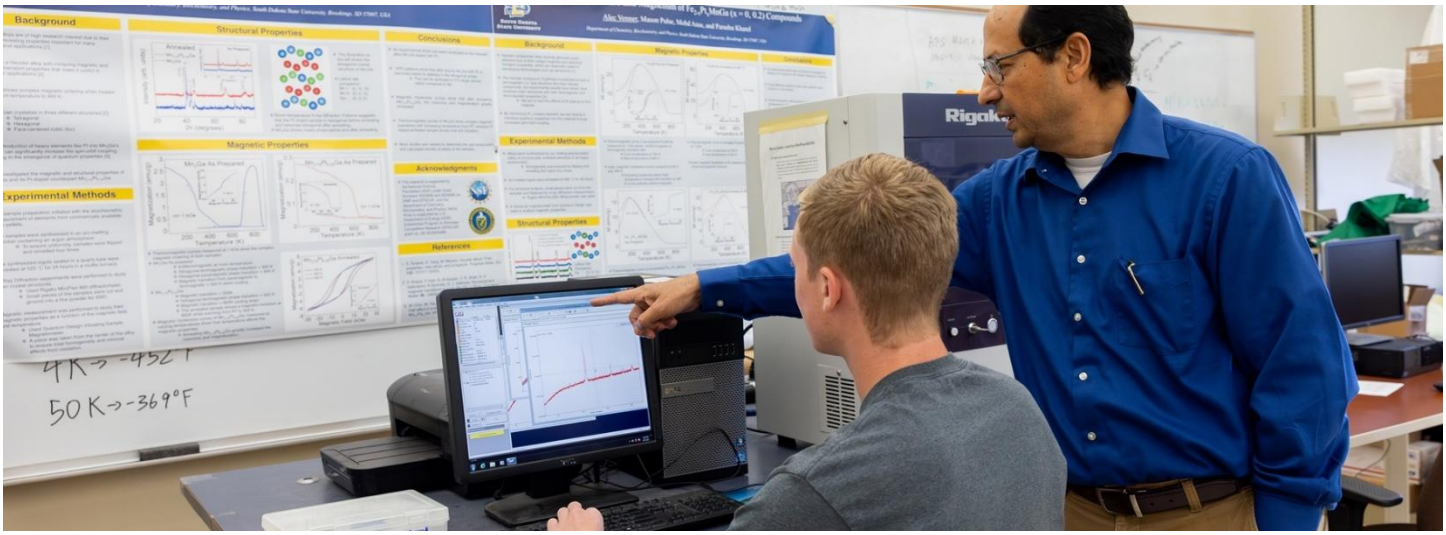
Total Required Credits: 12

Additional Admission Requirements

TOEFL iBT: 4
TOEFL Essentials: 7.5
IELTS: 6.0
Duolingo: 100

Additional Information

Students enrolled in SDSU certificate programs are not eligible for federal student financial aid. The non-federal alternative loan programs may be used for students meeting the lender criteria as found at www.sdstate.edu (search alternative loans). For further information, please contact the SDSU financial aid office at 605-688-4695 or finaid@sdstate.edu.



Course Information

Course Descriptions

ECON[1] 576[2] - Marketing Research[3] (COM)[4]
Credits: 3[5]
This course provides an in-depth study of the primary methodologies of marketing research. Emphasis is placed on collecting, analyzing, interpreting and presenting information for the purpose of reducing uncertainty surrounding marketing and management decisions.
Cross-Listed: MKTG 576.[6]

1. Course subject.
2. Course number.
3. Course title.
4. Common course within the South Dakota Board of Regents System.
5. Number of credits assigned to the course. One credit is usually interpreted as one hour of class work per week or as two to four hours of lab work per week.
6. A brief description of the course. This section includes other information affecting your enrollment in the course. A course description might include prerequisites, co-requisites, and registration restrictions. Other information included in various course descriptions would be: "Alternate years," "Not open to majors," "May be repeated for a total of six credits," etc.

Course Numbering

(SDBOR Policy 2.4.2)

Graduate Courses

500-599	Entry level graduate (may be dual listed with a 400-level undergraduate course and may include limited enrollment by undergraduates)
600-699	Graduate level (undergraduate enrollment only by exception)
700-799	Graduate level (Graduate students only)
800-899	Doctoral and post-doctoral level (Doctoral and post-doctoral students only)

Course Types/Instructional Methods

(SDBOR Academic Affairs Guidelines 2.4.3.A)

Clinical Experience

- This course entails provision of direct patient care in a clinic-based setting.
- Through observation and treatment of patients, students focus on developing specific skill sets designed to improve health (physical and/or mental).
- Oversight and instruction are provided by a faculty member and/or approved site supervisor.
- Enrollments are small (1 to 9) due to the inherent nature of this experience.

Clinical Laboratory

- Learning takes place in a clinical laboratory, an operation which conducts diagnostic tests performed on samples taken on/from the human body.
- These clinical laboratories may be free-standing or situated within hospitals or medical clinics.
- Faculty members are heavily involved; they maintain direct and close supervision of students.
- Enrollment is limited; it varies from 1 to 9 students.

Competency-Based/Self-Paced Study

- Each enrolled student advances at his/her preferred rate; that is, progression is controlled by the student, not the faculty member.
- Successful mastery of content is based on achievement of competencies as opposed to completion of assignments.
- Student progression through course content is often assisted by technology.
- Individual or group tutorials may be provided to supplement individual learning.

Discussion

- Communication between faculty member and students is two-way; all are participants who actively share experiences, ideas, viewpoints, and feedback. Depth of information sharing surpasses ordinary question and answer sessions.
- Designed to stimulate thinking and interest, this method is particularly relevant when subject matter is subjective, controversial, and/or multi-faceted.
- Student involvement is strong; it entails conversation, dialogue, and/or debate.
- Enrollment maximum is typically 35 students.

Experiential

- This course entails discovery learning in a specified area or discipline; through dedicated participation, students derive personal understanding and attach meaning to acquired experiences.
- Focus is placed on the learning process itself, not preconceived learning outcomes; the contrast to traditional instruction presents a defining element of this method.
- Learning is inductive, student-centric, and activity-oriented. Throughout, participants critically assess the experience, draw useful conclusions, and anticipate application of such knowledge to future situations. The assigned faculty member assumes a role of mentor/coach.
- Geared toward participation-based experiences such as service learning and job shadowing.

Independent Study

- Format is distinctive and individualized; content is tailored to the student(s) and particular situation.
- Intended for unique learning experiences outside of established courses.
- Enrollment varies; typically, however, section size is small (1 to 5 students).
- For each section, a suitable plan of study and meeting schedule are negotiated and established.

Internship/Practicum

- This field-based learning experience is monitored and supervised; examples include discipline-specific field work, student teaching, and cooperative education.
- Placed in real-world environments of chosen professions, students strongly engage; involvement is memorable and impactful.
- In pursuit of relevant, discipline-based experience, each student follows a prearranged plan of study and benefits from skilled mentoring.
- Such experience may or may not be associated with payment of wages.
- Enrollment is variable, depending on need.

Laboratory

- Face-to-face course instruction takes place in a specialized physical setting – that is, the laboratory. Online instruction is tailored to the situation and entails a simulated laboratory environment.
- Laboratory experience complements lecture; instruction reinforces concepts presented in lecture through hands-on application.
- Enrollment maximum varies, but typically does not exceed 25.

Lecture

- The learning environment is highly structured; course content is largely rooted in facts, principles, ideas, and theory.
- Communication is very straightforward and primarily one-way; the faculty member formally relays information, while students listen.
- This format is particularly relevant to situations in which student knowledge of subject matter is very limited.
- Classes can be sizable; enrollment maximums – which widely vary – depend on course level, discipline, and university preference.

Lecture-Lab Combination

- Relevant to instructional situations that feature seamless melding of lecture and laboratory activities (as defined by methods R and L). The lecture and laboratory components are streamlined into a single section.
- Due to the seamless presentation of course content, the totality of instruction typically occurs in a single learning space on the same days/time frames.
- In cases where traditional course situations (comprised of both lecture and laboratory components linked as corequisites) transition to instructional method K, the laboratory course is inactivated, and the lecture course moves forward as the integration.
- For such situations, Laboratory is not included in course title; L is not used in course numbering.

Music Ensemble, Large

- Intended for large groups, either instrumental or vocal in nature; examples include band, orchestra, and choir.
- Enrollments vary (10 or greater students) with regularly scheduled instructional meetings and/or faculty-led practices.
- Performers can register for a credit bearing or non-credit bearing experience; however, those who are enrolled for 0 credits must also register for other courses which are credit bearing.

Music Ensemble, Small

- Intended for small groups, either instrumental or vocal in nature.
- The course involves regularly scheduled instructional meetings and/or faculty-led practices.
- Enrollments vary between 3 and 9 students (trio, quartet, quintet, etc).

Orientation

- This course is designed to bolster navigational success (collegiate and/or programmatic); content facilitates optimal student acclimation and promotes informed decision making.
- Content is grounded in practical concepts associated with general collegiate life or specific professional discipline. This focus is reinforced by opportunities of expeditionary learning and interactions with guest speakers.
- Learning is highly hands-on with strong student engagement. The faculty member of record functions as a coordinator/mentor who offers support and encourages exploration.

Physical Education Activity

- This course is devoted to participation in/performance of a physical activity; faculty instruction includes proper form and technique.
- The enrollment maximum varies, depending on factors such as nature of the particular sport, availability of venue and equipment, and safety considerations.

Private Instruction

- This course centers on personalized, one-to-one training; common examples include music performance and flight instruction.
- Course content is consistent with prescribed learning outcomes; it is not negotiable, but rather, inherent to the course.

Research

- This course focuses on designing and conducting research; a viable and appropriate plan is developed as a collaborative effort between faculty member and student.
- Interaction between faculty member and student researcher is both extensive and intensive.
- This instructional method is not intended for courses that focus on either research methods (grounded in theory) or research proposal development; nor is it intended for graduate thesis/dissertation courses.

Seminar

- This course is highly focused and topical with strong, direct faculty-student interaction.
- Instruction features significant emphasis on student exploration of scholarly literature; research; and professional challenges, problems, and practices.
- This instructional method is exclusive to graduate and upper-level undergraduate (300, 400) course work.
- The enrollment maximum is typically 20 students.

Small Group

- Because of known and ongoing constraints, section size is extremely limited; such constraints are physical in nature; they tie to limited numbers of workstations, specimens, crucial pieces of equipment, etc.
- Section size is restricted to 9 or fewer students; because of inflexible physical constraints, teaching 10 or more is impossible.

Studio

- Intended for fine arts courses held in a specialized studio environment which is precisely and intentionally geared to the nature of course (for example, dance studio).
- Course presentation and student participation is contingent upon the special studio; no other learning venue will suffice.
- Course content demands significant one-to-one student/instructor interaction; the course is very hands-on with extensive student engagement.

Thesis

- A formal treatise presenting the results of study, which is submitted in partial fulfillment of the student's program requirements.
- The faculty thesis director is a strong presence; he/she provides considerable mentoring, guiding, and directing. Members of the thesis committee engage in more limited – but still important - interaction with the student.
- Should the student not complete all thesis requirements in the current term, a transitional grade (see SDBOR 2.8.1) must be assigned.

Tracking

- Utilized for 0-credit place holding pseudo courses; EXCH 489 presents a common example; it is used for students participating in international exchange programs.
- Enrollment assures retention of active student status for the current term.
- Intended usage is narrow and precise.

Travel Study

- Intended for a travel experience that is structured, academic, and university-sponsored with clearly established, on-site faculty leadership.
- Faculty member guides students through a progression of cohesive, theme-based learning environments; shares contextual information, motivates guided inquiry, and facilitates debriefing.
- Interactive instruction heavily relies on engagement of students with comparison of information and observations as well as sharing of insights and reactions.

Workshop

- A very intense, rigorous academic experience, the workshop focuses on a specific, narrowly tailored topic of current interest and professional relevance.

- The workshop is restricted to graduate level instruction; in rare instances, 300/400-level undergraduate instruction is allowed; this scenario requires special approval from the system Vice-President of Academic Affairs.
- For each earned credit, 45 hours of student work is required.
- No more than 3 graduate credit hours in any graduate program can be a workshop (see SDBOR Policy 2.4.2).

Course Delivery Methods/Schedule Type

(SDBOR Academic Affairs Guidelines 2.4.3.B)

Face-to-Face (F2F)

- Faculty member delivers course content when congregated together with students in a single physical setting.
- Location: In-person classroom
- Scheduled Class Time: Yes
- Immunizations Required: Yes

HyFlex

- Faculty member delivers course content through a blend of face-to-face and distance methodologies. The mix includes face-to-face, online synchronous, and online asynchronous. Students are allowed to choose, and that selection is fluid.
- Location: In-person classroom
- Scheduled Class Time: Yes
- Immunizations Required: Yes

HyFlex Synchronous

- Faculty member delivers course content through a blend of face-to-face and distance methodologies. The mix includes face-to-face and online synchronous. Students are allowed to choose, and that selection is fluid.
- Location: In-person classroom
- Scheduled Class Time: Yes
- Immunizations Required: Yes

Online Asynchronous

- Faculty member delivers entirety (100%) of course content via internet-based methodologies; instructor and students are physically separated. Students are not required to participate in learning engagements on specified days/times.
- Location: Online
- Scheduled Class Time: No
- Immunizations Required: No

Online Synchronous

- Faculty member delivers entirety (100%) of course content via internet-based methodologies; instructor and students are physically separated. Students are required to participate in learning engagements on specified days/times; this condition of the course is made known before the start of the term.
- Location: Online
- Scheduled Class Time: Yes
- Immunizations Required: No

Receive Site

- Faculty member utilizes technology (video and audio) in the delivery of course content to distance students.
- Location: In-person classroom
- Scheduled Class Time: Yes
- Immunizations Required: No

Send Site

- Faculty member utilizes technology (video and audio) in the delivery of course content to distance students; local students are physically present in the classroom of the host site, which is situated within the main campus.
- Location: In-person classroom
- Scheduled Class Time: Yes
- Immunizations Required: Yes

Hybrid Online

- Faculty member delivers course content through an integration of online and face-to-face methodologies. Between 75 and 99% of instruction is provided via online modalities.
- Location: In-person classroom for face-to-face meetings
- Scheduled Class Time: Yes
- Immunizations Required: No

Hybrid Face-to-Face

- Faculty member delivers course content through an integration of online and face-to-face methodologies. No more than 74% of instruction is provided via online modalities.
- Location: In-person classroom for face-to-face meetings
- Scheduled Class Time: Yes
- Immunizations Required: Yes

Emporium

- Faculty member does not provide traditional lectures, but rather, on-demand personal assistance as students progress through online instructional modules. The learning environment is a computer-based classroom located on campus.
- Location: In-person classroom
- Scheduled Class Time: No
- Immunizations Required: Yes

Other

- Relevant to situations in which the instructor of record may or may not play a role in the student's engagement and learning; such scenarios could include internships, practicums, field experiences, and tracking courses.
- Location: Off-campus internship or practicum
- Scheduled Class Time: No
- Immunizations Required: No

Emerging Technologies

- Faculty member utilizes newly available technology to deliver course content. If a trend accompanied by promise of longevity becomes evident, it will volley into creation of a unique delivery method code.
- Location: Situation-specific
- Scheduled Class Time: No
- Immunizations Required: No

Other Important Definitions

Common Course Numbering

The South Dakota Regental institutions utilize common course numbering. A common course (COM) is a course offered by one Regental institution that has essentially the same content (subjects/breadth) and level of instruction (depth) as a course offered by at least one other Regental university. Any courses on the following pages without the COM designation are considered to be unique to SDSU.

Cross-listed Courses

A cross-listed course is a course which carries more than one course prefix (i.e., HIST, POLS, GEOG) with credit being offered under any one of the listed prefixes at the same time. Students choose to take the course under the prefix that is more beneficial to their course of study. All students typically meet at the same time in the same place, with the same instructor(s). A cross-listed course may also be multi-numbered.

Dual Numbered Courses

A multiple-numbered course is a single course specifically designed for simultaneous delivery at two or more levels with the two or more numbers taught simultaneously. The course is offered for credit at different levels (i.e., courses may be offered for upper/lower division credit or for undergraduate/graduate credit). Different levels of expectations are stated for the students via the syllabi. The dual-numbered course may also be crosslisted.

x9x Common Course Descriptions

(SDBOR Academic Affairs Guidelines 2.4.1.A)

The following middle digit 9 course numbering scheme is used in the South Dakota public university system. These courses may have multiple sections. A section's title may or may not reflect the material covered in that section. See the academic department for section information, e.g., description, prerequisites such as instructor or department consent, GPA required, junior or senior standing, etc.

X90 Seminar

A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

x91 Independent Study

Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

x92 Topics

A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

393 through 893 Workshop

Special, intense sessions in specific topic areas. 45 hours of student work is required for each hour of credit earned. Workshops may vary in time range, but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity. No more than 3 graduate credit hours in any graduate program can be a workshop (see Board Policy 2.4.2).

x94 Internship

Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

x95 Practicum

Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

x96 Field Experience

Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

x97 Cooperative Education

Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

498 Research

Independent research problems/ projects or scholarship activities. The plan of study is negotiated by the faculty member and student. Contact between the two may be extensive and intensive.

788 Research Problems/Projects

Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

798 Thesis

A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

898D Dissertation

A formal dissertation presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee. For this structure D reflects doctoral degree; S reflects specialist degree.

Search for Class Sections

- Browse Classes

  Contact Information:

  Registrar's Office
  Enrollment Services Center (SESC)
  PO Box 511
  605-688-6195

- Continuing Education

Course Descriptions

ABE (Agricultural and Biosystems Engineering)

ABE 534 - Natural Resources Engineering
Credits: 3
Precipitation, infiltration, evapotranspiration and runoff from small agricultural watersheds and application to design of conservation structures, water erosion control practices. design of drainage and irrigation systems. Feedlot pollution control principles.

ABE 534L - Natural Resources Engineering Lab
Credits: 1
Laboratory to accompany ABE 534.

ABE 535 - Irrigation and Drainage Engineering
Credits: 3
Students will apply soil-water-crop relationships to water management systems. Students will learn and integrate theory, design, and management of artificial subsurface drainage systems; conservation drainage systems; pumping plants; and surface, sprinkler, and drip irrigation systems.

ABE 537 - Water Quality for Agriculture
Credits: 3
The study of the potential water quality impacts of agricultural practices and systems, human activities, and natural processes. Contaminants of focus will include nutrients, salts, biological contaminants, and others. Impacts and potential remediation or prevention actions will be studied. Students will design remediation or prevention methods or systems based on current knowledge and technologies.

ABE 544 - Unit Operations of Biological Materials Processing
Credits: 3
Transport processes of heat and mass are applied to the following unit operations: evaporation, drying gas liquid separation processes (humidification cooling towers), vapor-liquid separation processes (distillation), soil-liquid separation processes (leaching), membrane separations (ultrafiltration, reserve osmosis), mechanical separation processes, extrusion.
Corequisites: ABE 544L.

ABE 544L - Unit Operations of Biological Materials Processing Laboratory
Credits: 1
Laboratory to accompany ABE 544.

ABE 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ABE 732 - Advanced Hydrology in Agriculture
Credits: 3
Small watershed hydrology principles. Unit hydrograph theory. Infiltration and evapotranspiration processes. Small watershed surface runoff simulation. Soil erosion principles.
Registration Restriction: Instructor consent.

ABE 733 - Ground Water Engineering in Agriculture
Credits: 3
Saturated and unsaturated ground water flow theory. Steady and transient well hydraulics. Aquifer groundwater flow simulation. Infiltration models. Vadose zone simulation. Groundwater recharge.
Registration Restriction: Instructor consent.

ABE 738 - Computer Models in Water Resources Management
Credits: 3
This course offers students in agricultural, biosystems, and environmental engineering and related fields an understanding of hydrological modeling and associated skills. Computer models currently utilized in industry and government agencies for decision support will be studied and used to enhance the understanding of hydrological processes. Hands-on experiences will be organized with local case studies for analysis and practice-oriented learning using software tools.

ABE 748 - Bioseparations
Credits: 3
Study of separations important in food and biochemical engineering such as leaching, extraction, expression, absorption, ion exchange, filtration, centrifugation, membrane separation, and chromatographic separations.
Prerequisites: ABE 544.

ABE 754 - Advanced Unit Operations of Food/Biomaterials Processing
Credits: 2
Advanced study of engineering principles as they apply to unit operations for food preservation and processing, including effect of heat and time on the lethality of undesirable food microorganisms, heat transfer with foods and containers and its effect on food safety, freezing and refrigeration technology, high temperature short time extrusion processing, and aseptic processing.
Corequisites: ABE 754L.

ABE 754L - Advanced Unit Operations of Food/Biomaterials Processing Laboratory
Credits: 1
Laboratory to accompany ABE 754.
Corequisites: ABE 754.

ABE 763 - Instrumentation
Credits: 2
Principles of transducers, amplifiers and terminating devices in measurement systems with emphasis on transducers and systems performance. Techniques and methods for use in engineering and scientific measurement.
Corequisites: ABE 763L.

ABE 763L - Instrumentation Laboratory
Credits: 1
Laboratory to accompany ABE 763.
Corequisites: ABE 763.

ABE 771 - Graduate Seminar
Credits: 1
Discussion and reports of current topics and investigations in Agricultural and Biosystems Engineering.
Notes: Limit of 2 credits

ABE 790 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

ABE 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

ABE 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ABE 794 - Internship (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

ABE 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

ABE 898D - Dissertation (COM)
Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

ACCT (Accounting)

ACCT 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ACCT 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ADV (Advertising)

ADV 576 - Global and Multicultural Advertising
Credits: 3
This course develops an understanding of global and multicultural advertising and marketing. Students gain experience in decisions that reflect an understanding of global and multicultural markets and explore the social and ethical issues in such advertising and marketing.

AFES (Agriculture, Food and Environmental Sciences)

AFES 581 - Domestic Agricultural Travel Experience
Credits: 1-4
This travel study course is designed to provide extramural educational experiences, as approved by, and under the direction of a faculty member, and may be in cooperation with faculty and administrators of other institutions. Students will participate in hands-on activities, and design educational activities for presentation. Includes pre-travel coursework and post-travel reflection.

AFES 582 - International Agricultural Travel Experience
Credits: 1-4
This will be a team-mentored class. Students will work one on one or in small groups with professors that have knowledge of the global region and culture that will be visited. Students will participate in a one-to-three week travel/study abroad experience to another nation(s) to experience and evaluate diverse food/agricultural systems.

AFES 591 - Independent Study (COM)
Credits: 1-6
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

AFES 592 - Topics (COM)
Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

AFES 694 - Internship (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

AFES 750 - Capstone Experience
Credits: 4
This course will allow students to utilize their domestic and international agricultural travel experiences to focus on global agricultural issues facing the agricultural industry, the factors that contribute to the problem, and potential solutions that could be implemented to improve world-wide agriculture and food production, sustainability and environmental protection.

AFES 791 - Independent Study (COM)
Credits: 1-6
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

AFES 792 - Topics (COM)
Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

AGEC (Agricultural Economics)

AGEC 530 - Agribusiness Marketing and Prices
Credits: 3
Economic theory and quantitative techniques used in analysis of procurement and sales, construction of economic models, statistical estimates of supply and demand, and price forecasting.

AGEC 540 - International Economics
Credits: 3
Explored the economic interaction between sovereign states, including the gains from trade, the pattern of trade, protectionism, the balance of payments, exchange rate determination, international policy coordination, and the international capital market.
Cross-Listed: ECON 540.

AGEC 557 - Business Ethics (COM)
Credits: 3
This course is a study of the ethical implications of managerial decisions. Topics covered include the responsibility of the organization to the individual and society, the role of the individual within the organization, and ethical systems for American business. The course provides an examination and assessment of current American business practices.
Cross-Listed: BADM 557.

AGEC 562 - Environmental Law
Credits: 3
Introduction to regulatory theory, externalities and market failures, definition of key regulations affecting agribusiness, overview of local government law, and delineation of environmental laws relating to agriculture. Current environmental issues are related to statutory, administrative, and regulatory authorities.
Cross-Listed: BLAW 562.

AGEC 571 - Advanced Farm and Ranch Management
Credits: 3
Strategic and operational business planning of farms and ranches covering all essential topics from long-term financing, technology adoption, intellectual property rights, marketing, land use changes and climate change, biofuels, and trade. Selected quantitative tools and procedures for analysis and decision making in farm and ranch business management will provide students the right blend of knowledge and tools to become future farm and ranch managers.

AGEC 572 - Resource and Environmental Economics (COM)
Credits: 3
Resource and environmental economics surveys the allocation and conservation of natural resources from a perspective of optimal use and sustainability. Emphasis is placed on environmental economics including the problems of pollution, population, and economic growth. Methods for evaluating projects and programs are considered.
Cross-Listed: ECON 572.

AGEC 573 - Rural Real Estate Appraisal
Credits: 2
Practices of rural real estate appraisal. The application of cost, market data, and income approaches to rural land and building appraisal are covered, including tax, loan, and other specialized rural appraisal procedures in developing the appraisal report. Field trips to rural areas are included as part of completing an actual appraisal.
Corequisites: AGEC 573L.

AGEC 573L - Rural Real Estate Appraisal Lab
Credits: 1
Laboratory to accompany AGEC 573.
Corequisites: AGEC 573.

AGEC 579 - Agricultural Policy
Credits: 3
This course examines the process of developing agricultural and food policy. Topics will include the policy development process; global and domestic implications of both US domestic and international trade policies; environmental and resource issues; food safety, security, and nutrition policies; and the intended and unintended consequences of policy decisions.

AGEC 584 - Trading in Commodity Futures and Options
Credits: 3
This course utilizes fundamental and technical analysis techniques to analyze commodity futures and options. This is a hands-on commodity trading class. Students will analyze selected agricultural and other commodity markets, generate trading proposals, and initiate, manage, and close positions in commodity futures and options markets.

AGEC 585 - Farming and Food Systems Economics
Credits: 3
Economic concepts and methods for analyzing farming system and food system alternatives, investments, and issues. Includes economic feasibility analysis methods for assessing potential farm/ranch, value-added, and other food enterprises. Economic structure and organization of food systems in US and other parts of the world are examined.

AGEC 590 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

AGEC 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

AGEC 593 - Workshop (COM)
Credits: 1-3
Special, intense sessions in specific topic areas. Approximately 45 hours of work is required for each hour of credit. Workshops may vary in time range but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity.

AGEC 596 - Field Experience (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

AGEC 691 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

AGED (Agricultural Education)

AGED 501 - Parliamentary Procedure
Credits: 2
This course will focus on the function of deliberative assemblies and the orderly conduct of meetings. The course will utilize the current version of Roberts Rules of Order Newly Revised to prepare students to provide parliamentary advice to student organizations, school boards, commodity groups, and other deliberative assemblies.

AGED 531 - Work Based Learning
Credits: 2
In this course the student will learn the importance of work-based learning programs, establish communication skills that include community needs into student programing, and develop curriculum for a complete work-based learning program.
Cross-Listed: FCSE 531.

AGED 592 - Topics (COM)
Credits: 1-5
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

AGED 625 - Future Directions for Career and Technical Education
Credits: 3
This course will discuss current educational and political influences on CTE through the lens of the constructivist foundations of the field. Students will examine trends in CTE to attempt to predict and prepare for the CTE classrooms of tomorrow. Primary focus of the course will be on agricultural and family and consumer science education.

AGED 650 - Foundations of Agricultural Education
Credits: 3
An understanding of the historical and philosophical development of agriculture food and natural resource systems places current events in their proper historical frame. This course explores the history of agriculture in North America, the philosophies which guided its evolution, and agricultural progress from the 1600s to present day. Inquiry includes public school and county extension education, the USDA, the Land-Grant system, the National FFA Organization, and 4-H youth development.

AGED 788 - Research Problems/Projects (COM)
Credits: 1-7
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

AGED 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

AHED (Adult Higher Education)

AHED 711 - Assessment and Program Design
Credits: 3
Organization and implementation of adult education programs. Particular emphasis on curriculum development, financing, staffing, marketing, and evaluation of adult programs.

AHED 720 - Principles of Postsecondary Education (COM)
Credits: 3
This course provides an overview of the postsecondary education system in the US. It surveys the history, major features, and effects of this system.

AHED 755 - Principles of College Teaching
Credits: 3
An analysis of teaching methodologies, planning procedures, evaluation techniques, and professional relationships. Emphasis will be on learning and using strategies suitable for teaching.

AHED 794 - Internship (COM)
Credits: 1-8
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than in the case with field experience courses.

AHSS (Arts, Humanities and Social Sciences)

AHSS 701 - Ethical Theory for Social Scientists
Credits: 3
This course presents a foundational overview of major ethical theory for use in the social sciences. Ethical theory is used as a lens through which social science research and practices can be applied. The focus of the course is on ethical methodology as a means to application.

AHSS 702 - Writing for the Social Sciences
Credits: 3
This course will use a combination of discussion, workshops, and individualized instruction to introduce graduate students in the Social Sciences to the purposes and practices of academic writing. Students will strengthen their skills in higher-level reading and writing through critical examination of writing across a variety of academic genres and ongoing feedback and revision throughout the course. The course will culminate in students' completion of a substantial writing project relevant to their progress in the program

AIE (Artificial Intelligence Engineering)

AIE 501 - Artificial Intelligence Engineering
Credits: 3
This course focuses on the engineering, deployment, and evaluation of artificial intelligence systems. Students apply programming, data handling, and model development skills to design scalable and reliable AI applications. The course emphasizes system integration, performance evaluation, optimization, and ethical considerations, preparing students for professional practice in artificial intelligence engineering.

AIE 510 - Introduction to Machine Learning
Credits: 3
This course introduces the fundamental concepts, algorithms, and engineering practices of machine learning. Students learn how data-driven models are designed, trained, evaluated, and integrated into intelligent systems. Emphasis is placed on scalable, reliable, and reproducible ML pipelines that support real-world intelligent system development.

AIE 520 - Introduction to Deep Learning
Credits: 3
This course introduces deep learning as a core technology for building intelligent systems, with an emphasis on the engineering of scalable and reliable deep learning systems. Students learn how neural networks are designed, trained, optimized, and integrated into real-world applications.

AIE 522 - Natural Language Processing with Deep Learning
Credits: 3
This course introduces natural language processing using deep learning, including transformers and large language models. Students learn core NLP tasks and explore prompt-based methods and system integration, with emphasis on theoretical foundations and hands-on implementation using modern deep learning frameworks.
Prerequisites: AIE 520.

AIE 524 - Generative Artificial Intelligence
Credits: 3
This course introduces the fundamentals and engineering of generative artificial intelligence (GenAI) systems that create text, images, code, and other content. Students study modern generative model architectures such as large language models, diffusion models, and multimodal foundation models, along with the data pipelines used to collect, preprocess, train, and deploy these models.
Prerequisites: AIE 520.

AIE 540 - Mobile and Cloud Computing
Credits: 3
This course introduces mobile, edge, and cloud computing for AI systems. Students learn to develop and deploy AI applications across mobile, edge, and cloud platforms, with emphasis on scalable, reliable, and efficient intelligent services.

AIE 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

AIE 720 - Deep Learning for Intelligent Systems
Credits: 3
This course covers latest deep learning architectures, agent-based systems, and deep reinforcement learning for building intelligent systems, including transformers, foundation models, multimodal networks, graph neural networks, LLM-based autonomous agents, and deep RL for decision-making and control. The course emphasizes how these models are designed, optimized, and deployed in real-world applications.
Prerequisites: AIE 520.

AIE 721 - Distributed Machine Learning System
Credits: 3
This course focuses on engineering scalable machine learning systems across multiple machines. Students learn to design distributed ML pipelines, optimize performance, and ensure reliability using modern frameworks and cloud platforms. Emphasis is placed on system architecture, resource efficiency, and production deployment, preparing students to engineer robust, real-world ML systems.

AIE 750 - Machine Learning System Design
Credits: 3
This course focuses on the engineering of end-to-end machine learning systems, including MLOps practices for building, deploying, monitoring, and maintaining models in production. Students learn how to design scalable ML architectures, develop data and training pipelines, manage the model lifecycle, and integrate models into real-world intelligent systems.
Prerequisites: AIE 510.

AIE 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

AIE 791 - Independent Study (COM)
Credits: 1-5
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

AIE 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

AIE 798 - Thesis (COM)
Credits: 1-9
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

AIE 898D - Dissertation (COM)
Credits: 1-9
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

AIS (American Indian Studies)

AIS 511 - South Dakota Indian Studies (COM)
Credits: 3
An introduction to the historical and contemporary life of the Dakota, Lakota, and Nakota (Sioux Tribes). The following conceptual areas are addressed throughout the course: Indian values, family structures, traditional religion; Indian fine arts; legends; economics; governmental policies, treaties, and acts and related areas. The course focuses on teaching methods, context, and materials to equip students to teach bicultural.

AIS 512 - Cultural Issues in Mass Communication
Credits: 3
From the perspectives of media creator, audience and source, this course uses a decolonizing lens to examine the ways culture impacts strategic storytelling and representation.
Cross-Listed: MCOM 512.

AIS 519 - World Environmental History (COM)
Credits: 3
Examines the history of interactions between human cultures and the natural world from the 1400s to the present day.
Cross-Listed: HIST 519.

AIS 520 - Indigenized Media: Rising Voices in Digital Storytelling
Credits: 3
A deep dive into the works of Indigenous filmmakers, journalists, artists, bloggers, influencers and pop culture creators. The course focuses on the growth of the Native media industry, its influence on Native and non-Native publics and discourses, and the future of Indigenous storytelling.
Cross-Listed: MCOM 520.

AIS 530 - Indigenous Relationships to the Environment
Credits: 3
This course provides an overview of Indigenous relationships to the environment which promote the systemic flourishing of life. Students will engage in knowledges that demonstrate the common ground of Indigenous culture and scientific thought. This course will also provide an opportunity to develop professional skills in working with Indigenous peoples, culture, and the environment.

AIS 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ARCH (Architecture)

ARCH 501 - Writing Architecture
Credits: 3
This course looks at both the history and the practice of writing about architecture from the end of the nineteenth century to the present with particular attention to the rise of criticism in architectural culture.

ARCH 502 - Reading Architecture
Credits: 3
Introduces fundamental theoretical texts and their influence on architectural thinking. Students will read explore and discuss historical and contemporary issues through the lens of assigned texts.

ARCH 532 - Technology of Surroundings
Credits: 2
Lecture and field work in urban design practices, environmental responsibilities, and the implementation of site design technologies.

ARCH 533 - Technology of Structures
Credits: 3
The course builds both an intuitive and empirical understanding of the basic principles of systems thinking in architecture through mechanical study and integrative analysis of building structure performance in space and against gravity.

ARCH 534 - Technology of Systems
Credits: 3
The course builds both an intuitive and empirical understanding of the basic principles of systems thinking in architecture through environmental study and integrative analysis of building service system performance.

ARCH 542 - History of Ideas
Credits: 3
Studying architecture through the frame of history emphasizing the 20th century development of the modern culture of architecture. Buildings, both local and global, from across diverse societies put into historical context as cultural, socio-political, and corporate artifacts of the profession.

ARCH 543 - Urban History
Credits: 3
Studying architecture in a broad survey of the development of contemporary cities through architectural practices, both local and global and from across diverse societies. Cities are put into historical context as a system of cultural, socio-political, and economic artifacts.

ARCH 544 - History of Profession
Credits: 3
Studying architecture through the frame of history emphasizing building as a professional and disciplinary practice. The course focuses on historical study of the genesis of the profession across time and cultures in Renaissance and Baroque Italy (1350-1650).

ARCH 555 - Building Studio
Credits: 5
Building design performed in the integrative digital modeling of function, site, construction, surface, structure, systems, form, and composition.

ARCH 555L - Building Lab
Credits: 2
Building design projected in the graphics of planimetric drawings, diagrams, and animations of function, site, construction, surface, structure, systems, form, and composition.

ARCH 603 - Practicing Architecture
Credits: 1
Preparatory course in which a proposal for completion of the independent project and documentation is prepared and approved. This class will require students to create an independent project and necessary documentation. They will also create the necessary calendar and schedule for the project.

ARCH 631 - Technology of Envelopes
Credits: 2
Introduction to building systems, daylighting, environmental systems, building services, and sustainable technologies with an emphasis on the building exterior surface.

ARCH 632 - Technology of Interiors
Credits: 2
Introduction to technological issues of interior systems and construction including plumbing systems, mechanical air handling, lighting, finish materials, and sustainable practices in interior design.

ARCH 650 - Comprehensive Building Design
Credits: 6
Comprehensive professional architectural studio measuring competency across all aspects of a coordinated building design. Students will prepare detailed drawings, documents and models describing a complex building program, integrated systems and structure, and an appropriate relationship to site.

ARCH 653 - Independent Performance
Credits: 6
Performance of a self-initiated service, research, teaching, or practical training exercise.
Prerequisites: ARCH 603.

ARCH 654 - Research Studio
Credits: 5
The research studio is the collaborative performance of a systematic inquiry whose goal is communicable knowledge. They are topical investigations either 'into', 'for' or 'through' architecture and guided by polemical questions that come out of contemporary issues in faculty research and creative activity.

ARCH 654L - Research Lab
Credits: 2
The research lab records and reflects the processes and products of the research studio as communicable knowledge. Media utilized will be topical to the workflow of the studio.

ARCH 655 - Independent Documentation
Credits: 3
Written, photographic, and graphical recording, description, and reflection of the self-initiated exercise performed in ARCH 653.

ARCH 673 - Professional Practice I
Credits: 3
A study of the theories, responsibilities, and opportunities in regulation and stewardship in professional practice.

ARCH 674 - Professional Practice II
Credits: 3
A study of the theories, responsibilities, and opportunities in economics and management in architectural practice.

ARCH 691 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

ARCH 692 - Topics (COM)
Credits: 3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ART (Art)

ART 591 - Independent Study (COM)
Credits: 1-12
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

ART 592 - Topics (COM)
Credits: 1-9
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

AS (Animal Science)

AS 531 - Advanced Bison Production
Credits: 3
An in-depth course focusing on bison management and production techniques specific to bison. Intensive, governmental, and tribal production systems will be thoroughly explored.
Notes: Fall.

AS 533 - Applied Mineral Nutrition of Livestock
Credits: 1
This course is designed to provide an overview of macro and micromineral nutrition of domestic livestock. Students will explore the general functions of various minerals, mineral requirements, potential interactions, bioavailability of different mineral sources, and signs of mineral deficiencies or toxicities.

AS 534 - Applied Vitamin Nutrition of Livestock
Credits: 1
This course is designed to provide an overview of vitamin nutrition of domestic livestock. Students will explore the general functions of various vitamins, vitamin requirements, effectiveness of different vitamin sources, and signs of vitamin deficiencies or toxicities.

AS 541 - Advanced Meat Science
Credits: 3
In-depth study of muscle anatomy and physiology, postmortem metabolism, rigor mortis, meat proteins, meat quality, and meat tenderness.
Notes: Even Spring. Sections of this course are provided online through the Innovative Digital Education Alliance.

AS 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.
Notes: Fall, Spring, and Summer.

AS 592 - Topics (COM)
Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

AS 711 - Ruminology
Credits: 3
Biochemical, physiological, and microbiological activity occurring in the rumen and the relation of rumen function to animal response.
Cross-Listed: DS 711.

AS 712 - Ruminant Nutrition
Credits: 3
Principles of nutrition for ruminants in relation to growth, reproduction and lactation.
Notes: Even Spring on-campus. Other sections of this course are provided online through the Innovative Digital Education Alliance.

AS 720 - Advanced Selection of Domestic Animals
Credits: 3
Quantitative and population genetic theory of sound breeding programs for domestic animals including, variation, heredity, selection, estimation of breeding values, systems of mating, and performance testing.
Notes: Sections of this course are provided online through the Innovative Digital Education Alliance.

AS 730 - Endocrinology
Credits: 3
This course covers topics pertaining to endocrine gland and hormone function; hormone synthesis; control of hormone secretion, circulation and metabolism; physiological roles of hormones; and mechanisms of hormone action. Specific areas of study involve pituitary and hypothalamic function, pancreatic function, and hormones regulating growth and metabolism, thyroid hormones, gonadal and adrenal hormones.
Notes: Odd Spring.

AS 732 - Advanced Physiology of Reproduction
Credits: 3
Anatomical and physiological process of reproduction in domestic animals with special emphasis on research techniques and the findings of recent research.
Notes: Odd Fall on-campus. Sections of this course are provided online through the Innovative Digital Education Alliance.

AS 734 - Protein and Energy Nutrition
Credits: 3
Principles of protein and energy metabolism and the partitioning of these nutrients for maintenance, growth and production in domestic farm animals.
Notes: Odd Spring.

AS 736 - Monogastric Nutrition
Credits: 3
Nutrition principles for nonruminants related to reproduction, lactation and growth.
Notes: Even Fall on-campus. Other sections of this course are provided online through the Innovative Digital Education Alliance.

AS 740 - Metabolism
Credits: 3
The metabolism of domestic animals and humans will be covered. This will include the structure and function of proteins, enzyme kinetics, and catalysis. The major pathways of amino acid, carbohydrate, lipid, and nucleotide metabolism including their regulation will be emphasized.
Notes: Fall.

AS 750 - Animal Growth and Development
Credits: 3
Growth of animals at the cellular level, including hormones, growth factors, receptors and signaling and growth at the whole animal level.
Notes: It is recommended that students have completed undergraduate biochemistry (or AS 640) and physiology courses. Even Spring on-campus. Other sections of this course are provided online through the Innovative Digital Education Alliance.

AS 753 - Research Topics in Meat Science
Credits: 3
Current research issues in meat science. Interpreting meat science research results. Experience in scientific writing for proposals and journal articles.
Notes: Odd Spring.

AS 760 - Advanced Equine Nutrition
Credits: 3
This course explores concepts in equine nutrition including digestive physiology of horses, nutrient requirements for different classes of horses and feed management. Ration evaluation and balancing, as well as problem solving will be a core component to this course.
Notes: Sections of this course are provided online through the Innovative Digital Education Alliance.

AS 770 - Advanced Beef Production
Credits: 3
This class is aimed at students with an interest in the Beef Cattle Industry. The course combines principles of farm and ranch land acquisition and management, along with: breeding, nutrition, reproduction, health and disease prevention, life cycle management of the calf crop, as well as marketing alternatives for the producer. Retained ownership of the calf crop past weaning through the stocker and/or feedlot phase will be discussed and evaluated financially. New and emerging technologies will also be discussed.
Notes: Sections of this course are provided online through the Innovative Digital Education Alliance.

AS 780 - Evaluation and Use of Breeds in Livestock
Credits: 3
Evaluation of breeds of cattle, sheep, and swine with emphasis on breed comparison research and breed history. Examination of appropriate use of existing breed resources and development of new breeds.
Notes: Sections of this course are provided online through the Innovative Digital Education Alliance.

AS 790 - Seminar (COM)
Credits: 1
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

AS 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

AS 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

AS 898D - Dissertation (COM)
Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

AST (Agricultural Systems Technology)

AST 563 - Agricultural Waste Management
Credits: 3
Understand agricultural or biological wastes. Develop an understanding of regulatory requirements and best management practices that advocate responsible environmental stewardship. Topics include production, collection, handling, treating, and reusing agricultural and biological wastes. Course will emphasize written and oral reports.

AST 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

AT (Athletic Training)

AT 600 - Introduction to Patient Management
Credits: 2
Introduction to the role of the athletic trainer in the healthcare system and contemporary healthcare competencies that support expected standards of care.
Registration Restriction: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 610 - Interventions I
Credits: 3
Exploration of foundational principles, theories, and skills associated with the development and implementation of evidence-based plans of patient care.
Registration Restriction: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 611 - Prophylactic Interventions
Credits: 2
Students will develop the ability to select and apply taping, bracing, and other commonly used techniques and devices designed to prevent and/or minimize risk of injury or re-injury in physically active clients and patients.
Registration Restriction: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 651 - Clinical Experience I
Credits: 1
Students participate in client and client-related services that are an integral part of the athletic training program. Clinical instruction occurs in and outside the institutional setting and involves work with clients who receive professional services from students serving under direct supervision of approved preceptors.
Registration Restriction: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 652 - Clinical Experience II
Credits: 1
Students participate in client and client-related services that are an integral part of the athletic training program. Clinical instruction occurs in and outside the institutional setting and involves work with clients who receive professional services from students serving under direct supervision of approved preceptors.
Registration Restriction: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 722 - Patient Examination and Treatment I
Credits: 6
Students will develop the professional knowledge and skills necessary to accurately examine and care for common musculoskeletal conditions affecting the lower extremity and spine.
Registration Restriction: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 725 - Principles of Acute Care in Athletic Training
Credits: 2
Students will develop the knowledge, skills and clinical decision-making ability to act efficiently and effectively in emergency situations involving life-threatening and/or non-life-threatening conditions. Ethical and legal issues related to emergency care and the practice of Athletic Training will also be addressed.
Registration Restriction: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 725L - Principles of Acute Care Lab
Credits: 1
Lab to accompany AT 725.
Registration Restriction: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 732 - Patient Examination and Treatment II
Credits: 6
Students will develop the professional knowledge and skills necessary to accurately examine and care for common musculoskeletal conditions affecting the upper extremity and spine.
Registration Restriction: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 735 - Health Care Administration for Athletic Training
Credits: 2
Students will develop the professional knowledge, skills and values that an athletic trainer must possess to administer and manage a health care facility and associated venues that provide health care to athletes and others involved in physical activity.
Registration Restriction: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 740 - Functional Movement
Credits: 2
Students will develop the ability to evaluate and correct movement patterns as part of the injury prevention, performance enhancement, and rehabilitative processes. Students will also learn how to apply these techniques to sport specific movements for the purposes of injury prevention and performance enhancement.
Registration Restriction: Must be a graduate student in the School of Health and Human Sciences.

AT 740L - Functional Movement Lab
Credits: 1
Lab to accompany AT 740.
Registration Restriction: Must be a graduate student in the School of Health and Human Sciences.

AT 742 - General Medical Examination
Credits: 3
Students will develop the professional knowledge and skills necessary to evaluate and care for general medical conditions, illnesses, and system disorders. Foundational principles of pathophysiology will be included in addition to relevant pharmacologic and behavioral health concepts.
Registration Restriction: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 753 - Clinical Experience III
Credits: 2
Students participate in client and client-related services that are an integral part of the athletic training program. Clinical instruction occurs in and outside the institutional setting and involves work with clients who receive professional services from students serving under direct supervision of approved preceptors.
Registration Restriction: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 754 - Clinical Experience IV
Credits: 1
Students participate in client and client-related services that are an integral part of the athletic training program. Clinical instruction occurs in and outside the institutional setting and involves work with clients who receive professional services from students serving under direct supervision of approved preceptors.
Registration Restriction: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 755 - Clinical Experience V
Credits: 5
Students participate in client and client-related services that are an integral part of the athletic training program. Clinical instruction occurs in and outside the institutional setting and involves work with clients who receive professional services from students serving under direct supervision of approved preceptors.
Registration Restriction: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 756 - Clinical Experience VI
Credits: 5
Students participate in client and client-related services that are an integral part of the athletic training program. Clinical instruction occurs in and outside the institutional setting and involves work with clients who receive professional services from students serving under direct supervision of approved preceptors.
Registration Restriction: Must be a graduate student admitted to the M.S. in Athletic Training.

AT 788 - Research Problems/Projects (COM)
Credits: 1
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

AT 790 - Seminar (COM)
Credits: 2
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

AT 795 - Practicum (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.
Notes: Throughout the course of the two-year curriculum, students will complete five (5) separate AT 795 Practicum courses that are linked to students' clinical experiences: AT 795: Practicum – Clinical Experience I (2 credits), AT 795: Practicum - Modalities (2 credits), AT 795: Practicum – Upper Extremity Assessment (2 credits), AT 795: Practicum – Fall Camp Experience (1 credit), and AT 795: Practicum – Clinical Experience III (2 credits).

BADM (Business Administration)

BADM 557 - Business Ethics (COM)
Credits: 3
This course is a study of the ethical implications of managerial decisions. Topics covered include the responsibility of the organization to the individual and society, the role of the individual within the organization, and ethical systems for American business. The course provides an examination and assessment of current American business practices.
Cross-Listed: AGEC 557.

BADM 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

BADM 593 - Workshop (COM)
Credits: 1-3
Special, intense sessions in specific topic areas. Approximately 45 hours of work is required for each hour of credit. Workshops may vary in time range but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity.

BIOL (Biology)

BIOL 515 - Mycology (COM)
Credits: 2
Comprehensive taxonomic survey of the Kingdom Fungi; reproductive biology, physiology, genetics, and ecology of fungal organisms; relationship of fungi to human affairs.
Corequisites: BIOL 515L.
Cross-Listed: PS 515.

BIOL 515L - Mycology Lab (COM)
Credits: 1
Laboratory experience that accompanies BIOL 515.

BIOL 539 - Biology of Aging
Credits: 3
Physical, sensory, and physiological changes with age, aging of cells and tissues. Cellular, developmental, endocrine and other theories of aging. Pathologies of aging.

BIOL 548 - Molecular and Microbial Genetics
Credits: 4
This course in molecular genetics will cover the concepts and the molecular mechanisms in genetics of prokaryotic and eukaryotic organisms. Students will study the molecular processes underlying gene structure and function, will learn the major components and their basic structures in molecular genetics, will understand the molecular mechanisms of major biological processes such as gene expression and regulation, and will learn to interpret the results from the literature in molecular genetics. In addition, the course will provide a comprehensive coverage of the common molecular tools and their applications.
Cross-Listed: MICR 548.

BIOL 566 - Environmental Toxicology and Contaminants (COM)
Credits: 3
This course will prepare students in the area of Ecological Effects of Toxic Substances and other contaminants. Wildlife toxicology and impacts of agriculture on the Northern Plains will be emphasized. Topics covered will include pesticides, heavy metals, aquatic and terrestrial ecotoxicity and other topics related to Wildlife Toxicology.

BIOL 567 - Parasitology
Credits: 2
This course will prepare students in the area of ecological effects of toxic substances and other contaminants. Wildlife toxicology and impacts of agriculture on the Northern Plains will be emphasized. Topics covered will include pesticides, heavy metals, aquatic and terrestrial ecotoxicity and other topics related to wildlife toxicology.
Corequisites: BIOL 567L.

BIOL 567L - Parasitology Lab
Credits: 1
Laboratory experience that accompanies BIOL 567.
Corequisites: BIOL 567.

BIOL 570 - Cancer Biology (COM)
Credits: 3
This course will address the current research directed at understanding the molecular and cellular basis of cancer and explore potential therapeutic targets. Topics covered will emphasize cell cycle regulation and apoptosis, cellular control of proliferation and differentiation, genetic alterations, growth factors and signal transduction, invasion and metastasis, and angiogenesis.

BIOL 576 - Advanced Mammalian Physiology
Credits: 4
An advanced study of the physiological mechanisms utilized by mammals to regulate body functions with the nervous and endocrine systems, to acquire and use chemical energy from their environment, and to integrate the functions of the organs' systems to maintain the health of the animal. Emphasis is placed on applying physiological concepts and principles to solve problems. Previous courses in anatomy, physiology, and biochemistry are recommended.

BIOL 583 - Developmental Biology (COM)
Credits: 3
Analysis of the processes of animal development beginning with the formation of female and male gametes (ova and sperm) and ending with organ differentiation. Evolutionary concepts of animal development, developmental genetics, and molecular biological approaches to the analysis of development.

BIOL 592 - Topics (COM)
Credits: 1-5
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

BIOL 594 - Internship (COM)
Credits: 1-12
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

BIOL 645L - Microimaging Techniques Laboratory
Credits: 1-3
Preparation and observation of animal and plant tissues for photomicroscopic study. Emphasis will be given to various techniques used in current research areas.

BIOL 719 - Professional Development Seminar
Credits: 1-4
The course includes: alternative career prep, mentoring, CV/application packet review, interviewing & negotiation skills, MCAT (or alternative professional exam) preparation, field experiences, case studies, intellectual integration of material presented in disparate courses evaluated through written and oral presentations, scaffolded learning in the areas of professionalism, academic and non-academic writing and oral communication, bioethics and healthcare case studies.
Prerequisites: Students must be enrolled in the M.S. in Human Biology.

BIOL 721 - Advanced Human Anatomy
Credits: 2
Regional dissection of the human body that capitalizes on the systems-based approach. Structure, function, and fetal development are used in combination with medical cases/clinical correlations to enhance student learning.
Registration Restriction: Must be a graduate student admitted to the M.S. in Human Biology or M.S. in Athletic Training. The BIOL 494 Anatomy Internship is strongly recommended prior to enrollment in this course.
Corequisites: BIOL 721L.

BIOL 721L - Advanced Human Cadaver Dissection
Credits: 2
Laboratory to accompany BIOL 721.
Corequisites: BIOL 721.

BIOL 743 - Cell Biology (COM)
Credits: 3
Emphasis on the integration of structure and function in the cell.

BIOL 782 - Epidemiology
Credits: 3
The course introduces concepts and methodologies for the study of health and disease in human populations. Different study designs and their methods of analysis will be discussed, as well as sources, handling, and interpretation of epidemiologic data.
Cross-Listed: NUTR 782.

BIOL 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

BIOL 790 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

BIOL 791 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

BIOL 792 - Topics (COM)
Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

BIOS (Biological Sciences)

BIOS 662 - Advanced Molecular Biology
Credits: 3
This course will provide the students a cutting-edge, comprehensive knowledge in molecular biology. It will give the students a perspective both on what is known and on what is unknown about the structure, organization and functions of genes, genomes and genetic mechanisms.
Notes: Undergraduate courses in genetics and cell biology are recommended prior to taking the course.

BIOS 663 - Advanced Concepts in Infectious Disease
Credits: 6
This course will provide cutting-edge, comprehensive knowledge in molecular and cellular pathogenesis and the immune response. It will give a perspective both on what is known and current research in the areas of general pathology, immunology, virology, and bacteriology. The course will cover the importance of host-pathogen interactions in infectious disease, which will serve as the basis for further study within more specialized topics in higher-level courses.
Prerequisites: BIOS 662; students with no background in infectious disease should enroll in undergraduate Immunology, Virology, or Medical Microbiology prior to taking this course.

BIOS 664 - Molecular Plant Physiology
Credits: 3
This course discusses current molecular advances in plant biology. A wide range of topics in plant growth and development as well as plant interactions with abiotic and biotic factors will be covered. Each topic is led by a researcher who is experienced in the subject area being discussed, and consists of an introduction lecture and a case study followed by a class discussion on a recent research paper in the field.
Cross-Listed: PS 664.

BIOS 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

BIOS 791 - Independent Study (COM)
Credits: 1-6
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

BIOS 792 - Topics (COM)
Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

BIOS 794 - Internship (COM)
Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

BIOS 796 - Field Experience (COM)
Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

BIOS 798 - Thesis (COM)
Credits: 1-10
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

BIOS 898D - Dissertation (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

BLAW (Business Law)

BLAW 533 - Real Estate (COM)
Credits: 3
This course is a study of real property interests including brokerage, law, financing, investments, appraisal, property development, property management, and marketing.

BLAW 551 - Public Health Law
Credits: 3
Will investigate issues across a range of specific contexts in public health such as communicable disease control, public health class action litigation and medical care e.g., the right to have and refuse medical care, confidentiality and privacy). Issues include how health policies are developed; the impact current and potential policies have and will have on public health; the courts role and interpretations of public health law; and the interaction of national, state, local, and interest group politics in the formation of policies. The course will focus on the states' roles and the constitutions of the states as well as the Tenth Amendment of the United States Constitution.
Cross-Listed: HLTH 551.

BLAW 553 - Principles and Procedures of Valuation
Credits: 4
Provides the first two parts of specific curriculum required for licensure by Appraisal Qualifications Board for individuals seeking a career in professional valuation services. Principles of valuation and appraisal procedures with concentration on the valuation process and techniques to apply. Topics include real property concepts and characteristics, legal considerations, influences on real estate values, types of value, economic principles, market area analysis, highest and best use, and ethical considerations.

BLAW 554 - Real Estate Finance
Credits: 3
Students will acquire the skills necessary to evaluate a variety of real estate investments through exposure to the terms, issues, and topics associated with commercial real estate. Students will become familiar with the unique investment structures, institutional features, and jargon associated with the field of real estate.

BLAW 555 - Advanced Real Property Valuation
Credits: 3
Students will learn the procedures used to estimate market value of real property; market analysis and valuation techniques most appropriate for appraising income-producing properties, including commercial and agricultural properties.

BLAW 562 - Environmental Law
Credits: 3
Introduction to regulatory theory, externalities and market failures, definition of key regulations affecting agribusiness, overview of local government law, and delineation of environmental laws relating to agriculture. Current environmental issues are related to statutory, administrative, and regulatory authorities.
Cross-Listed: AGEC 562.

BLAW 567 - Labor Law and Economics
Credits: 3
Explores history and development of the U.S. labor movement; the labor market from firm's and union's viewpoint; contract administration; collective bargaining; and public policy toward collective bargaining. Also explores current topics in employment law, discrimination, and employment at will.
Cross-Listed: ECON 567.

BLAW 590 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

BLAW 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

BLAW 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

BLAW 594 - Internship (COM)
Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

BLAW 596 - Field Experience (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

BLAW 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

BLAW 791 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

BLAW 792 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

BOT (Botany)

BOT 505 - Grasses and Grasslike Plants
Credits: 1
A systematic study of grasses, and grasslike plants of the northern Great Plains; field and lab practice in collection and identification of graminoid plants; discussion of unique biological aspects of grass and grasslike plants that make them economically and ecologically significant.
Corequisites: BOT 505L.

BOT 505L - Grasses and Grasslike Plants Lab
Credits: 2
Laboratory to accompany BOT 505.
Corequisites: BOT 505.

BOT 515 - Aquatic Plants
Credits: 1
A systematic survey of vascular plants that grow in wetland habitats, and a study of their adaptations to life in the water. Field and laboratory practice in identification and recognition of common aquatic plants.
Corequisites: BOT 515L.

BOT 515L - Aquatic Plants Lab
Credits: 2
Laboratory to accompany BOT 515.
Corequisites: BOT 515.

BOT 715 - Advanced Plant Ecology
Credits: 2
This course offers students an in-depth exploration of advanced topics in plant ecology, emphasizing theoretical frameworks, empirical research, and practical applications in the field. Students engage with both classic and current literature, participate in discussions, and address contemporary issues (e.g., climate change, biodiversity loss, habitat degradation, soil health, species invasion) to deepen their understanding of plant-environment interactions at various scales.
Corequisites: BOT 715L.

BOT 715L - Advanced Plant Ecology Laboratory
Credits: 1
This course explores advanced vegetation sampling techniques and statistical methods used in analyzing plant ecological research data, including community analysis and multivariate analysis. Emphasis is placed on hands-on data analysis using software packages and interpretation. Suggested background courses include graduate-level statistics.
Corequisites: BOT 715.

BOT 791 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

BOT 792 - Topics (COM)
Credits: 1-5
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

CA (Consumer Affairs)

CA 517 - Communication in Financial Planning
Credits: 3
Using the CFP Board's eight domains that describe the financial planning process as a framework, students will learn and demonstrate communication skills necessary for success in the financial planning field.

CA 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

CA 595 - Practicum (COM)
Credits: 3-6
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.
Prerequisites: Completion of 24 credits hours of CA courses at the 500 level or higher.

CA 612 - Financial Counseling
Credits: 3
Theory and research regarding the interactive process between the client and the practitioner, including communication techniques, motivation and esteem building, the counseling environment, ethics, and methods of data intake, verification, and analysis. Other topics include legal issues, compensation, uses of technology to identify resources, information management, and current or emerging issues.

CA 621 - Financial Theory and Research I
Credits: 3
Theories of family functioning, macroeconomic theory related to family resource allocation decisions, the family as an economic unit, and the interaction of the economy and families.

CA 645 - Military Personal Financial Readiness
Credits: 3
This course gives an overview of the topics relevant to the financial planning process. The course adapts the topics to address the unique needs of and resources available to military service members and their families. Topics covered are: status of service member; financial readiness; financial management; record-keeping; cash flow management; risk management; credit and debt management; savings, education planning, and investment management; tax management; retirement management; estate management; and special topics.

CA 715 - Housing and Real Estate in FFP
Credits: 3
The role of housing and real estate in the family financial planning process, including taxation, mortgages, financial calculations, legal concerns, and ethical issues related to home ownership and real estate investments. Emphasis on emerging issues in the context of housing and real estate.

CA 721 - Financial Theory and Research II
Credits: 3
Microeconomic theory as it relates to family resource allocation decisions, theories of household behavior, the lifecycle hypothesis, behavioral economics, behavioral finance, theories of behavioral change, and psychological theories of family well-being. Focus on empirical research investigating household financial decision-making.
Prerequisites: CA 621.

CA 745 - Professional Practices in Financial Planning
Credits: 3
Challenges of managing financial planning practices including, but not limited to: business evaluation, personnel, marketing, client services, ethics and technological applications. Relying both on a theoretical as well as an applied approach, students will analyze case studies that provide relevant, practical exposure to practice management issues, with a strong emphasis on current research findings.

CA 788 - Research Problems/Projects (COM)
Credits: 3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

CA 790 - Seminar (COM)
Credits: 3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

CA 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

CA 798 - Thesis (COM)
Credits: 1-6
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

CD (Community Development)

CD 592 - Topics (COM)
Credits: 3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

CD 600 - Foundations of Community Development
Credits: 3
This course is available only to graduate students registered in the Community Development specialization. This seminar serves as an orientation to on-line learning and an introduction to the courses, faculty and curriculum connected to the on-line master's degree program. Students will have an opportunity to meet each other on-line, practice using the technology to support learning objectives, and develop a basic understanding of the field.

CD 601 - Organizing for Community Change
Credits: 3
This course will examine the role of civil society in community planning efforts and offer students a comparative approach to planning theories and approaches. It will also focus on change within communities and the roles of government, planners, and citizens in reacting to or shaping change. Students will have an opportunity to explore current issues related to planning and dealing with change by examining controversial practices such as covenants and land trusts, as well as by studying various community responses to change. Students will understand how citizens, firms and governments act to improve their community and region; the structure and implications of power; the relation between social relationships and economic activity, coalition building, concepts of inclusiveness (class, gender, ethnicity, geography), voice, and conflict and its management in communities and regions. The course will cover dimensions of social capital and the context of change. Students will learn to use this knowledge to promote equitable change at the community and regional level. They will study the implications of economic and demographic shifts on strategies and tactics for change and explore various resources for supporting these efforts.

CD 602 - Community and Regional Economic Policy and Analysis
Credits: 3
A firm grounding in the reality of the local economy is necessary for successful programs in community economic development and for designing successful state and local policy and programs in economic development. The course introduces concepts of communities and regions, theories of economic growth, drivers of economic growth, the economic base of a community, course of growth or decline in the community, roles of local government and institutions, analytical tools, and strategies for local economic development.

CD 603 - Community Natural Resource Management
Credits: 3
The course will introduce students to the breadth of consideration involved in community resource management. Included in the course are theoretical frameworks, methodological investigation and applied practices to enhance the ability of community development professionals to work with their communities to plan, develop, and monitor the conversation and development of natural resources with multiple functions.

CD 604 - Community Analysis
Credits: 3
This course provides an introduction to research methods relevant to community development. Course topics include how to formulate and begin a research effort, methods of data collection and how conceptual frameworks are used to develop the questions and analyze data. Also included are strategies for reporting findings and applying findings in community action. The course will also look at methods of evaluating the entire research process. Significant attention is paid to issues of research ethics and inclusiveness throughout the course.

CD 605 - Principles and Strategies of Community Change
Credits: 3
This interdisciplinary course analyzes principles and practices of community change and development, beginning with definitions of community and the role of communities in social and economic change. Using case studies and the students' communities of reference, the course will relate Community Development approaches to conceptual models from diverse disciplines. Conceptual models include conflict, neo-classical economic growth, participatory democracy, and others. Students will be exposed to professional practice principles and will leave the course having constructed their personal framework for the practice of community development.

CD 612 - Housing and Development
Credits: 3
Review and evaluation of historical and current housing issues, production, and financial systems, Examination of federal, state, and local policies and programs for community development.

CD 613 - Introduction to Native Community Development
Credits: 3
This course is designed as a base knowledge course for students currently working within or in partnership with native communities or considering working in this area. Students taking this course will develop a basic understanding within the context of community development of the diversity of tribal structures and cultures and the unique history and jurisdictional considerations of these nations. Course topics will include: working with tribes, Federal and Indian relations, and governance and cultural issues. Students taking this course will complete a holistic analysis and conceptual mapping of a tribe. This course is required before students may take other courses in this track. This course is available only to graduate students registered in the Community Development Option.

CD 624 - Building Native Community in Economic Capacity
Credits: 3
This course will focus on non-western approaches to helping native communities build their capacity. Students will learn to take a participatory, culture-centered, and strength- based approach to development.

CD 626 - Economic Development Strategy
Credits: 3
Course explores theories of local economic development and addresses the development issues faced by communities in the 21st century. Students will understand and apply concepts from economic development planning, economic analysis, business development, human resource development, community-based development, and high-technology development.

CD 631 - Evaluation of Organizations/Programs
Credits: 3
The purpose of this three-credit hour graduate level distance education course is to the philosophy, techniques, and methodologies of organizational and program evaluation. Topics covered include overview of program evaluation and theory, techniques to evaluate program processes and performance, evaluation designs, assessing program deficiency, models to diagnose organizations, and methods to assess organizational performance.

CD 635 - Sustainable Communities
Credits: 3
This course links the management of natural capital to other community-based actions around resource allocation and the impacts on quality of life. The literature on community-based natural resource management will be examined and alternative ways of valuing natural capital will be assessed. Contrasting theories of the role of natural capital in communities and human society will be linked to their implications for community sustainability in terms of economic vitality, social well-being, and ecosystem health.

CD 637 - Immigration and Communities
Credits: 3
International migration has historically impacted rural and urban communities around the world. Taking a comparative approach, this course examines community-immigration interactions and how that influences community development and immigrant inclusion. Students will read and relate theories of immigrant and community change to case studies of immigrants and communities and gather primary data to assess the capacity of communities to include new international immigrants.

CD 641 - Leadership for Change
Credits: 3
Course focus is on the role of leadership in community development and change, including situation leadership in the community development process, reviewing the effectiveness of different leadership styles, and relating leadership to community. Skills and processes that facilitate effective shared leadership, including facilitation, conflict resolution, use of participatory techniques, etc, are explained. This course is available only to graduate students registered in the Community Development Option.

CD 642 - Grant Writing
Credits: 3
The intricacies of grantsmanship provide the focus of this course. Topics covered will include identification of fund sources, procedures for proposal preparation, composition of grants, and the effects of organizational and personal linkages. Students will prepare a grant application based upon an RFP or to a continuous funding source (e.g. Kellogg Foundation, NW Foundation, or IDED).

CD 643 - Nonprofit Management
Credits: 3
Managing nonprofits including the role of nonprofit organizations in addressing various social problems. Focus will be on the growth of the nonprofit sector and its impact on the community as a source of citizen empowerment. Topics include individual giving and volunteering, board and executive leadership, government and nonprofit relationship, ethics and accountability, and issues and challenges in nonprofit management. This course is available only to graduate students registered in the Community Development Option.

CD 792 - Topics (COM)
Credits: 3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

CEE (Civil and Environmental Engineering)

CEE 511 - Asphalt Materials and Mix Design
Credits: 2
Properties of aggregates and asphaltic materials related to asphalt mixes. Various types of asphalt pavements and mix design methods. Plant operations, construction methods and equipment used in the production of asphalt. Asphalt mix design and testing with an emphasis on Superpave mix design method. Introduction to recycling and sustainable asphalt pavement materials.
Corequisites: CEE 511L.

CEE 511L - Asphalt Materials and Mix Design Lab
Credits: 1
Performance of standard tests on asphalt products and mixtures to determine various characteristics. Emphasis will be placed on professional communication and the interpretation of test results.
Corequisites: CEE 511.

CEE 522 - Environmental Engineering Instrumentation
Credits: 2
Development of an understanding of standard analytical methods for parameters commonly measured in liquid environmental systems.
Corequisites: CEE 522L.

CEE 522L - Environmental Engineering Instrumentation Lab
Credits: 1
Analysis of water and wastewater samples using environmental laboratory instrumentation. Development of laboratory skills in water and wastewater analysis.

CEE 523 - Municipal Water Distribution and Collection System Design
Credits: 3
Design of municipal water distribution and collection systems utilizing modern design tools including the utilization of software to simulate system behavior in response to environmental changes.

CEE 524 - Industrial Waste Treatment
Credits: 3
Characteristics and composition of industrial wastes, sampling and methods of analysis of these wastes and remedial measures for treatment and disposal.

CEE 535 - Water Resources Engineering
Credits: 3
Topics related to water resources engineering including: multiple purpose river development, economic analysis of flood control measures, aspects of water law, advanced topics related to surface and ground water hydrology and administrative aspects of water resources planning.

CEE 536 - Advanced Hydraulic Engineering
Credits: 3
Advanced topics related to hydraulic engineering including: dimensional analysis, turbulence in open-channel flows, mechanics of sediment transport, coastal hydraulics and stream channel mechanics, hydraulic structures, unsteady flows, numerical and physical modeling.

CEE 538 - Environmental Fluid Mechanics
Credits: 3
Develop a basic understanding of the physical processes in turbulent flows that are important to the transport and dispersion of contaminants and materials in surface waters. This course will introduce the analytical, computational, and experimental tools commonly used to solve environmental fluid mechanics problems. Topics covered include dynamics of turbulence, turbulent diffusion, shear flow dispersion, stratified flows and mixing in rivers and lakes.

CEE 543 - Matrix Analysis of Structures
Credits: 3
Theory and application of matrix methods in structural analysis.

CEE 546 - Advanced Geotechnical Engineering
Credits: 3
Development of a fundamental understanding of engineering properties of soils and the factors controlling their magnitude and changes with time and environment. Development of why this knowledge is important and how it can be used in the solution of geotechnical and geoenvironmental problems.

CEE 547 - Foundation Engineering (COM)
Credits: 3
Application of the fundamental concepts of soil behavior to evaluation, selection, and design of shallow and deep foundation systems. Related topics such as temporary support systems for excavations and pile driving are also included.

CEE 552 - Prestressed Concrete
Credits: 3
Theory and design of prestressed concrete including pre-tensioning and post-tensioning.

CEE 558 - Design of Timber Structures
Credits: 3
Gravity and lateral loads, physical and mechanical properties of wood, properties of dimension lumber and glued laminated timber, design of beams and columns, properties of structural wood panels. Design of sheathing, diaphragms and shearwalls. Design of connections.

CEE 567 - Urban Transportation Engineering Design
Credits: 3
Introduction to transportation engineering design with a focus on urban aspects of design, construction, and maintenance. Level-of-service, stopping sight distance, highway alignment, earthwork, intersection/interchange design, pavement design, and additional topics with a focus on urban setting concerns.

CEE 569 - Rural Transportation Engineering Design
Credits: 3
Introduction to transportation engineering design with a focus on rural aspects of design, construction, and maintenance. Level-of-service, stopping sight distance, highway alignment, earthwork, intersection/interchange design, pavement design, and additional topics with a focus on rural setting concerns.

CEE 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

CEE 691 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

CEE 692 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

CEE 702 - Graduate Colloquium
Credits: 2
A course for graduate students to improve written and oral communication skills to prepare students for research and dissemination of knowledge and entering into professional practice.

CEE 720 - Water Treatment Plant Design
Credits: 3
Water supply sources, design of treatment plants, cost estimates of water supply systems.

CEE 725 - Biological Principles of Environmental Engineering
Credits: 3
Ecology, energetics and kinetics of biochemical systems. Analysis and modeling of suspended growth and fixed film biological processes used in environmental engineering. Laboratory procedures for developing biokinetic data.

CEE 726 - Physical and Chemical Principles of Environmental Engineering
Credits: 3
Fundamental concepts of fluid/particle interactions, process kinetics, and equilibrium chemistry applied to natural and engineered aquatic environmental systems. Coagulation, fluid/particle separation, oxidation/reduction, precipitation/dissolution, carbonate systems, absorption, ion exchange, and gas/liquid interfaces.

CEE 729 - Wastewater Treatment Plant Design
Credits: 3
Design of waste collection and disposal facilities, waste treatment plants, cost estimates of waste disposal and treatment systems.

CEE 732 - Advanced Foundation Engineering
Credits: 3
Advanced treatment of foundations and earth retaining structures. Bearing capacity, lateral resistance and settlement of deep foundations; earth pressures on sheet pile walls, braced excavations and buried pipes; numerical methods and computer use in design and analysis applications.

CEE 733 - Topics in Water Resources Engineering
Credits: 3
Topics related to water resources engineering including: Multiple purpose river development, economic analysis of flood control measures, aspects of water law, advanced topics related to surface and ground water hydrology and administrative of water resources planning.
Notes: Course may be repeated.

CEE 749 - Geotechnical Testing
Credits: 2
Determination of engineering properties of soils. Measurement of stress-strain behavior, compressibility, permeability. Use of direct shear test, triaxial compression test, consolidation test, permeameter tests. Interpretation of test data for engineering applications. Use of computerized data acquisition methods.
Corequisites: CEE 749L.

CEE 749L - Geotechnical Testing Lab
Credits: 1
Laboratory to accompany CEE 749.
Corequisites: CEE 749.

CEE 754 - Advanced Design of Steel Structures
Credits: 3
Review of LRFD concepts and basic member design, fundamentals of ASD, column buckling, plate buckling, fundamentals of structural stability, frame stability and frame design. Design of plate girders, composite girders, bracing members and the basics of PR and FR connections.

CEE 755 - Advanced Reinforced Concrete Design
Credits: 3
Design of rigid frames, effect of plastic behavior, details for complex structures, analysis of flat plate and other two-way floor systems. Design comparisons.

CEE 756 - Reinforced Masonry Design
Credits: 3
Development of masonry construction. Material properties. Structural design of loadbearing walls, columns, beams and shear walls. Design of masonry buildings due to gravity loads, lateral forces and earthquakes.

CEE 759 - Structural Dynamics
Credits: 3
Dynamic analysis of structural system with one and several degrees of freedom. Determination of natural frequencies. Analysis of free and forced vibration systems including damping. Introduction to earthquake engineering.

CEE 764 - Pavement Sustainability
Credits: 3
Different pavement types, construction materials, construction methods, pavement design, perpetual pavements, enhancing pavements' life span, use of recycled materials in pavements, reducing energy consumption and cutting emissions using different technologies are presented. Maximizing the sustainability of the pavement construction by utilization of the foregoing materials and methods are also discussed in this course.

CEE 765 - Pavement Design
Credits: 3
Introduction to pavement types, wheel loads, stresses and strains in pavement components, material characterization, basic principles of design and pavement evaluation.

CEE 766 - Designing with Geosynthetics for Transportation Applications
Credits: 3
Concepts and methods involving the use of geosynthetics in transportation infrastructure design and construction are discussed in this course.

CEE 767 - Advanced Transportation Design
Credits: 3
Selected topics related to more recent advances in highway, traffic, and roadside design are covered in this course. The topics are covered in a manner to develop critical thinking and reasoning skills with application of these skills to relevant problems emphasized.

CEE 768 - Transportation Data Analysis and Safety
Credits: 3
The course covers transportation data analysis with a specific emphasis related to traffic safety. Statistical and econometric methods for transportation data analysis are covered to develop critical thinking and reasoning skills with application of these skills to relevant problems emphasized.

CEE 769 - Bridge Design
Credits: 3
Determination of bridge loadings and bearings. Design of concrete and steel bridge systems. Specifications and detailing related to bridge.

CEE 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

CEE 790 - Seminar (COM)
Credits: 1-2
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

CEE 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

CEE 792 - Topics (COM)
Credits: 1-12
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

CEE 794 - Internship (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

CEE 798 - Thesis (COM)
Credits: 1-9
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

CEE 898D - Dissertation (COM)
Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

CHEM (Chemistry)

CHEM 548 - Biophysical Chemistry
Credits: 3
A study of the fundamental principles governing the physical chemistry of biological systems. Topics covered include the forces governing protein and nucleic acid stability, the thermodynamics of protein folding and protein-ligand interactions, bioenergetics, kinetics of biochemical reactions, biological membranes and membrane transport. The physical basis of protein purification, probing protein-ligand interactions, and the determination of macromolecular structure is also discussed.

CHEM 555 - Surface Engineering and Functionalization (COM)
Credits: 1
This course will provide an introduction to the fundamentals and applications of surface engineering and functionalization technologies. Course topics will include thin film deposition technologies, thick coating, and organic coating methods. The course will also introduce concepts on surface functionalization, coating characterization, and electrochemical surface modifications. Students enrolled at the graduate level will be held to a higher standard than those enrolled at the undergraduate level.

CHEM 565 - Biochemistry II (COM)
Credits: 3
A continuation of CHEM 564.
Prerequisites: CHEM 564.

CHEM 567 - Essentials of Glycobiology
Credits: 3
This course focuses on glycobiology, the field of science that studies the structure, biosynthesis, biology, and evolution of saccharides (sugar chains or glycans) that are found in all living life systems. This course with will include the following topics: general principles of carbohydrates and carbohydrate chemistry, structure and biosynthesis, glycans in evolution and development, glycan binding proteins, the role of glycans in complex biological systems, glycans in physiology and disease, and various chemical techniques in which to analysis or manipulation glycans. Special emphasis will be placed on understanding the role glycans play in cancer biology and progression.

CHEM 568 - Chemical Biology
Credits: 3
Chemical biology is the interdisciplinary field of study at the interface of chemistry and the biological sciences. Chemical Biology applies concepts and tools from chemistry that are uniquely enabling of solving biological problems and making biological discovery. It utilizes experimental techniques from a wide range of chemical and biological fields. The chemistry of proteins, nucleic acids, lipids, and glycans, as well as biorthogonal chemistry, protein and n8ucleic acid modifications, and glycotherapeutics will be covered.

CHEM 584 - Chemical Toxicology
Credits: 3
Understanding of the principles of toxicity, including the molecular basis for toxicity and the environmental fate and transport of chemicals in the environment.

CHEM 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

CHEM 691 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

CHEM 701 - Advanced Organic Chemistry I
Credits: 3
Review and discussion of nomenclature, stereochemistry, resonance theory, equilibria, elementary kinetics, intermediate and mechanisms. Chemistry of polymers, heterocyclics, and natural products.

CHEM 703 - Advanced Physical Chemistry
Credits: 3
A review of the principles and applications of physical chemistry. Topics such as thermochemistry, quantum mechanics, spectroscopy, kinetics, and electrochemistry considered.

CHEM 704 - Advanced Inorganic Chemistry
Credits: 3
Inorganic systems including theoretical, representative group and transition metal topics.

CHEM 705 - Principles of Biochemistry
Credits: 3
Chemistry of biological processes occurring in plants and animals.

CHEM 706 - Advanced Analytical Chemistry
Credits: 3
Theoretical treatment of principles involved in non-instrumental analytical chemistry including sampling and statistics.

CHEM 707 - Chemical Communication Skills
Credits: 2
Searching chemical literature by traditional and computer assisted methods; techniques of written and oral communication of chemical information.

CHEM 711 - Chemical Education Research
Credits: 2
Course will provide an introduction to the primary literature on research in chemical education. Students will survey the fundamental areas of focus such as learning theories, pedagogical methodology, assessment, and current topics of interest.
Registration Restriction: Instructor consent.

CHEM 713 - Qualitative Research Methods
Credits: 2
A survey of theoretical traditions in qualitative methods for chemical education. Research will include methods of data collection, analysis, and reporting for each tradition. Emphasis will be placed on differences between qualitative and quantitative research methods in chemical education research.
Registration Restriction: Instructor consent.

CHEM 715 - Chemistry Instruction in Higher Education
Credits: 2
Instructional processes, learning theories, and issues specific to chemistry instruction in higher education. Topics including learning theory in the context of chemistry, lecture and laboratory settings, assessment strategies, demonstrations, and group work.
Registration Restriction: Instructor consent.

CHEM 724 - Structural Determination of Organic Compounds
Credits: 3
Determination of the structure of organic compounds primarily by spectroscopic techniques.
Corequisites: CHEM 724L.

CHEM 724L - Structural Determination of Organic Compounds Laboratory
Credits: 1
Laboratory to accompany CHEM 724.
Corequisites: CHEM 724.

CHEM 725 - Genetics of Human Disease (COM)
Credits: 3
The course will cover advanced genetic concepts, classical and modern mammalian genetic techniques, and the underlying genetic bases of a variety of Mendelian and complex disorders. Students will gain an understanding of how genetic abnormalities result in and contribute to human disease.

CHEM 731 - Advanced Environmental Chemistry
Credits: 3
In-depth treatment of the principles of the environmental chemistry and geochemistry of the atmospheric, aquatic and lithospheric environments.
Registration Restriction: Instructor consent.

CHEM 739 - Chromatography and Separation
Credits: 3
Theory and practice of solvent extraction and paper, thin layer, gas and liquid chromatographic techniques.

CHEM 740 - Analytical Spectroscopy
Credits: 3
In-depth treatment of the quantitative applications and theory of modern spectroscopy techniques including atomic absorption, emission, and fluorescence; molecular absorption and fluorescence; and X-ray spectroscopy.

CHEM 760 - Laboratory Rotations
Credits: 2
Investigative laboratory experiences for doctoral students in chemistry or biochemistry.

CHEM 762 - Molecular Mechanisms of Disease (COM)
Credits: 3
Advanced course covering current topics in human disease mechanisms. Course topics include disorders associated with defects in lipid metabolism, nucleotide metabolism, metal metabolism, and organelle function, as well as signaling mechanisms underlying rare and complex diseases. The course applies fundamental biochemical and cell biological concepts to human disease.
Registration Restriction: Instructor consent.

CHEM 763 - Developmental Biology of Disease (COM)
Credits: 3
This course focuses on mammalian development and human diseases resulting from developmental abnormalities. Topics include early development, organogenesis, maternal effects, and the use of models systems and techniques for studying human developmental diseases. Students who take this course will have a better understanding of the underlying causes of human diseases and congenital abnormalities.

CHEM 770 - Atomic Theory and Bonding
Credits: 3
This course will examine topics in atomic theory including wave-particle duality, wavefunctions, atomic spectra, quantum numbers, and the relationship between electronic structure and the periodic table. These topics will provide a foundation to explain molecular bonding. Topics of molecular bonding will include ionic and covalent bonding, electronegativity, polarizability, valence-shell-electron-pair-repulsion (VSEPR), valence-bond theory, and molecular orbitals. Student participation in discussions will lead to enhanced pedagogical skills for the secondary science teacher.
Registration Restriction: Instructor consent.

CHEM 771 - Intermolecular Interactions and Phases of Matter
Credits: 3
This course will examine the impact on a variety of physical properties made by attractive forces between molecules, atoms, and ions. Topics will include explaining the existence and predicting the strengths of intermolecular interactions, predicting physical properties such as viscosity, boiling points, and melting points based on the presence of intermolecular forces, and the impact of intermolecular interactions on phases of matter. Student participation in discussions will lead to enhanced pedagogical skills for the secondary science teacher.
Registration Restriction: Instructor consent.

CHEM 772 - Thermodynamics
Credits: 3
This course will focus on the relationship between energy, entropy, and the progress of chemical reactions. Major topics will include the relationship between heat and chemical reactions, calorimetry, reaction enthalpy, standard enthalpy, entropy, and free energy. An emphasis will be made on the mathematical techniques used to calculate these relationships and on how these concepts explain chemical behavior. Student participation in discussions will lead to enhanced pedagogical skills for the secondary science teacher.
Registration Restriction: Instructor consent.

CHEM 773 - Equilibria and Acid-Base Chemistry
Credits: 3
This course will examine the reversibility of chemical reactions. The concept of dynamic equilibria will be studied and the law of mass action used to quantify the condition of equilibrium. Students will be able to predict the extent and direction of a chemical reaction and quantify species at equilibrium. Le Chatelier's principle will used to study the impact different factors on the equilibrium status of a chemical reaction. Topics in acid/base chemistry will be used to further explain equilibria processes. Additionally, Bronsted-Lowry and Lewis theories, molecular structure relationships to acid/base behavior, weak acid/ base behavior, the acidic/basic behavior of salts, titration, and buffer solutions will be discussed. Student participation in discussions will lead to enhanced pedagogical skills for the secondary science teacher.
Registration Restriction: Instructor consent.

CHEM 774 - Kinetics, Nuclear, and Electrochemistry
Credits: 3
This course will focus on three important topics in chemistry: kinetics, nuclear, and electrochemistry. Students will utilize mathematical methods to study the speed of chemical reactions including average and instantaneous rates of reaction, rate laws, the law of initial methods, and integrated rate laws. Additionally, discussion of changes within the nucleus of an atom resulting in the alteration of that atom will occur by identifying fundamental processes of nuclear chemistry. Biological effects related to nuclear reactions will also be discussed both qualitatively and quantitatively. Finally, this course will focus on oxidation/reduction reactions as students manipulate redox reactions by balancing chemical reactions, predicting spontaneity of redox reactions, and explaining the function of voltaic cells. Student participation in discussions will lead to enhanced pedagogical skills for the secondary science teacher.
Registration Restriction: Instructor consent.

CHEM 775 - Organic and Biochemistry
Credits: 3
This course will focus on topics in organic and biochemistry that provide a basis for future instruction in these content areas. Topics in organic chemistry will include nomenclature, functional groups, and basic organic reactions and mechanisms. Biochemistry topics will include nomenclature and structures of simple molecules including carbohydrates, proteins, and nucleic acids. Student participation in discussions will lead to enhanced pedagogical skills for the secondary science teacher.
Registration Restriction: Instructor consent.

CHEM 776 - Laboratory Development
Credits: 3
This course will focus on the development of laboratory strategies for the secondary chemistry classroom. Students will receive guided instruction in laboratory development techniques from content experts. The outcome of the course will be the development of several new laboratory exercises which will be shared among participants.
Registration Restriction: Instructor consent.

CHEM 777 - Action Research in the Secondary Classroom
Credits: 1
This course will engage science instructors in processes used to assess the efficacy of using specific strategies for teaching in the classroom. The methodology for conducting educational research in the classroom will be the initial focus. One outcome of the course will be the inception of a project that could be implemented by the science instructor to investigate the use of a new teaching strategy in the classroom.
Registration Restriction: Instructor consent.

CHEM 778 - Chemistry Teaching Strategies
Credits: 3
This course will focus on pedagogical and curricular strategies and the educational research which supports using these methods. The incorporation of pedagogical methods into science classrooms as modifications for or enhancement of traditional instruction will be the goal for participants. Additionally the development of integrated curricula which use multiple content areas will be discussed. Pedagogical and curricular strategies developed during the course will be peer-evaluated and tested in individual classrooms.
Registration Restriction: Instructor consent.

CHEM 780 - Introduction to Laboratory Safety
Credits: 1
This course focuses on safety topics of importance for teachers of chemistry. While the course will not result in safety certification, it will provide teachers with important information to use within their own classrooms to more safely use chemicals and consider the exposure of chemicals to their students.

CHEM 781 - Chemical Waste Disposal and Storage Techniques
Credits: 1
This course focuses on waste that is commonly found in secondary and post-secondary teaching laboratories. The overall goal of the course is to bring awareness of the safety issues that surround chemical waste and learn appropriate techniques to handle and store this waste.

CHEM 782 - Chemical Hygiene Planning
Credits: 1
This course focuses on the development of a chemical hygiene plan (CHP) as required by Occupational Safety and Health Administration (OSHA) and highly recommended by the American Chemical Society (ACS). This course will result in the creation of a CHP for a specific classroom, school or district.

CHEM 783 - Introduction to Green Chemistry for the High School Classroom
Credits: 3
A broad overview of green chemistry will be given including ways that green chemistry is being used in industry. Lesson plans for teachers to use will be introduced which include green chemistry concepts as well as laboratory activities that can replace those that are currently used by teachers but are dangerous to human health and the environment which can be easily integrated into the content and standards that teachers are already required to teach.

CHEM 784 - Advanced Green Chemistry
Credits: 3
Green Chemistry is the science of creating safe, energy efficient and non-toxic processes and products that provide sustainable solutions for the environmental problems facing our society today. Green Chemistry education must be integrated into the way we teach scientists from the earliest ages. This course will provide a more in-depth dive into the 12 principles of Green Chemistry to practice green chemistry pedagogy and procedures in their classrooms.
Prerequisites: CHEM 783.

CHEM 785 - Chemical Demonstrations in the Classroom - Physical Properties
Credits: 1
This course focuses on how to use demonstrations in a chemistry classroom. The overall goal is to provide participants with information about how to create and set up the necessary equipment and chemicals for the demonstration. An important objective is to discuss the chemistry that will be demonstrated and how that information can drive engagement in the classroom.

CHEM 786 - Chemical Demonstrations in the Classroom - Chemical Properties
Credits: 1
This course focuses on how to use demonstrations in and beyond a chemistry classroom. Explore new demonstrations being promoted for chemistry classrooms and outreach. The overall goal is to provide participants with information about how to create and set up the necessary equipment and chemicals for the demonstration. An important objective is to discuss the chemistry that will be demonstrated and how that information can drive engagement in the classroom and outreach efforts.

CHEM 788 - Research Problems/Projects (COM)
Credits: 1-6
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.
Registration Restriction: Instructor consent.

CHEM 790 - Seminar (COM)
Credits: 1
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

CHEM 792 - Topics (COM)
Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

CHEM 794 - Internship (COM)
Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

CHEM 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

CHEM 898D - Dissertation (COM)
Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

CHRD (Counseling and Human Resource Development)

CHRD 585 - Careers in Counseling and Student Affairs
Credits: 3
This course is designed for students who are considering a career in counseling or student affairs. Students will be required to demonstrate an understanding of the various facets of the profession through a variety of individual and small group activities.

CHRD 601 - Introduction to Professional Issues and Ethics
Credits: 1
This course provides an introduction and orientation to the counseling profession with a focus on ethics. More specifically, ethical standards of ACA and other related specialty areas will be covered along with the use of ethical decision-making models.

CHRD 602 - Research and Evaluation in Counseling and Human Development
Credits: 3
The course explores various research designs and methodologies applicable to the field of counseling. The course will emphasize qualitative and quantitative research, critical evaluation of research reports, the use of internet databases for writing a research paper, a thorough understanding of APA format.
Cross-Listed: HDFS 602.

CHRD 610 - Developmental Issues in Counseling
Credits: 3
Provides an understanding of the developmental needs of humans across the life span and adolescents and appropriate intervention methods to be used in counseling.

CHRD 647 - Pharmacological Issues in Mental Health Counseling
Credits: 3
This course provides a knowledge base for counselors who are working with clients taking psychoactive medications. The major aims of this course are to enable mental health counselors to be knowledgeable and to actively participate in professional mental health staff meetings, consulting from an informed perspective with psychiatrists and other medical professionals concerning clients who are taking prescription medications.
Registration Restriction: Acceptance in the Counseling and Human Resource Development program or instructor permission.

CHRD 661 - Theories of Counseling
Credits: 3
This course takes a practice-based approach to teaching students counseling theory. The course focuses on several major theories, such as Adlerian, Person-Centered, Cognitive-Behavioral, and Family Systems theories. Students are encouraged to understand the utility of theory-based practice. Course work involves applying theory to case studies and developing treatment plans based on the tenets and techniques of the theories studied.

CHRD 685 - Academic Advising Theory and Practice
Credits: 3
This course provides students with practicum experience in higher education academic advising.

CHRD 690 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

CHRD 691 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

CHRD 692 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

CHRD 701 - Professional Issues and Ethics II
Credits: 1
This course serves as an advanced view of the ethical standards of ACA and other related specialty areas. Application of the code and an ethical decision-making model is expected.
Registration Restriction: Instructor consent.

CHRD 702 - Advanced Human Sexuality
Credits: 3
Clinical, scientific, and philosophical studies of human sexuality. Emphasis on contemporary research and insights into human sexual experience, behavior, and social /cultural values and beliefs about sexuality throughout the lifespan. Topics will include sexual and psychosexual development, sexual health and disease, sexual variations, and sexual dysfunction and therapy.

CHRD 706 - Play Therapy Basics
Credits: 3
Basic theoretical approaches of play therapy are explored as well as the theory related to techniques, assessment and treatment. Play materials and use of play media to facilitate expression, self-understanding and growth are introduced. Students will demonstrate proficiency in basic play therapy principles, practices, and skills, as well as application of play therapy theory to practice. This course is designed for those who have completed a theory course in their respective degree area.

CHRD 707 - Advanced Play Therapy and Techniques
Credits: 2
Advanced theoretical approaches of play therapy are applied, as well as nature of theory related to techniques, assessment and treatment. Students will develop proficient skills in use of play materials to facilitate expression, self-understanding and growth.
Prerequisites: CHRD 706.

CHRD 708 - Play Therapy: Filial and Family
Credits: 1
This course focuses on working with and training parents and caregivers to be therapeutic agents in their children's lives through the utilization of play therapy skills in parent-child structured play sessions.
Prerequisites: CHRD 707.

CHRD 709 - Applications of Play Therapy
Credits: 2
Students are required to demonstrate proficiency in play therapy principles and practices. Students engage in advanced study of play therapy, including theories, application of skills, parent consultation. Group play therapy will be examined and reviewed.
Prerequisites: CHRD 708.

CHRD 710 - Clinical Experiences in Play Therapy I
Credits: 1
This course is designed to provide introductory clinical experiences in play therapy. Students will demonstrate proficiency in basic play therapy principles, practices, and skills, as well as application of play therapy theory to practice. Parent consultation and special topics in play therapy will be explored.
Prerequisites: CHRD 706.

CHRD 711 - Clinical Experiences in Play Therapy II
Credits: 2
This course is designed to provide advanced clinical experiences in play therapy. Students will demonstrate proficiency in advanced play therapy principles, practices, and skills, as well as application of play therapy theory to practice. Parent consultation, filial techniques, and special topics are incorporated.
Prerequisites: CHRD 710.

CHRD 713 - Administration and Management of Mental Health Organizations
Credits: 3
Developing and managing a comprehensive counseling program in agencies. Emphasis on the planning process, management, budgeting, organizational structure, supervision, evaluation and consultation.

CHRD 716 - Human Resources Management in Business and Industry
Credits: 3
This course will focus on the human factors affecting the workplace. Specific topics to be covered will include employee assistance programs, wellness programs, management training, conflict resolution, and career planning.

CHRD 721 - School Counseling
Credits: 3
A study of the role and function of a K-12 school counselor including individual counseling, small group counseling, classroom guidance, and consultation with parents, teachers, administrators.

CHRD 722 - Administration and Management of School Counseling Programs
Credits: 3
Developing and managing a comprehensive counseling program in a school setting. Emphasis on the planning process, management, budgeting, organizational structure, supervision, evaluation and consultation.

CHRD 723 - Counseling the Family
Credits: 3
Counseling the Family is a course which describes the major systems of family therapy and the resulting impact upon the counseling process. An inter-psychic, systematic framework will be formulated as a supplemental way to view familial problems and promote change.

CHRD 725 - Couples and Advanced Family Counseling
Credits: 3
This course is designed to help students increase their theoretical and practical knowledge, along with skill development in working with couples and families. Treating couples and families from an ecological systems context (i.e. community, social, cultural, economic, etc.) with specific attention on current issues including gender, race, ethnicity, sexuality, family patterns, and economic conditions.

CHRD 728 - Child and Adolescent Counseling
Credits: 3
This course is intended to provide a comprehensive study of therapeutic approaches and techniques applicable for use with children and adolescents in a counseling setting. Emphases will be placed on developmental problems, creative interventions, crisis management, exceptional children, and collaboration with the community, family, and school systems.

CHRD 731 - Multicultural Counseling and Human Relations
Credits: 3
This course aims to provide an understanding of the cultural context of relationships, issues and trends in a multicultural and diverse society related to such factors as culture, ethnicity, nationality, age, gender, sexual orientation, mental and physical characteristics, education, family values, religious and spiritual values, socioeconomic status and unique characteristics of individuals, couples, families, ethnic groups, and communities.

CHRD 736 - Appraisal of the Individual
Credits: 3
Assessment methods used in studying individuals. Standardized instruments, self-report inventories, observation, case study techniques and other non-standardized assessment tools are used. Recording, analyzing, compiling and interpreting data for use in counseling setting.

CHRD 741 - Crisis Counseling
Credits: 3
This course requires students to consider crises from their perspective as an individual enrolled in: (1) Clinical Mental Health Counseling, (2) Marriage and Family Counseling, (3) Rehabilitation Counseling, (4) School Counseling, and (5) College Counseling. A primary focus of this course is on application of course material including experiential crisis activities. Additionally, the course will provide an examination of diverse crisis situations and the assessment and treatment strategies used by counselors to assist individuals, groups and organizations to manage and resolve those crises.

CHRD 742 - Career Counseling and Planning
Credits: 3
Examination of the career development and counseling process through the life span. Assist those intending to counsel at elementary, secondary, higher education and the community/workplace. Explores strategies and resources for career/life planning. Various interest inventories and personality assessment methods are used.

CHRD 751 - Overview of Rehabilitation and Mental Health Counseling
Credits: 3
Provides an orientation to the field of rehabilitation and mental health counseling. Includes historical antecedents, philosophical and traditional connections with the field of rehabilitation counseling, assessment, planning and service delivery methods for those intending to work in rehabilitation focused programs serving persons with psychiatric disabilities.

CHRD 752 - Medical and Psychological Aspects of Disability
Credits: 3
Provides instruction in the causes and processes of medical diseases and conditions that result in severe and persistent disability. Basic anatomy, physiology, and central nervous system functions will be reviewed. The course will explore the relationship between physical and psychiatric processes. Individual and family adjustment to disability will be covered. Students will be oriented to current approaches and concepts in prosthetics, assistive technology, medication, and wellness.

CHRD 753 - Case Management Principles and Plan Development
Credits: 3
Covers practice and provides methods for managing cases and making caseload management decisions. Principles and practice in areas covered include intake interview; medical, psychological, and vocational evaluation, career and lifestyle alternatives, plan development, transitions, placement, and community integration. The course will also provide instruction in writing professional case reports, proposals, and progress notes. Time and work flow management strategies will be examined.

CHRD 755 - Clinical Diagnosis and Treatment Planning
Credits: 4
This course is designed to introduce students to the DSM-IV and to help develop their diagnostic and treatment planning skills. Students will focus on particular disorders and how to effectively treat those disorders in clinical and school settings. Among the disorders and treatment plans that will be covered in class are: depressive disorders, anxiety disorders, substance abuse disorders, schizophrenia, disorders first diagnosed in infancy, childhood and adolescence, as well as personality disorders.

CHRD 756 - Counseling the Addictive Client
Credits: 3
Counseling the addictive client is a course which describes how one can identify and treat addictive behaviors. Emphasis is on preventive and remedial action.

CHRD 757 - Case Consultation and Supervision
Credits: 3
This course reviews consultation and supervision theories and applications in a counseling setting. Clinical decision making skills in a counselor practice are also covered.

CHRD 766 - Group Counseling
Credits: 3
Processes and procedures used in small group counseling. Students participate in group counseling, facilitate in-class counseling sessions and develop structured units for specific populations.
Prerequisites: CHRD 601, CHRD 610, CHRD 661 and EDER 760 or CHRD 602.

CHRD 770 - Student Development: Theory and Practice
Credits: 3
This course introduces various theories of college student development and includes attention to developmental issues of special populations, such as minority students, international students, and nontraditional students. Research in several areas of student affairs work is emphasized.

CHRD 771 - Student Personnel Services
Credits: 3
Two basic orientations provide the framework for this course: understanding the transition from theory to practice, and becoming a reflective, ethical practitioner. Students will gain a broad knowledge of student affairs functions as well as good overview of current issues in higher education.

CHRD 772 - Administration and Leadership in Student Affairs
Credits: 3
This course provides an overview of administrative and leadership practice in the student affairs profession. The course will emphasize historical foundations of the profession and will utilize these foundations in understanding current practice. Students will gain broad knowledge about the role and function of student affairs functions in a variety of higher education settings.

CHRD 773 - Current Issues in Academic Advising and Student Affairs
Credits: 3
This course is designed to build upon the foundational practices of professional academic advising in post-secondary education. Course content will include core competencies of academic advising including student development theory, academic success, and professional preparation. Current issues in academic advising/student affairs and best advising practices to support diverse student populations will be explored.

CHRD 785 - Pre-Practicum
Credits: 3
This course provides an introduction to basic therapeutic skills and structures compatible with a wide range of theoretical approaches. Students learn to conduct counseling interviews in order to successfully identify clients' conflicts, determine clients' desire for change, explore options and assist client action. This course serves as a foundation of CHRD 786 Counseling Practicum.
Prerequisites: CHRD 601, CHRD 610, CHRD 661, and (EDER 760 or CHRD 602) or instructor permission.

CHRD 786 - Counseling Practicum
Credits: 3-5
This course builds on the basic counseling skills learned in CHRD 785 Pre-Practicum and preferably directly follows that course in students' course work. In addition to enhancing basic counseling skills, this course is designed to help students integrate theory and practice. As part of their course work, students are asked to develop theory-based conceptualizations of client concerns. The faculty reserve the right to deny admission to CHRD 786 if they have reason to suspect a student might be unable to provide quality counseling services to clients. A minimum of 20 semester credit hours, including, CHRD 601, 602, 610, 661, 766, and 785, with a grade of B or better in 766 and 785. Retakes limited to two retakes.
Prerequisites: CHRD 601 and CHRD 602 or CHRD 610, CHRD 661 and EDER 760.

CHRD 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

CHRD 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

CHRD 794 - Internship (COM)
Credits: 1-6
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than in the case with field experience courses.
Prerequisites: CHRD 786 with a grade of B or better.

CHRD 798 - Thesis (COM)
Credits: 1-6
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

CJUS (Criminal Justice)

CJUS 516 - Drugs and Society
Credits: 3
The course will examine explanations of drug use and the social construction of drug policies. Students will discuss the methods used to study patterns of drug use and theories of drug abuse and take an in-depth look at the histories, pharmacologies, and patterns associated with the most popular drugs. Students will study the social control of drugs, the connections between drugs and crime, and the causes and consequences of modern U.S. international drug policies.
Cross-Listed: SOC 516.

CJUS 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

CJUS 592 - Topics (COM)
Credits: 3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

CM (Construction Management)

CM 500 - Risk Management and Construction Safety
Credits: 3
Construction safety and health and effective management of risk.

CM 543 - Construction Planning and Scheduling
Credits: 3
Planning and scheduling construction projects. Both manual methods and computer programs will be used to schedule activities, control cost and manage resources.

CM 555 - Residential Construction
Credits: 3
The study of the residential construction process including design, documentation, and construction.

CM 560 - Sustainable Building Systems Concepts and Analysis
Credits: 3
The analysis of energy efficient and environmentally responsible building design and construction. Material selection, energy, and climate analysis, and practical applications of new technology will be covered.

CM 573 - Construction Law and Contracts
Credits: 3
The study of the legal rights and liabilities for the construction manager and design professionals. Topics include obligations and remedies, bond requirements, dispute resolution, contract administration, and risk mitigation.

CM 585 - Site Development and Feasibility Analysis
Credits: 3
Tools and techniques used to evaluate the cost of new site development; risk assessment and market feasibility analysis for properties to be acquired for economic development.

CM 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

CM 794 - Internship (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

CMST (Communication Studies)

CMST 501 - Advanced Interpersonal Communication (COM)
Credits: 3
Advanced study of contemporary issues that have significant impact on interpersonal relationships. Students develop an understanding of the current communication research, theory, and social practices associated with these relational issues.

CMST 510 - Organizational Communication (COM)
Credits: 3
Explores communication processes in organizational contexts, theories of leadership, decision making and conflict, the application of principles that facilitate communication in organizations, and other selected topics.

CMST 515 - Communication and Gender (COM)
Credits: 3
This course examines gendered verbal and nonverbal communication processes and the ways men and women tend to communicate in interpersonal, family, group, organizational, and mass media contexts.

CMST 516 - Rhetorical Criticism
Credits: 3
Critical evaluation of American speakers from Colonial to contemporary times.

CMST 540 - Health Communication (COM)
Credits: 3
This course will examine the contexts and processes of communication about health, focusing on how professionals, patients, and practitioners interact in ways that constitute and influence health and medicine.

CMST 541 - Current Issues in Health Communication
Credits: 3
In-depth engagement with contemporary and emerging areas of health communication scholarship and practice, such as work with social media, international communities, or new public health crises. Critical examination of complexities in researching and enacting health communication, especially in contexts such as health care or health communication campaigns.

CMST 582 - Travel Studies
Credits: 1-5
This travel study course is designed to provide extra-mural educational experiences, as approved by, and under the direction of a faculty member, and may be in cooperation with faculty and administrators of other institutions. Students will participate in hand-on activities, and design educational activities for presentation at selected locations. Includes pre-travel orientation, post-travel self-evaluation, and a written report.

CMST 588 - Forensics Team Management
Credits: 1
This course is designed to help prepare students for their professional roles as directors or assistant directors of collegiate or high school forensics (speech and debate) programs. The course will explore theoretical understandings of competitive speech and debate, best practices in team management, coaching, and tournament hosting.
Registration Restriction: Department permission.

CMST 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

CMST 592 - Topics (COM)
Credits: 1-5
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

CMST 700 - Instructional Communication
Credits: 3
Students will explore problems and issues in teaching communication and media studies courses in higher education. Students will also develop a teaching philosophy and teaching materials for communication and media courses.

CMST 702 - Communication Theory and Methods I
Credits: 3
In this course, students discuss the history and roots of communication and media theories; overview of key theories in communication and media studies; and explore how theory can be used to guide research or professional projects.

CMST 703 - Communication Theory and Methods II
Credits: 3
In this course, students continue to explore key theories and methods in communication and media studies, including learning how to integrate theory and methods within research or professional projects.
Prerequisites: CMST 702.

CMST 720 - Professional Communication
Credits: 3
In this course, students explore the role of oral and written communication across a variety of professional and applied contexts. Topics include tailoring communication to diverse stakeholders, entrepreneurship, freelancing, and practicing professional ethics.

CMST 788 - Research Problems/Projects (COM)
Credits: 1-6
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

CMST 791 - Independent Study (COM)
Credits: 1-6
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

CMST 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

CMST 795 - Practicum (COM)
Credits: 3
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

CMST 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

CSC (Computer Science)

CSC 522 - Computer Vision and Pattern Recognition
Credits: 3
This course introduces fundamentals and applications, and recent advances in computer vision and pattern recognition. Topics covered in this course include single-view and two-view geometry, multi-view 3D reconstruction and registration, 2D/3D features and descriptors, object detection and tracking, and sematic scene understanding using deep convolutional neural networks (CNN). Students will have hands-on experience in implementing computer vision algorithms and deep CNN architectures in solving real-world problems.

CSC 533 - Computer Graphics
Credits: 3
Principles of computer graphics. A study of the algorithms used to generate raster and vector graphics.

CSC 547 - Artificial Intelligence (COM)
Credits: 3
Introduction to ideas, issues and applications of Artificial Intelligence. Knowledge representation, problem solving, search, inference techniques, theorem proving. Expert systems. Artificial intelligence programming languages.

CSC 569 - Fundamentals of High-Performance Computing
Credits: 3
An introduction to high-performance computing (HPC) and its application to scientific research computing: accessing and using HPC clusters, task and process-based parallelism, shared and distributed memory, using hardware accelerators (e.g., graphics processing units), and other emerging topics.
Cross-Listed: EE 569.

CSC 574 - Computer Networks
Credits: 3
Analysis of current and future computer networks with emphasis on the OSI model. Local and wide area networks. TCP/IP, SNA, token ring, ethernet and other common networks will be covered. Protocol and interfaces within and across networks including the OSI layers, routers, bridges and gateway.
Prerequisites: CSC 600.

CSC 585 - AI Assisted Medical Image Processing
Credits: 3
This course covers the fundamentals of AI and its applications in enhancing medical image analysis and diagnosis. Students will learn about fundamentals and applications of the latest artificial intelligence technology for medical image processing. Students will have hands on experience in developing and applying AI models to process medical imaging data (e.g., X-Rays, MRIs and CT scans) and will explore use cases of AI-powered medical image processing techniques in implementing healthcare systems.

CSC 587 - Network Security
Credits: 3
An introduction to cryptography and its application to network and operating system security: security threats, applications of cryptography, secret key and public key cryptographic algorithms, hash functions, basic number theory, authentication, and security for electronic mail.

CSC 592 - Topics (COM)
Credits: 1-5
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

CSC 600 - Accelerated Computer Science Fundamentals
Credits: 3
This course teaches the fundamental and advanced techniques of graduate computer programming using C++. The C++ language is used for this course because it is the standard language used for most graduate courses. In this course, students will learn how to write efficient and reliable code through advanced programming techniques.

CSC 630 - Principles Data Base System Design
Credits: 3
Fundamental concepts. Physical data organization. Data models. Data Manipulation languages. Data base design. Application of data base concepts in design and development of data base systems and applications. Design of current commercial as well as research oriented data base systems. Techniques of using data base systems for application security and integrity. Performance evaluation.

CSC 705 - Design and Analysis of Computer Algorithms (COM)
Credits: 3
Design and analysis of algorithms to determine their time and space requirements. The study of efficient algorithms for various computational problems. Analysis of specific algorithms for internal sorting, hashing, and string search. Sorting manipulation of data structures, graphs, matrix multiplication, the Fast Fourier Transform, arithmetical operations and pattern matching. Study and implication of advanced topics on lists, stacks, trees, sets and dynamic allocation.

CSC 710 - Structure and Design of Programming Languages (COM)
Credits: 3
Evolution of concepts in programming languages. Data and control abstraction. Run-time effects of binding, scope and extent; structure of ALGOL-like and interpretive languages. Data types, problem areas and implementation models. Control structures, exception handling, concurrency. Functional programming. Examples from representative languages.

CSC 720 - Theory of Computation (COM)
Credits: 3
Formal models of computation. Recursive function theory, computable functions, decidable and enumerable sets, unsolvable programs, correctness of programs, undecidability and incompleteness and complexity of computation.

CSC 740 - Management Information Systems
Credits: 3
Computer appreciation course providing technical background for understanding and raising issues treated in other courses. Structure and operation of computer systems. Hardware technology and software development. Tools and methods for developing computer applications. Structure and components of Management Information Systems. Using the computer to support operations of management in planning and control and decision making. MIS development, organization, management and evaluation. Acquiring computer resources. The computer industry and profession.

CSC 750 - Recent Advances in Parallel Process
Credits: 3
A survey of topics related to the architecture of highly parallel machines, programming and algorithms. Pipelined computers, associative machines, array processors. Interconnection networks. Parallel algorithms.
Prerequisites: CSC 705.

CSC 770 - Software Engineering Management (COM)
Credits: 3
Management issues arise in the development of software systems. The topics include planning documentation for requirements, design, implementation and testing, cost projection and modeling, documentation standards, code control, tracking of defects management psychology, group interaction and communication, and the management of reviews and walkthroughs.

CSC 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

CSC 790 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

CSC 791 - Independent Study (COM)
Credits: 1-5
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

CSC 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

CSC 798 - Thesis (COM)
Credits: 1-9
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

CSC 898D - Dissertation (COM)
Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

CSS (Computational Science and Statistics)

CSS 710 - Digital Twins
Credits: 3
The course introduces the principles and applications of Digital Twin technology for modeling and simulation of physical systems using computational mathematics. Students will develop mathematical modeling, numerical methods, data integration, and optimization for real-time predictive analysis.
Prerequisites: MATH 515.

CSS 774 - Advanced Scientific Machine Learning
Credits: 3
The course explores advanced methods for Scientific Machine Learning integrating physics-informed models, data-driven approaches, and large-scale simulations. Emphasis on scalable algorithms and high-performance computing for scientific and engineering applications.
Prerequisites: MATH 515.

CSS 890 - Seminar (COM)
Credits: 1
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

CSS 891 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

CSS 898D - Dissertation (COM)
Credits: 1-36
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

DS (Dairy Science)

DS 500 - Dairy Chemistry and Analysis
Credits: 3
An examination of the physical and chemical properties of milk constituents and their effects on processing, testing, and nutritive value of milk and its' products. The role of intentional or accidental additives including impacts, effects and significance. An examination of laboratory protocols utilized in compositional analysis of milk and milk derived products as they relate to procurement, process control and regulatory compliance.
Corequisites: DS 500L.
Notes: Fall.

DS 500L - Dairy Chemistry and Analysis Lab
Credits: 2
Corequisites: DS 500.
Notes: Fall.

DS 513 - Physiology of Lactation
Credits: 3
A study of the anatomical, biochemical and physiological factors in the mammary gland that regulate mammary development, milk synthesis and secretion, and impact milk quality and udder health. Machine milking settings and troubleshooting related to milking efficiency, animal handling in the milking parlor and milking procedures will be also covered.
Corequisites: DS 513L.
Notes: Even fall.

DS 513L - Physiology of Lactation Lab
Credits: 1
Lab to accompany DS 513.
Corequisites: DS 513.
Notes: Even fall.

DS 515 - Dairy Microbiology
Credits: 2
Microbiological aspects related to production and processing of milk for human use, including role of regulatory agencies, quality standards and HACCP principles.
Corequisites: DS 515L.
Notes: Odd Spring.

DS 515L - Dairy Microbiology Lab
Credits: 2
Laboratory to accompany DS 515.
Corequisites: DS 515.
Notes: Odd Spring.

DS 542 - Dairy Product and Process Development
Credits: 3
Students will work in small groups to design and produce a prototype dairy product. The course will include standards of identity for dairy products, nutritional labeling requirements, least cost formulation, design of manufacturing processes and methods for planning product development.
Prerequisites: DS 500.
Notes: Odd spring.

DS 560 - Dairy Product Processing I
Credits: 4
Principles and practices of producing fluid/market milk, cultured products and cheese.
Corequisites: DS 560L.
Notes: Odd Fall.

DS 560L - Dairy Product Processing I Lab
Credits: 1
Laboratory to accompany DS 560.
Corequisites: DS 560.
Notes: Odd Fall.

DS 561 - Dairy Product Processing II
Credits: 4
Principles and practices of producing frozen dairy desserts, butter, concentrated milks, and dried milk products.
Corequisites: DS 561L.
Notes: Even Spring.

DS 561L - Dairy Product Processing II Lab
Credits: 1
Laboratory to accompany DS 561.
Corequisites: DS 561.
Notes: Even Spring.

DS 580 - Dairy Farm Operations I
Credits: 3
The first course in a two-semester sequence course addressing dairy herd management practices. Dairy farm capital, budgets and credit; factors affecting economic returns of dairy farming; nutrition and feeding of lactating dairy cattle; and nutritional implications related to herd replacements.
Corequisites: DS 580L.
Notes: Odd Fall.

DS 580L - Dairy Farm Operations I Lab
Credits: 1
Lab to accompany DS 580.
Corequisites: DS 580.

DS 581 - Dairy Farm Operations II
Credits: 3
The second semester of a two-semester sequence course addressing dairy herd management practices. Production testing and records interpretation; impacts of cropping systems and commodity markets; labor requirements and Human Resources implications; building and equipment requirements; animal health and reproduction; merchandising of cattle and milk; and factors affecting economic returns of dairy farming.
Prerequisites: DS 580.
Corequisites: DS 581L.
Notes: Even Spring.

DS 581L - Dairy Farm Operations II Lab
Credits: 1
Lab to accompany DS 581.
Corequisites: DS 581.
Notes: Even Spring.

DS 711 - Ruminology
Credits: 3
Biochemical, physiological, and microbiological activity occurring in the rumen and the relation of rumen function to animal response.
Cross-Listed: AS 711.
Notes: Odd Fall.

DS 722 - Advanced Dairy and Food Microbiology
Credits: 3
Emerging concepts in dairy microbiology related to food preservation, microbial detection techniques, molecular aspects of lactic acid bacteria and applications as probiotics, bacterial pathogenesis, and food safety management systems.
Notes: Even Spring.

DS 731 - Laboratory Techniques in Dairy Science
Credits: 3
Research design, laboratory techniques, and data management and presentation in Dairy Science. Laboratory procedures include photometry, gas chromatography, and microbiological (aerobic and anaerobic) assays.
Notes: Even Fall.

DS 790 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.
Notes: Spring.

DS 791 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

DS 792 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

DS 796 - Field Experience (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

DS 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

DS 898D - Dissertation (COM)
Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

DSCI (Decision Science)

DSCI 553 - Risk Management - Personal and Business
Credits: 3
Applications of risk modelling and evaluation skills to personal or business project management. Topics include risk initiation, identification, assessment, and response planning.
Cross-Listed: ECON 553.

DSCI 590 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

DSCI 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

DSCI 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

DSCI 594 - Internship (COM)
Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

DSCI 596 - Field Experience (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

DSCI 752 - Advanced Business Decision Science
Credits: 3
The application of quantitative methods to business management and complex strategic and tactical decisions. Applications of mathematical modelling, regression, simulations, & other tools of analysis to business decisions.

DSCI 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

DSCI 792 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

DSCI 793 - Workshop (COM)
Credits: 1-3
Special, intense sessions in specific topic areas. 45 hours of student work is required for each hour of credit earned. Workshops may vary in time range, but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity.

DSGN (Design)

DSGN 582 - Travel Studies
Credits: 1-5
This travel study course is designed to provide extramural educational experiences, as approved by, and under the direction of a faculty member, and may be in cooperation with faculty and administrators of other institutions. Students will participate in hand-on activities, and design educational activities for presentation at selected locations. Includes pre-travel orientation, post-travel self-evaluation, and a written report.

DSGN 592 - Topics (COM)
Credits: 1-9
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

DSGN 691 - Independent Study (COM)
Credits: 1-9
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

DSGN 692 - Topics (COM)
Credits: 1-9
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ECE (Early Childhood Education)

ECE 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

ECE 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ECE 645 - Contemporary Perspectives in Early Childhood Education
Credits: 3
The course is designed to present contemporary perspectives in the field of early childhood education. Current influences from Dewey to Reggio Emilia on curriculum development and assessment and teaching and learning will be explored.

ECE 711 - Developmental Theory and Application
Credits: 3
In-depth study of human development. Emphasis upon current theories and their application to an understanding of the developmental growth processes; relationship between cognitive, social, physical and emotional development and behavior; range of normality in growth and behavior. Focus on normal development but with consideration of impact of deviance from normative development on child, family, neighborhood.

ECE 715 - Cognitive Development
Credits: 3
This course will focus on the study of human growth and development across the lifespan. Topics include historical and modern views of human development, neurobiological, cognitive and socio-emotional processes and periods of development from conception through adulthood and theories of development.

ECE 788 - Research Problems/Projects (COM)
Credits: 1-7
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

ECE 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

ECE 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ECE 794 - Internship (COM)
Credits: 1-7
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than in the case with field experience courses.

ECE 795 - Practicum (COM)
Credits: 1-6
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

ECE 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

ECON (Economics)

ECON 513 - Macroeconomics Policy
Credits: 3
Students study government policies designed to shape macroeconomic activity. These policies include fiscal policy, monetary policy, foreign-exchange policy, growth policy, and tax policy. Students study these policies and their macroeconomic consequences theoretically and empirically.

ECON 533 - Public Finance (COM)
Credits: 3
Public Finance covers the role of government in the United States economy. The necessity of government in a market economy, optimality in government expenditures and taxation, and a survey of patterns and trends of governmental economic activity are discussed.

ECON 540 - International Economics
Credits: 3
Explored the economic interaction between sovereign states, including the gains from trade, the pattern of trade, protectionism, the balance of payments, exchange rate determination, international policy coordination, and the international capital market.
Cross-Listed: AGEC 540.

ECON 550 - Industrial Organization (COM)
Credits: 3
Industrial organization studies how different industry structures influence firm performance and business practices, and how government policies affect competitiveness and the economy.

ECON 553 - Risk Management - Personal and Business
Credits: 3
Applications of risk modelling and evaluation skills to personal or business project management. Topics include risk initiation, identification, assessment, and response planning.
Cross-Listed: DSCI 553.

ECON 560 - Economic Development
Credits: 3
Developing and developed national economies. Factors impacting economic development. Role of public policies in development. Agricultural and rural development issues emphasized.

ECON 567 - Labor Law and Economics
Credits: 3
Explores history and development of the U.S. labor movement; the labor market from firm's and union's viewpoint; contract administration; collective bargaining; and public policy toward collective bargaining. Also explores current topics in employment law, discrimination, and employment at will.
Cross-Listed: BLAW 567.

ECON 572 - Resource and Environmental Economics (COM)
Credits: 3
Resource and environmental economics surveys the allocation and conservation of natural resources from a perspective of optimal use and sustainability. Emphasis is placed on environmental economics including the problems of pollution, population, and economic growth. Methods for evaluating projects and programs are considered.
Cross-Listed: AGEC 572.

ECON 576 - Marketing Research (COM)
Credits: 3
This course provides an in-depth study of the primary methodologies of marketing research. Emphasis is placed on collecting, analyzing, interpreting and presenting information for the purpose of reducing uncertainty surrounding marketing and management decisions.
Cross-Listed: MKTG 576.

ECON 590 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

ECON 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

ECON 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ECON 593 - Workshop (COM)
Credits: 1-3
Special, intense sessions in specific topic areas. Approximately 45 hours of work is required for each hour of credit. Workshops may vary in time range but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity.

ECON 691 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

ECON 692 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ECON 703 - Advanced Macroeconomics
Credits: 3
Advanced Macroeconomics studies the economy as a whole. The course investigates the sources of long-run economic growth and short-run aggregate shocks. Some of the models examined include Solow, Infinite Horizon, Overlapping Generations, New Growth, and Real Business Cycle. Also theories of incomplete nominal adjustment, rational expectations, unemployment and inflation, and monetary and fiscal policies are studied.

ECON 704 - Advanced Microeconomics
Credits: 3
Rigorous analysis of topics in microeconomics including: methodology of economic science, economic choice, production, resource allocation, distribution, welfare economics, and general equilibrium.

ECON 705 - Econometrics
Credits: 3
Practice in the application of micro-and macro-economic theory to solutions of real and hypothetical problems. Selection and use of appropriate statistical and other analytical methods suitable for complex problems.

ECON 707 - Research Methodology in Empirical Economics and Management
Credits: 1-3
The methods and procedures used to conduct empirical research in applied economics and management. Effectively develop and address research questions and objectives; includes the techniques to review literature and collect and analyze data. Research project proposal and presentation are required

ECON 713 - Monetary Theory and Practice: The American Experience
Credits: 3
Examine how the money supply and other nominal economic variables, including inflation rates and nominal interest and exchange rates, relate to real economic variables, including real output, income, and employment. Examine this relationship theoretically, empirically, and in the context of the US experience from 1913 to the present.

ECON 751 - Advanced Managerial Economics
Credits: 3
Advanced analysis of management decisions that business industry professionals face on a daily basis in their role as managers of agribusiness, commercial and manufacturing enterprises using microeconomics and econometric methods. Topics include economic analysis of demand, production, cost, market structure, government regulation, risk, and capital budgeting.
Cross-Listed: MGMT 751.

ECON 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

ECON 791 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

ECON 792 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ECON 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

EDAD (Educational Administration)

EDAD 705 - School Principalship
Credits: 3
Examines leadership practices of the school principal from student-centered learning perspectives. Specific topics will focus on understanding the principal's role as a leader of the school environment, data-driven decision-making, teaching and learning, organizational structure, and professional development.

EDAD 706 - Instructional Leadership Development
Credits: 3
This course takes an in-depth approach to the instructional responsibilities of the school principal and other instructional leaders. Course content focuses on enhancing instructional leadership and supervision associated with school instruction, teacher instructional capacities, student learning, and leading curriculum and instruction development.

EDAD 731 - School Finance and Budgeting
Credits: 3
This course will develop an understanding and working knowledge of school finance theory and practice with emphasis placed on contemporary school finance reform movement approaches. The course will discuss financial and human resource allocation and school budgeting.
Notes: Emphasis will be placed on the school finance reform movement in recent years.

EDAD 736 - School Law and Ethics
Credits: 3
This course develops an understanding of legal foundations of K-12 schools in American society, including legal powers and relationships of school boards, administrators, teachers, families, and students.

EDAD 741 - School - Community Relations
Credits: 3
This course discusses building and sustaining relations between the school and the community. Students will examine principal leadership behaviors to foster two-way communications with stakeholders, community organizations, and leaders. This course is a prerequisite or co-requisite for EDAD 794 Internship.

EDAD 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

EDAD 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

EDAD 794 - Internship (COM)
Credits: 1-8
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than in the case with field experience courses.

EDER (Education Evaluation and Research)

EDER 605 - Foundations of Institutional Research and Assessment in Higher Education
Credits: 3
This course helps students explore knowledge and skills needed for a career in institutional research or assessment.

EDER 610 - Introduction to Research
Credits: 3
Determining research focus; developing research problems and objectives; reviewing the literature and establishing a theoretical framework; establishing procedures for data collection and analysis; ethical issues.

EDER 612 - Inquiry and Action Research
Credits: 3
This course will focus on research design relative to inquiry practices in P-12 classrooms. Primary emphasis will be placed on design, delivery, and analysis of action research in educational settings. Students will complete small scale research projects in their internship sites using this model of educational research.

EDER 614 - Advanced Educational Research Design and Analysis
Credits: 3
This course will focus on research design, delivery and analysis in education. Primary emphasis will be placed on survey design, delivery, and analysis, qualitative design, interviewing, transcription and analysis, and classical experimental design and execution in educational settings. Students will draft research publications utilizing journal requirements and prepare them for submission.

EDER 691 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

EDER 711 - Educational Assessment (COM)
Credits: 3
Examines the theory and principles of educational assessment.

EDER 760 - Informational Literacy
Credits: 3
Particular emphasis is placed on the knowledge needed to be an informed and effective consumer of research. This course helps students become critical consumers of professional information by addressing the location, evaluation, use, and communication of information.

EDER 788 - Research Problems/Projects (COM)
Credits: 1-6
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.
Notes: Course is repeatable for additional credit.

EDER 792 - Topics (COM)
Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

EDFN (Education Foundations)

EDFN 527 - Middle School: Philosophy and Application
Credits: 2
Group processes and issues in affective education at the middle school/junior high level. Topics for study are group processes, interdisciplinary team planning, cooperative learning, student advisory programs, self-esteem building, and student/teacher relationships.
Registration Restriction: Instructor consent.

EDFN 560 - Applied Linguistics for Teaching English as a Second Language (COM)
Credits: 3
The study of social and linguistic structures which undergird different discourse forms. Emphasis will be on discourse forms which are particularly important for full participation in US culture such as the rhetoric of public and school interactions.

EDFN 561 - Cultural and Psychological Perspectives in the Acquisition of English as a Second Language
Credits: 3
Addresses the social and cognitive processes involved in the acquisition of a second language including developmental influences.

EDFN 562 - Teaching Language Arts for English as a Second Language Across the Curriculum
Credits: 3
The teaching of reading and writing to students with limited English proficiency. Emphasis will be on reading and writing as it pertains to performance in educational and public settings.

EDFN 563 - Methods of Teaching English as a Second Language
Credits: 3
Develops the central concepts, tools of inquiry, and structure of teaching English to students with limited English proficiency. Includes the evaluation of instructional processes, learning resources, curriculum, and programs. Emphasis will be on teaching students to use English in educational and public settings.

EDFN 580 - Leadership Development in Youth Organizations
Credits: 3
Develop an understanding of leadership development in formal youth organizations in, within, or adjacent to school contexts. Emphasis is placed on positive youth and leadership development including social, emotional, academic, and community aspects. The course will foster a rich understanding of the necessary leadership skills to ensure organizational and individual growth in youth members.

EDFN 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

EDFN 600 - Educational Theory in Practice
Credits: 3
This course is designed to empower educators and future administrators with the knowledge and skills to drive positive changes in classroom practice through evidence-based approaches. Recognizing the dynamic nature of education, the course emphasizes the integration of research findings to inform and guide instructional strategies to foster a culture of continuous improvement within educational institutions. Topics discussed in class will be applied to clinical settings.

EDFN 610 - Foundations of Competency-Based Learning
Credits: 3
This course seeks to build a foundational understanding of competency-based education through exploration of the history, purpose, and research underpinning the approach. There will also be considerable discussion and examination of the culture-building process with school stakeholders which is necessary to any program.

EDFN 615 - Building and Maintaining Competency-Based Learning Programs
Credits: 3
This course focuses on the process of planning and implementing competency-based learning programs in schools. There will be specific consideration in the learning to technology, shared-definition and leadership, blended learning, and classroom environment in the competency-based setting. This course will include site-visits to schools which have implemented personalized, competency-based programs. A key theme in this course will be how to include stakeholders (students, parents/guardians, teachers, admin, staff, and community members) in the development and implementation of competency-based programs.
Prerequisites: EDFN 610.

EDFN 620 - Upscaling, Sustainability, and Evaluation in Competency-Based Learning Programs
Credits: 3
This course focuses on the use of data and evaluation to make decisions in the competency-based setting. Specifically, there will be assignments and discussions which consider types of assessment, program evaluation, funding and external support, continual community and family involvement, and reflective practices. Significant time in this course will be on how to continue and improve communication with stakeholders (students, parents/guardians, teachers, admin, staff, and community members).
Prerequisites: EDFN 615.

EDFN 688 - Student Teaching (COM)
Credits: 1-16
Students preparing to teach will observe, participate, and teach under the supervision of the regular classroom teacher in an approved school.
Cross-Listed: ED 688.

EDFN 691 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

EDFN 700 - Exceptional Learners
Credits: 3
Assist regular classroom teachers to better understand and more effectively teach students with special learning needs. Focuses on learning disabilities, cognitive disabilities, and behavior disorders. Also includes short sections regarding hearing impairments, visual impairments, orthopedic or health impairments, speech/language disorders, and the gifted. Regular classroom curricular adaptations and teaching modifications are included.

EDFN 701 - Capstone
Credits: 1
A highly focused, and topical course integrated with the final internship. The format includes student presentations and discussions of reports based on literature, practices, problems, and research. Seminars may be conducted over electronic media.

EDFN 725 - Education in a Pluralistic Society
Credits: 3
Focus on school issues surrounding pluralism in a democratic society. This course relates to working with the diversity of populations within our schools. This diversity is represented in our schools by the multi-cultural nature of American society, and differences associated with exceptionality, gender, age, religion, and socio- economic status. The course will focus on preparing educators to confront issues relating to pluralism and diversity and to work productively in a variety of settings.

EDFN 727 - Group Processes
Credits: 3
A survey of small group constructs, research, and principles of application. Emphasis on learning methods and skills of group observation as well as developing knowledge of group roles and dynamics. members will learn experimentally about groups by participating, observing and analyzing opportunities to experience their own behaviors and styles as they deem appropriate.

EDFN 730 - Current Issues in Education (COM)
Credits: 3
Analysis of current trends and issues in education. Focus on the change process in educational and social settings.

EDFN 745 - Motivation in the Classroom
Credits: 3
This course focuses on the research of motivational theories in the field of educational psychology. Commonly held beliefs about human motivation will be questioned with an in-depth exploration of motivational theory and application in the classroom setting.

EDFN 750 - Educational Technology Integration
Credits: 3
This course investigates technologies and how they are implemented in various educational environments. Specific focus is placed on theoretical models of technology integration and applications for learning, communicating, and assessing.

EDFN 751 - Teaching Reading Across Disciplines
Credits: 3
Examines the latest research on how readers comprehend and learn from written tests, and the classroom applications of this research. Intended for teachers of content subjects (science, English, math, history, etc.) in grades 4 through the early years of college.

EDFN 754 - Clinical Practice in Reading
Credits: 1-3
Supervised experience in utilizing best techniques and materials to effect desirable solution to reading difficulties; practical experience in writing case studies, in diagnosing reading disability. Proposing effective remediation, keeping records and in evaluating progress of student.

EDFN 757 - Critical Issues in Literacy Coaching (COM)
Credits: 1
This course delves into the critical issues surrounding literacy education through the lens of the science of reading. Participants will explore foundational research, best practices, and contemporary challenges in teaching reading, with an emphasis on evidence-based approaches. The course aims to empower instructional coaches with the knowledge and strategies necessary to support teachers as they foster the literacy needs in pre-K-12 settings.

EDFN 758 - Coaching Using the Science of Learning (COM)
Credits: 1
This course provides instructional coaches with a foundational understanding of the science of learning and its implications for effective teaching practices for literacy. Participants will explore key concepts from cognitive psychology and neuroscience that inform how students learn, retain, and transfer knowledge. The course emphasizes practical strategies for applying these principles in coaching practices, fostering collaboration among educators, and enhancing student outcomes.

EDFN 759 - Literacy Coaching Frameworks and Andragogy (COM)
Credits: 1
This course introduces various literacy instructional coaching frameworks and the andragogical principles and practices needed to effectively facilitate adult learning in literacy education. Participants will explore strategies to engage adult learners, assess their needs, and create supportive learning environments that foster professional growth.

EDFN 761 - Developing Instructional Capacity (COM)
Credits: 1
This course focuses on equipping instructional coaches with the knowledge and skills to implement effective literacy instructional strategies. Participants will explore evidence-based practices, collaborative approaches, and practical tools that enhance literacy instruction. Through coaching techniques, participants will learn how to support educators in developing and refining their instructional strategies to improve student outcomes in reading and writing.

EDFN 762 - Literacy Assessment and Learning (COM)
Credits: 1
This course focuses on equipping instructional coaches with the knowledge and skills to implement effective literacy assessment practices. Participants will explore various types of assessments, including screening, diagnostic, outcome, and progress monitoring tools, that enhance literacy instruction. Through targeted coaching techniques, participants will learn how to support educators in effectively using assessments to inform instruction and improve student outcomes in reading and writing.

EDFN 763 - Data-Informed Literacy Coaching (COM)
Credits: 1
This course explores the role of data in literacy coaching and instructional decision-making. Participants will examine strategies for collecting, analyzing, interpreting, and evaluating literacy assessment data to guide instructional decisions and support student growth. Emphasis will be placed on using data to inform coaching conversations, provide targeted professional development, and foster a collaborative, data-driven school culture. By the end of the course, participants will develop an action plan for integrating data-informed decision-making into their literacy coaching practices.

EDFN 764 - Literacy Coaching for Differentiated Instruction (COM)
Credits: 1
This course focuses on equipping literacy coaches with the strategies and tools needed to empower educators in implementing differentiated literacy instruction that effectively supports students with unique literacy needs such as English Language Learners (ELLs) or students with Dyslexia. Participants will explore research-based practices for tailoring instruction to meet the diverse needs of all students. Through collaborative coaching techniques and practical applications, participants will learn how to guide educators in creating literacy environments that foster engagement and enhance learning outcomes for all students.

EDFN 766 - Disciplinary Literacy Coaching (COM)
Credits: 1
This course prepares literacy coaches to support teachers in integrating literacy instruction into content areas such as science, social studies, and math. Participants will explore the principles of disciplinary literacy, examining how reading, writing, speaking, and critical thinking skills enhance content learning. Emphasis will be placed on coaching strategies that help educators incorporate evidence-based literacy practices into their subject-area instruction.

EDFN 767 - School-Wide Literacy Intervention (COM)
Credits: 1
This course explores the role of instructional coaches in developing, implementing, and sustaining schoolwide intervention plans within a Multi-Tiered System of Supports (MTSS) framework. Participants will examine best practices for data-driven decision-making, collaboration, and instructional support to ensure equitable literacy interventions for all students. Emphasis will be placed on using assessment data to identify student needs, guiding teachers in implementing targeted interventions, and fostering a schoolwide culture of continuous improvement.

EDFN 768 - Literacy Curriculum Evaluation (COM)
Credits: 1
This course focuses on the principles and practices of evaluating literacy curricula. Participants will explore the critical components of effective literacy instruction, including alignment with educational standards, integration of evidence-based strategies, and assessment of student outcomes. The course will provide practical tools and frameworks for evaluating literacy curricula to ensure they meet the needs of all learners and align with the science of reading.

EDFN 769 - Literacy Curriculum Mapping (COM)
Credits: 1
As a follow-up to Literacy Curriculum Evaluation, this course focuses on the development and refinement of literacy curriculum maps based on evaluation findings. Participants will apply principles of effective literacy instruction to design cohesive, standards-aligned curriculum maps that integrate evidence-based strategies and support diverse learners. Emphasis will be placed on using data to inform curriculum decisions, ensuring instructional coherence across grade levels, and adapting curriculum maps to improve student outcomes. By the end of the course, participants will create a functional literacy curriculum map tailored to their educational context.

EDFN 770 - Family and Community Literacy Engagement (COM)
Credits: 1
Coaches will learn to engage families and the broader community in supporting literacy development. This includes strategies for fostering home-school partnerships and community involvement in literacy initiatives.

EDFN 771 - Promoting Literacy Policies and Programs (COM)
Credits: 1
This course prepares coaches to promote policies and programs that support evidence-based literacy instruction. Coaches will learn how to engage stakeholders at the school, district, and state levels to promote the Science of Reading in the formation of and facilitation of educational policy.

EDFN 772 - Integrating Technology in Literacy Coaching (COM)
Credits: 1
This course explores how literacy coaches can leverage technology to enhance instruction, support teachers, and improve student literacy outcomes. Participants will examine digital tools and platforms that promote reading, writing, and engagement while also learning strategies for coaching educators in effective technology integration. Emphasis will be placed on data-informed decision-making, personalized learning, and fostering digital literacy skills. By the end of the course, participants will develop a technology-enhanced coaching plan to support literacy instruction. How artificial intelligence can be utilized within literacy coaching will also be examined.

EDFN 773 - Literacy Instructional Leadership (COM)
Credits: 1
This course focuses on developing leadership skills in the context of literacy instruction. Coaches will learn to lead literacy initiatives, collaborate with administrators, and promote school-wide literacy goals.

EDFN 774 - Implementing Literacy Coaching Cycles (COM)
Credits: 1
This course explores the role of structured coaching cycles in driving instructional improvement and fostering teacher growth. Participants will examine evidence-based coaching models, develop skills in goal-setting and feedback, and learn how to use data to guide coaching conversations. Emphasis will be placed on building collaborative relationships, supporting reflective practice, and sustaining meaningful instructional change. By the end of the course, participants will be equipped to implement coaching cycles that empower educators and improve student outcomes.

EDFN 776 - Sustaining Literacy Coaching Cycles (COM)
Credits: 1
This course provides literacy coaches with practical strategies for implementing and sustaining effective coaching practices within their schools. Participants will explore how to build strong coaching relationships, navigate challenges, and foster a culture of continuous literacy improvement. Emphasis will be placed on leadership skills, professional collaboration, and long-term planning to ensure that coaching efforts lead to lasting instructional change.

EDFN 777 - Practicum: Applying Coaching Cycles (COM)
Credits: 1
This practicum course provides participants with hands-on experience in literacy coaching by applying coaching cycles in real educational settings. Participants will engage in planning, implementing, and reflecting on coaching sessions with educators. Emphasis will be placed on using data-driven decision-making, providing targeted feedback, and supporting teachers in implementing evidence-based literacy strategies. Through guided mentorship and peer collaboration, participants will refine their coaching skills and develop a portfolio showcasing their impact.

EDFN 790 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

EDFN 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

EDFN 794 - Internship (COM)
Credits: 1-6
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than in the case with field experience courses.

EDFN 798 - Thesis (COM)
Credits: 1-6
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

EE (Electrical Engineering)

EE 534 - Power Systems Analysis
Credits: 3
Basic parameters of transmission lines. Representation of power systems, symmetrical components, network equations and solutions, load-flow studies and load-flow control, and symmetrical faults on synchronous machines.
Corequisites: EE 534L.

EE 534L - Power Systems Analysis Lab
Credits: 1
Computer (PowerWorld Simulator and/or PSCAD) modeling and simulation of power systems. Load-flow and load-flow control, symmetrical and asymmetrical faults, and contingency analysis studies are performed.
Corequisites: EE 534.

EE 536 - Photovoltaic Systems Engineering
Credits: 3
Fundamentals of hybrid photovoltaic power systems. Topics may include: an overview of energy and electricity use; solar resource characteristics; load assessment; the fundamentals of solar cells, batteries, power electronics, and generators and other power sources; power system design; the National Electric Code; and energy economics.
Corequisites: EE 536L.

EE 536L - Photovoltaic Systems Engineering Laboratory
Credits: 1
This lab provides practical experience in the design of hybrid photovoltaic power systems.
Corequisites: EE 536.

EE 547 - Advanced Power Systems (COM)
Credits: 3
Advanced topics in analysis of unbalanced/faulted three-phase systems using symmetrical components. Dispatch and coordination of interconnected systems. System protection, generation control, transmission line transient operation, and specialized problems in transient stability. Grid tie and DC link systems. The national regulatory environment. System simulation using Matlab, Simulink and PowerWorld.
Prerequisites: EE 531 or EE 534.

EE 554 - Biomedical Instrumentation and Electrical Safety
Credits: 3
The design of electronic instrumentation for physiological applications. Emphasis on modeling and design of biopotential electrode/amplifier systems, physiological measurement techniques, therapeutic and prosthetic devices, and electrical safety in healthcare facilities.

EE 560 - Sensors and Measurements
Credits: 2
Introduction to the operation, design, testing and applications of modern sensors in use and under development. Signal conditioning and system integration are also reviewed.
Corequisites: EE 560L.

EE 560L - Sensors and Measurements Lab
Credits: 1
Laboratory to accompany EE 560.
Corequisites: EE 560.

EE 562L - Electronic Materials Laboratory
Credits: 1
An introduction to microelectronic fabrication including evaporative and sputter deposition, photolithography, mask design, and packaging.
Registration Restriction: Instructor consent.

EE 569 - Fundamentals of High-Performance Computing
Credits: 3
An introduction to high-performance computing (HPC) and its application to scientific research computing: accessing and using HPC clusters, task and process-based parallelism, shared and distributed memory, using hardware accelerators (e.g., graphics processing units), and other emerging topics.
Cross-Listed: CSC 569.

EE 575 - Digital Image Processing
Credits: 3
Introductions to the fundamentals of digital image processing. Topics include image formation, transforms, enhancement, restoration, compression, and analysis.

EE 591 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

EE 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

EE 592L - Topics Laboratory (COM)
Credits: 1
This course provides opportunities for students to engage in hands-on experience in subject material that does not already have a laboratory component.

EE 691 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

EE 692 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

EE 716 - Digital Fabrication: Materials and Processes (COM)
Credits: 3
The principles of interfacial phenomenon, solution thermodynamics, and colloid chemistry will be used in illuminated process by which metallic nanoparticulates can be formed and incorporated into inks for use in manufacturing of a variety of products. Students will learn 1) the methods and science behind the manufacture of a variety of functional nanoparticles, 2) the methods of incorporating these particles into inks and the printing of these inks for digital fabrication applications, and 3) the interfacial processes involved in line spreading and curing of the printed traces.
Cross-Listed: MES 677 and NANO 677 at SDSM&T; CHEM 716 at USD.

EE 731 - Advanced Power Electronics
Credits: 4
This course presents an overview of switching power devices and power electronics converters focused on power electronic interfaces for renewable energy systems, switch mode power supplies and UPS systems. The course emphasizes power electronic circuit analysis, design, and the fundamentals of modeling and control of power converters. Qualitative and quantitative analysis of power electronics converters is presented focusing on the design and performance of AC/DC, DC/DC, DC/AC, and AC/AC converters including the control system performance.

EE 732 - Modeling and Control of Power Electronic Systems
Credits: 3
This course presents approaches for computer-aided analysis and design of power electronic interfaces for renewable energy systems. Techniques for modeling electric generators, power converters and renewable energy sources (i.e. wind and solar), and for designing converters with feedback control are discussed.

EE 733 - Advanced Power System Analysis
Credits: 3
This is an advanced course to power systems engineering, designed to provide a student with the knowledge of steady-state analysis in power system operation. Course content includes power flow analysis, state estimation, power system security, automatic generation control, economic dispatch, optimal power flow, unit commitment, fuel scheduling, and production cost modeling.

EE 734 - Power System Dynamics and Stability
Credits: 3
This course will cover modeling, analysis and mitigation of power system stability and control problems. Planning and operations of a modern interconnected power grid under disturbances to ensure system performance and reliability will also be covered. Students will learn both analytical and numerical methods to solve realistic power system stability and control problems.

EE 735 - Photovoltaics (COM)
Credits: 3
This course will cover modern silicon photovoltaic (PV) devices, including the basic physics, ideal and nonideal models, device parameters and design, and device fabrication. The emphasis will be on crystalline and multicrystalline devices, but thin films will also be introduced. PV applications and economics will also be discussed.

EE 736 - Advanced Photovoltaics (COM)
Credits: 3
This course will cover advanced photovoltaic concepts, including thin films, compound semiconductors, spectral conversion devices, and organic and polymeric devices. Advanced device designs will be emphasized. Evaluation will include a research paper addressing a current PV topic.
Prerequisites: EE 735.

EE 737 - Organic Photovoltaics (COM)
Credits: 3
Organic photovoltaic provides a variety of interesting and new properties which facilitate solar energy utilization. The objectives of this course are to introduce material properties of polymers, small molecules, dyes, and nanomaterials for photovoltaics; describe device mechanisms and behavior or organic photovoltaics; understand the photophysical processes in organic photovoltaics; and introduce different processing techniques for device fabrication.

EE 751 - Linear Systems Theory
Credits: 3
State variables, Laplace transform theory, matrix analysis and complex variable theory as applied to problems in circuit analysis. Topology, network theorems and network functions.

EE 765 - Electric Properties of Materials
Credits: 3
Topics covered include electromigration, diffusion, theory of rate processes, relaxation, effects, phase transformations, physics of failure in electrical circuit applications.

EE 766 - Thin Films and Plasma Processing
Credits: 3
This course will focus on the state-of-the art thin film materials and plasma processing. The contents include thin film optics theory, function principle of optoelectronic materials and devices, and fundamental plasma science and technologies. Hands on training on plasma processing and optical filter design will be provided. Specific materials and processes to be studied will be decided by the course instructor.

EE 770 - Information and Signal Processing
Credits: 3
Foundation of information theory and its relationship to the measure and transmission of information; comparison of analog and digital system implementations. Topics include random processes, signal representation, spectral analysis, channel capacity, rate distortion, coding, data compression. Z-transforms and digital filtering.

EE 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

EE 790 - Seminar (COM)
Credits: 1
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

EE 791 - Independent Study (COM)
Credits: 1-9
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

EE 792 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

EE 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

EE 898D - Dissertation (COM)
Credits: 1-6
A formal treatise presenting the results of a study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

EES (Ecology and Environmental Science)

EES 525 - Disturbance and Restoration Ecology
Credits: 3
Introduction to basic concepts of disturbance and restoration ecology. Demonstration and discussion of linkages between basic biology and management of natural resources.
Notes: Fall, even years.

EES 530 - Biological Invasions
Credits: 3
Ecological factors that contribute to species invasion in terrestrial and aquatic ecosystems will be examined. Impacts to invaded ecosystems, management implications, and mitigation strategies will be explored.
Notes: Fall, odd years.

EES 792 - Topics (COM)
Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ELED (Elementary Education)

ELED 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

EM (Engineering Mechanics)

EM 522 - Theory of Elasticity
Credits: 3
Analysis of stress and strain; equilibrium and compatibility equations; Hooke's law; fundamental problems in the theory of elasticity; plane-stress and plane-strain problems of the narrow beam, rotating discs and a plate with a circular hole.

EM 523 - Theory of Plasticity
Credits: 3
Analysis of stress and strain; plastic behavior of materials; basic laws of plastic flow; applications to bending of beams, torsion of bars and thick-walled cylinders; slip line theory and its application to extrusion problems; limit analysis theorems and their applications to structural problems.
Prerequisites: EM 522 or instructor consent.

EM 624 - Theory of Plates and Shells
Credits: 3
Small-deflection theory of plates. Laterally-loaded rectangular plates. Navier and Levy solutions. Plates of various shapes, boundary conditions, and loading systems. Basic equations of the theory of shells. Design problems in cylindrical shells.

EM 731 - Advanced Fluid Mechanics
Credits: 3
Fundamental notions of continuum, stress at a point velocity field, and vorticity. General principles of kinematics and dynamics of a fluid. Potential flow and vortex motion.

EM 741 - Finite Element Analysis
Credits: 3
Theoretical basis of the method of finite element analysis-an approximate method which analyzes problems using small, but finite elements rather than the infinitesimal elements of the calculus. Two-and three dimensional stress analysis, plate bending and shell problems, static, dynamic and stability problems. Geometric and material non-linearities. Introduction to both heat and fluid flow problems.

ENGL (English)

ENGL 571 - Academic Editing and Publishing
Credits: 3
Theory and practice of academic editing and publishing with emphasis on academic journals.

ENGL 572 - Film Criticism (COM)
Credits: 3
Theory and practice of various critical approaches to film.

ENGL 573 - Creative Writing: Screenwriting (COM)
Credits: 3
Advanced study of the writing process concentrating on screenwriting.

ENGL 575 - Creative Writing: Non-Fiction (COM)
Credits: 3
Advanced study of the writing process concentrating on non-fiction.

ENGL 576 - Creative Writing: Fiction (COM)
Credits: 3
Advanced study of the writing process concentrating on fiction.

ENGL 578 - Creative Writing: Poetry (COM)
Credits: 3
Advanced study of the writing process concentrating on poetry.

ENGL 583 - Advanced Creative Writing (COM)
Credits: 3
A course allowing students with experience in creative writing to specialize in a particular genre (poetry, fiction, etc.).

ENGL 585 - Writing Center Tutoring
Credits: 3
Theory and practice of peer tutoring and mentoring models in university writing centers.

ENGL 591 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

ENGL 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ENGL 605 - Seminar in Teaching Composition
Credits: 3
Study of the methods, theories, and history of writing instruction.
Registration Restriction: A course for English GTAs and required of them.

ENGL 704 - Introduction to Graduate Studies
Credits: 3
An introduction to literary criticism and study of bibliographic tools (including electronic sources) and research methods needed for scholarly writing in the Humanities. Required of all candidates for the M.A. degree in English.

ENGL 710 - Seminar in Rhetoric
Credits: 3
Intensive study of selected periods or topics in rhetoric, with special emphasis on their relation to issues in criticism and composition.

ENGL 723 - Seminar in English Literature To 1660
Credits: 3
Intensive study of a selected type, theme, author, or period of English Literature from the beginning to 1660.

ENGL 726 - Seminar in English Literature Since 1660
Credits: 3
Intensive study of a selected type, theme, author, or period of English literature since 1660.

ENGL 728 - Seminar in American Literature To 1900
Credits: 3
Intensive study of a selected type, theme, author, or period of American literature to 1900.

ENGL 729 - Seminar in American Literature Since 1900
Credits: 3
Intensive study of a selected type, theme, author, or period of American literature since 1900.

ENGL 742 - Seminar in American Indian Literature
Credits: 3
Intensive study of American Indian literature of the past or present with concentration on the Plains Indians.

ENGL 756 - Seminar in Minority Literature
Credits: 3
American literature of specific cultural or ethnic minorities other than Native American (African American, Asian American, Hispanic, Jewish, or woman writers, for example). May be repeated once with different content.

ENGL 788 - Research Problems/Projects (COM)
Credits: 1-6
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

ENGL 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

ENGL 792 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ENGL 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

ENTR (Entrepreneurship)

ENTR 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ENTR 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

EPSY (Educational Psychology)

EPSY 723 - Adolescent Psychology
Credits: 3
This course covers the mental, social, and emotional development of boys and girls during the adolescent period.

EPSY 740 - Educational Psychology: Cognition, Learning and Applications
Credits: 3
This course examines foundational theories in the field of educational psychology. It explores theories of cognitive development, memory formation, and problem-solving strategies to gain insights into effective teaching and learning methodologies. Additionally, the course examines social constructivist views of learning and how they can be applied to a variety of classroom learning environments.

EXCH (Exchange Programs)

EXCH 589 - Student Exchange - International (COM)
Credits: 0-18
This course allows students to register as full- time students while taking part in an Exchange Program. Students will register on their home campus for the number of credit hours they intend to take while enrolled at another campus.

EXPL (Experiential Learning)

EXPL 587 - Study Abroad (COM)
Credits: 0-18
The goal of the course is to track student enrollment in a study abroad experience as well as to award credit for the time and effort necessary in the preparation, culture-learning, and re-entry processes of study abroad.

EXPL 592 - Topics (COM)
Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

EXS (Exercise Science)

EXS 550 - Clinical Exercise Physiology (COM)
Credits: 3
This course is designed to provide the clinical exercise physiology student with assessment and prescription techniques appropriate to special populations.

EXS 555 - ECG and Clinical Stress Testing
Credits: 3
This course is designed to fill the needs of students who desire the ability to interpret the normal and abnormal, resting and exercise ECG, as well as provide opportunities to learn and practice the basic components of maximal stress testing during a variety of exercise conditions. Since clinical stress testing and ECG interpretation is a vital component of the laboratory skills needed by today's exercise physiologist, emphasis in this course will be focused on understanding and interpreting ECG tracings and related pathophysiology, preparation of the exercise 12-lead ECG, and interpretation of maximal stress test results regarding exercise tolerance for various clinical populations and comparing them to normal individuals. In addition, an overview of other diagnostic procedures that involve the use of exercise will be given.
Registration Restriction: Instructor consent.

EXS 582 - Theory of Strength and Conditioning (COM)
Credits: 3
This course is designed to help students learn the specific scientific foundational knowledge and the practical/applied knowledge necessary to be an effective strength and conditioning coach. The emphasis is on optimal human performance in sport.

EXS 745 - Applied Biomechanics
Credits: 3
This course provides students with an advanced application of mechanical principles to human movement. Specific topics will include the force-motion relation, kinetics and kinematics of human motion, and neuromuscular adaptations. Emphasis within these topics will be placed on evaluating and developing rehabilitation and performance techniques using motion capture, force platforms, and electromyography. Current research literature in each of the areas will be discussed and critically reviewed.

EXS 750 - Advanced Exercise Physiology
Credits: 3
Physiological basis of factors which influence physical fitness and physical performance; application of physiological measures to fitness programs, critical analysis of current literature; emphasis on bioenergetics, neuromuscular and circulorespiratory function, body composition and physical training.
Prerequisites: NES Majors only.

EXS 751 - Laboratory Techniques in Exercise Physiology (COM)
Credits: 3
A study of methods measuring the effects of physical exercise including tests, and statistical manipulation of the results of specific evaluation tools. These tools include the methods of determining surface area of humans; resting and exercise blood pressure in humans; vertical, horizontal and lateral center of gravity in humans; determination of adipose tissue via skinfold and hydrostatics in humans; measurement of dynamic flexibility; evaluation of static flexibility; evaluation of lung capacities; measurement of lung volumes; measurement of bench press strength at three angles of elbow flexion; determination of leg extension strength; determination of knee flexion; determination of generated horse power in humans; prediction of oxygen uptake via sub-maximal treadmill test in humans.

EXS 755 - Applied Exercise Physiology
Credits: 3
Focuses on the applied aspect of exercise physiology. Includes areas of environmental influences on performance, optimizing performance by developing and implementing training programs appropriate to the individual. In addition, training and performance characteristics of adolescent athletes and older adults as well as gender differences will be discussed.
Notes: For NES majors only.

EXS 756 - Physical Activity Assessment and Evaluation
Credits: 3
This course will introduce students to physical activity epidemiology and discuss approaches and interventions for changing physical activity behavior. Students will have the opportunity to discuss the strengths and weaknesses of various physical activity assessment tools and gain experience collecting, analyzing, and interpreting physical activity data.

EXS 792 - Topics (COM)
Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

FCSE (Family and Consumer Sciences Education)

FCSE 531 - Work Based Learning
Credits: 2
In this course, the student will learn the importance of work-based learning programs, establish communication skills that include community needs into student programing, and develop curriculum for a complete work-based learning program.
Cross-Listed: AGED 531.

FCSE 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

FCSE 595 - Practicum (COM)
Credits: 1-3
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with Field Experience courses.

FCSE 611 - History and Philosophy of Family and Consumer Sciences
Credits: 3
The history, mission, philosophy and development of Family and Consumer Sciences (FCS) and career and technical education; the societal context for families and communities and the impact of selected legislation and consumer sciences programs.

FCSE 673 - Supervised Student Teaching in Family and Consumer Sciences Education
Credits: 6-9
Student teaching is the capstone experience in a comprehensive program for the professional development of teacher candidates. MS-FCS teacher education candidates will spend 10-16 weeks in family and consumer sciences classrooms working directly with teaching-learning situations under the guidance of cooperating teachers and a university supervisor.

FCSE 721 - Occupational Programs in Family and Consumer Sciences
Credits: 3
This course will include the planning and implementing of occupational FCS programs in career and technical education. Emphasis on cooperative education, career pathways and work- based education.

FCSE 741 - Supervision of Family/Consumer Sciences Education
Credits: 2
This course will cover the philosophy, responsibilities, and techniques of supervision in the family and consumer sciences classroom and other learning environments.

FCSE 751 - Curriculum of Family/Consumer Sciences Education
Credits: 3
The analysis and development of curriculum and methods of teaching family and consumer sciences in the context of the National Standards for Family and Consumer Sciences Students, the National Standards for Teachers of Family and Consumer Sciences and appropriate state standards. This course will include the content topics of learners and the learning environment, program leadership, beginning instructional strategies, Family, Career and Community Leaders of America (FCCLA); curriculum development; integration of technology in the FCS classroom and assessment.

FCSE 761 - Advanced Methods and Assessment in Family and Consumer Sciences Education
Credits: 3
This course will address the application of theories of learning and human development in selecting teaching strategies and instructional resources for family and consumer sciences. The course will include long-range planning, classroom management, laboratory management, assessment and program evaluation, marketing/public relations, FCCLA and methods of teaching.

FCSE 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

FIN (Finance)

FIN 500 - Fundamentals of Family Financial Planning
Credits: 3
Issues and concepts related to the overall financial planning process, and establishing client-planner relationships. Services provided, documentation required and client and CFP licensee responsibilities are explored. Competencies related to gathering of client data, determining goals and expectations, and assessing the client's financial status by analyzing and evaluating data are developed. Emerging issues and the role of ethics in financial planning are an integral part of the course.

FIN 511 - Investments (COM)
Credits: 3
This course is a thorough study of the equity market including fundamental valuation techniques, asset allocation, the efficient markets hypothesis and its implications, portfolio theory, risk and return, the primary and secondary market mechanisms, security market indicators, and international investing. An overview of the bond market including bond valuation, duration, and bond portfolio management, and an introduction to options, futures, and forward contracts are provided. The vital roles of computer technology and electronic trading are also explored.

FIN 513 - Advanced Corporate Finance (COM)
Credits: 3
This course utilizes a combination of cases and theory in studying the investment, financing and dividend decisions of the firm. The emphasis is on long-term debt and equity financing as well as managing financial risk.

FIN 514 - Financial Derivatives (COM)
Credits: 3
This course discusses the basic characteristics of derivative instruments, such as forwards, futures, options, and swaps, and their applications to corporate strategy and risk management as well as to portfolio management. Topics include basic features of futures and options, option strategies, valuation and hedging techniques, financial risk management, and derivatives market mechanisms.

FIN 517 - International Finance (COM)
Credits: 3
International Finance explores the principles of financial management from an international perspective. Background material on foreign exchange markets and risk is provided, and the theory of foreign exchange markets is discussed. Emphasis is placed on corporate finance for international firms. Both direct and indirect investment as well as financing decisions for multinational corporations are covered.

FIN 520 - Student Managed Investment Fund
Credits: 3
This course involves hands-on experiential learning of real money management. Students will actively participate in all aspects of security analysis and portfolio management, including understanding investment ethics, generation of trading ideas, investment analysis, asset valuation and allocation, trading of financial securities, and performance report.

FIN 531 - Family Investment Planning
Credits: 3
An in-depth study of investment options for clients, this course will include common stocks, fixed income securities, convertible securities, and related choices. Relationships between investment options and employee/employer benefit plan choices will be studied. Current and emerging issues, and ethics will be an integral part of the course.

FIN 532 - Family Insurance Planning
Credits: 3
An in-depth study of risk management concepts, tools, and strategies for individuals and families, including life insurance; property and casualty insurance liability insurance; accident, disability, health and long-term care insurance; and government-subsidized programs; current and emerging issues, as well as ethical considerations, relative to risk management will be discussed. Case studies will provide experience in selecting insurance products suitable for individuals and families.

FIN 533 - Family Estate Planning
Credits: 3
Fundamentals of the estate planning process will be studied, including estate settlement, estate and gift taxes, property ownership and transfer, and powers of appointment. Tools and techniques used in implementing an effective estate plan; ethical considerations in providing estate planning services and new and emerging issues in the field will be explored. Case studies will provide experience in developing estate plans suitable for varied family forms.

FIN 534 - Family Retirement Planning
Credits: 3
Study of micro and macro considerations for retirement planning. Survey of various types of retirement plans, ethical considerations in providing retirement planning services, assessing and forecasting financial needs in retirement, and integration of retirement plans with governmental benefits.

FIN 535 - Family Tax Planning
Credits: 3
This course provides in-depth information of income tax practices and procedures including tax regulations, tax return preparation, the tax audit processes, the appeals process, preparation for an administrate or judicial forum, and ethical considerations of taxation. New and emerging issues related to taxation will be covered. Family/individual case studies provide practice in applying and analyzing tax information and recommending appropriate tax strategies.

FIN 539 - Family Financial Planning Capstone
Credits: 3
This course examines professional issues in financial planning, including ethical considerations, regulation and certifications requirements, communication skills, and professional responsibility. Students are expected to utilize skills obtained in other courses and work experiences in the completion of personal financial case studies, the development of a targeted investment policy, and other related financial planning assignments.
Prerequisites: FIN 531, FIN 532, FIN 533, FIN 534, and FIN 535.

FIN 590 - Seminar (COM)
Credits: 3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

FIN 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

FIN 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

FIN 594 - Internship (COM)
Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

FIN 596 - Field Experience (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

FIN 740 - Investment Science
Credits: 3
The course will apply econometrics, advanced statistics, and differential calculus to the process of stock analysis and pricing, portfolio composition, options pricing, and risk management. Its focus is on minimizing risk while seeking a target rate of return.

FIN 753 - Financial Management
Credits: 3
Advanced techniques for managing working capital, capital budgeting, analysis of financial structure and cost of capital, valuation, financial planning and control.

FIN 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

FIN 792 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

FS (Food Science)

FS 500 - Food Chemistry and Analysis
Credits: 3
A study of the chemical properties of basic food constituents and chemical changes occurring during storage and processing of foods. Principles and techniques of physical and chemical analysis of food products. Proximate analysis of moisture, protein, lipid, and carbohydrates and chemical or instrumental analysis of vitamins, minerals and food additives.
Corequisites: FS 500L.
Notes: Fall.

FS 500L - Food Chemistry and Analysis Lab
Credits: 2
Laboratory to accompany FS 500.
Corequisites: FS 500.
Notes: Fall.

FS 523 - Principles of Food Processing
Credits: 2
Study of physical/chemical principles and approaches used in heat processing, freezing, dehydration, and fermentation of foods. Current processing methods will be considered in terms of preparation, processing, packaging, and quality control of food products.
Corequisites: FS 523L.
Notes: Odd Fall.

FS 523L - Principles of Food Processing Lab
Credits: 1
Laboratory to accompany FS 523.
Corequisites: FS 523.
Notes: Odd Fall.

FS 551 - New Food Product Development
Credits: 3
This course is designed as a capstone course for undergraduate Food Science students and an introductory course for graduate students in food-related majors. The principles and technologies of food storage, process and packaging will be discussed in depth. Emphasis will be placed in the development of new food products.
Notes: Even Spring.

FS 551L - New Food Product Development Lab
Credits: 1
Laboratory to accompany FS 551.
Corequisites: FS 551.
Notes: Even Spring.

FS 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

FS 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

FS 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

FS 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

FS 898D - Dissertation (COM)
Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

GE (General Engineering)

GE 501 - Engineering Ethics and Economics
Credits: 1
This course covers engineering economics and ethics, making sound financial decisions for engineering projects, and the implications of those decisions. Emphasis will be on ethical decision making in the engineering design process.

GE 510 - Human Factors in Design
Credits: 3
Human factors engineering (HFE), sometimes called ergonomics, deals with optimizing working and living conditions through designing for human use. The central approach of HFE involves the systematic application of relevant information about user characteristics, behavior and expectations in the design of man-made products, equipment, facilities, and environments. The objectives of HFE are (1) to enhance the effectiveness and efficiency of work and other human activities; and (2) to enhance the product user's comfort, safety, health and satisfaction.

GE 525 - Occupational Safety and Health Management
Credits: 3
This course covers methods to implement and manage a safe work environment. Study will address OSHA standards and other related governmental regulations, hazard recognition and control, accident cost assessment, ergonomics, and emphasis on a proactive approach to accident prevention.

GE 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

GE 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

GE 685 - Management and Leadership in Technical Organizations
Credits: 3
Study of the roles and responsibilities of managers in technology-driven organizations. Topics include leadership, strategic planning and implementation, staffing and training to meet organizational needs, personal management style, and communicating effectively with all levels of an organization.

GE 690 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

GE 691 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

GE 692 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

GE 696 - Field Experience (COM)
Credits: 1-6
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study established between the student, instructor and field experience supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case in an internship or practicum course.

GE 701 - Research Colloquium 1
Credits: 1
This course is designed to cultivate a culture of scholarship, broaden intellectual horizons beyond a student's primary field of research, and strengthen core skills in scientific reasoning through in-depth discussions, presentations, and critical analysis of specific topics featuring guest speakers, faculty, and student participation.

GE 702 - Research Colloquium 2
Credits: 1
This course is designed to cultivate a culture of scholarship, broaden intellectual horizons beyond a student's primary field of research, and strengthen core skills in scientific reasoning through in-depth discussions, presentations, and critical analysis of specific topics featuring guest speakers, faculty, and student participation.
Prerequisites: GE 701.

GE 703 - Research Colloquium 3
Credits: 1
This course is designed to cultivate a culture of scholarship, broaden intellectual horizons beyond a student's primary field of research, and strengthen core skills in scientific reasoning through in-depth discussions, presentations, and critical analysis of specific topics featuring guest speakers, faculty, and student participation.
Prerequisites: GE 702.

GE 750 - Capstone
Credits: 1
Project that integrates technical knowledge in an engineering discipline, application of engineering, management and leadership concepts, and ability to effectively communicate.

GE 788 - Research Problems/Projects (COM)
Credits: 1-2
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

GE 790 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

GE 794 - Internship (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

GE 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

GEOG (Geography)

GEOG 501 - Geography of Languages
Credits: 3
The world's languages examined from a geographic perspective. Emphasis placed on the five geographic themes to understand the locations of languages, how many languages have spread to new places and regions, factors explaining their locations and pathways of movement, how languages are expressed in cultural landscapes, and how natural environments influence languages.

GEOG 510 - Soil Geography and Land Use Interpretation
Credits: 2
Relationship of soil characteristics and soil classification to land use interpretations. Laboratory exercises involve field and laboratory procedures used in soil survey investigations.
Corequisites: GEOG 510L.
Cross-Listed: PRAG 510.

GEOG 510L - Soil Geography and Land Use Interpretation Lab
Credits: 1
Lab to accompany GEOG 510.
Corequisites: GEOG 510.
Cross-Listed: PRAG 510L.

GEOG 515 - Environmental Geography and Sustainability
Credits: 3
Geographical aspects of environmental issues including historical geography of environmental problems, global driving forces, land ethics and stewardship, environmental externalities, population, resources, climate change, and environmental restoration. Focus on connections between human and natural systems; consequence chains between cause and effect; impact of time and space on problem perception, analysis, and solution; and natural and human laws. Term paper required.

GEOG 520 - Geography of Tourism
Credits: 3
Based on fundamental tourism principles, this course will examine, from a geographical perspective, the social, cultural, environmental and economic complexities associated with tourism as a global, national and local phenomenon. This course will also consider the positive and negative factors that affect tourists and destinations, and the costs and benefits of tourism to communities and places, providing case-study examples from the United States and around the world.

GEOG 521 - Research Methods in Geography
Credits: 3
The use of qualitative and quantitative techniques designing and completing field research in geography and beyond. Special focus will include mixed methods for synthesis, research and survey design, interviewing, ethnography, and visual techniques such as the use of imagery, photography, sketch mapping, and Global Positioning Systems (GPS) for the collection and analysis of geospatial data.

GEOG 525 - Population Geography
Credits: 3
Geographic analysis of such population characteristics as: numbers and distribution; growth and change; composition; mortality, fertility, and theories of population change; policy and family planning; migration and mobility; population, environment, food supply, and human wellbeing. Problems and prospects are considered in the context of each topic.

GEOG 530 - Geography of Europe
Credits: 3
This course focuses on the physical, historical, and cultural features that have shaped the current landscapes of Europe.

GEOG 537 - Atmospheric Sciences
Credits: 3
Systematic methodological investigation of the meteorological elements (weather, climate, altitude, etc.) and their effects on geographic features.

GEOG 539 - Geomorphology
Credits: 3
A study of the relationship of landforms and how they are impacted by human activity. Changes in land-use evolution through time and how this has impacted the landscape.

GEOG 540 - Health Geography
Credits: 3
The course will explore the history of health geography, its role in public health and other health applications, the use of maps, geospatial methods and GIS within health programs and initiatives, all from the geographic perspective and how place impacts the overall health of communities.
Cross-Listed: PUBH 540.

GEOG 547 - Geography of the Future (COM)
Credits: 3
A futuristic analysis of Earth's natural environmental elements, natural resources, population and settlement, and cultural institutions at the global, national, and state levels.

GEOG 554 - Sustainable Communities
Credits: 3
This course investigates the intersection of sustainability and communities. This primary focus on this course is the interconnections between social, economic, and environmental systems and their reflexive interactions with community form and function. The goal is to examine policies and programs that can be used to achieve sustainable communities.

GEOG 559 - Political Geography
Credits: 3
This course addresses geographic factors which influence current international relations and the policies of nations and political units with consideration given to aspects of geopolitics, racial/ethnic groupings, religions, languages, boundaries, and territorial changes.

GEOG 560 - Geopolitics
Credits: 3
An introduction to geopolitics that addresses the fundamental links between power and space at the global, national, and local scales. Focuses on classical geopolitics, critical geopolitics, political-economic approaches to geopolitics, world orders and hegemonic cycles, historical development of the international state system, and geography of imperialism.

GEOG 561 - Urban Geography
Credits: 3
Geography of cities: types, functions, and distribution of world cities. Special emphasis on planning of cities in the U.S.

GEOG 571 - Programming for Geospatial Data Analysis
Credits: 3
This course aims to help students develop programming skills for GIS. Specifically, this course covers the following topics: fundamentals of programming, object-oriented programming (OOP), software development life cycle, GIS data processing, and popular GIS libraries.

GEOG 573 - GIS Data Creation/Integration
Credits: 2
This course introduces advanced tools and techniques of data creation, data integration, mapping, and spatial analysis in Geographic Information Systems (GIS). It provides basic approaches for solving problems of data integration including format identification, conversion, and spatial registration. Building on the skills and techniques learned in the introductory GIS course or equivalent, it gives a conceptual base to many methods and techniques associated with vector and raster-based spatial analysis including imagery. It provides an examination of the functions and capabilities of ArcGIS Desktop GIS software (including extensions).
Corequisites: GEOG 573L.

GEOG 573L - GIS: Data Creation and Integration Lab
Credits: 1
Hands-on experience to apply advanced tools and techniques of data creation, data integration, mapping, and spatial analysis in Geographic Information Systems (GIS). It provides basic approaches for solving problems of data integration including format identification, conversion, and spatial registration. Building on the skills and techniques learned in the introductory GIS course or equivalent, it gives a conceptual base to many methods and techniques associated with vector and raster-based spatial analysis including imagery. It provides an examination of the functions and capabilities of ArcGIS Desktop GIS software (including extensions).
Corequisites: GEOG 573.

GEOG 574 - GIS: Vector & Raster Modeling
Credits: 2
This course introduces basic concepts of vector and raster modeling in Geographic Information Systems (GIS) with special emphasis on construction and use of raster digital elevation models (DEMs). Provides in-depth experience with a range of geoprocessing techniques for handling and analyzing GIS data. Topics include vector processing in a model framework, weighted suitability modeling, path findings, modeling viewsheds, constructing surfaces from point samples, and spatial hydrologic modeling. Builds on the skills and techniques learned in the introductory GIS course or equivalent.
Corequisites: GEOG 574.

GEOG 574L - GIS: Vector and Raster Modeling Lab
Credits: 1
Hands-on experience to apply basic concepts of vector and raster modeling in Geographic Information Systems (GIS) with special emphasis is on construction and use of raster digital elevation models (DEMs). Provides in-depth experience with a range of geoprocessing techniques for handling and analyzing GIS data. Topics include vector processing in a model framework, weighted suitability modeling, path finding, modeling viewsheds, constructing surfaces from point samples, and spatial hydrologic modeling.
Corequisites: GEOG 574.

GEOG 575 - GIS Applications
Credits: 2
This course explores the latest software and its applications in Geographic Information Sciences.
Corequisites: GEOG 575.

GEOG 575L - GIS Applications Lab
Credits: 1
Hands-on experience to explore the latest software and its applications in Geographic Information Sciences.
Corequisites: GEOG 575.

GEOG 576 - Web GIS
Credits: 2
This course covers the basic theories, principles, and protocols of Web GIS. Students will learn how to acquire, manage, and publish GIS data in a web-based environment.
Corequisites: GEOG 576L.

GEOG 576L - Web GIS Lab
Credits: 1
Develop relevant skills to design and implement a Web GIS application.
Corequisites: GEOG 576.

GEOG 578 - Mobile GIS
Credits: 2
Explores the concepts, workflows, and technologies of modern Mobile GIS. Students master map-centric and form-centric data collection using leading. The course details essential mobile workflows, including offline operations, workforce coordination, and the integration of field data with organizational systems. Emphasis is placed on developing practical skills for efficient and accurate spatial data capture and management.
Corequisites: GEOG 578L.

GEOG 578L - Mobile GIS Lab
Credits: 1
Practical, hands-on application of Mobile GIS concepts and workflows. Students develop proficiency in geospatial data collection, management, and quality control using mobile devices and professional apps. Lab activities include both computer processing and real-world field exercises.
Corequisites: GEOG 578.

GEOG 579 - AI and Advanced Geospatial Techniques
Credits: 2
Applies core principles of Geospatial Artificial Intelligence (GeoAI) to solve complex problems, emphasizing embedded AI tools in industry GIS software. Focuses on automating analytics, elevating predictive modeling (including Time Series AI), and deploying pre-trained and custom deep learning models. Students develop algorithmic scripting skills for spatial optimization, imagery analysis, and Generative AI workflows.
Corequisites: GEOG 579L.

GEOG 579L - AI and Advanced Geospatial Techniques Lab
Credits: 1
Students gain hands-on experience using embedded GeoAI tools in industry GIS platforms, scripting advanced spatial optimization and predictive models. Labs involve deploying custom deep learning models for imagery classification and utilizing Generative AI for complex geospatial data creation and analysis.
Corequisites: GEOG 579.

GEOG 580 - Satellite Remote Sensing
Credits: 2
This course provides an introduction to basic principles and common techniques in satellite remote sensing. Students will gain basic knowledge of how satellite data are collected and processed and be able to do simple analysis for their own research purposes. Emphasis is placed on how to use satellite remote sensing to monitor the changing earth's surface.
Corequisites: GEOG 580L.

GEOG 580L - Satellite Remote Sensing Lab
Credits: 1
Hands-on experience using various software, applying methods and principles, and processing satellite remote sensing data.
Corequisites: GEOG 580.

GEOG 583 - UAS Remote Sensing
Credits: 2
This course provides an overview of the basics in theory, concepts, models and applications of Uncrewed Aircraft Systems (UAS)-based remote sensing. It includes foundations of photogrammetry, light ranging and detection (LiDAR), radiometric calibration, geometric correction, ortho-rectification, geo-referencing and mosaicking etc. This course focuses on implementation of various UAS sensors and imagery in environment, agriculture and surveying related projects and applications.
Corequisites: GEOG 583L.

GEOG 583L - UAS Remote Sensing Lab
Credits: 1
The lab is a hands-on experience using various software and the application of methods and principles of UAS remote sensing.
Corequisites: GEOG 583.

GEOG 585 - Advanced Satellite Remote Sensing
Credits: 2
This course will concentrate on the digital processing and visualization of various types on remotely sensed imagery. Image sources, characteristics, formats and analysis techniques will be explored as well as the integration of remotely sensed imagery with GIS and GPS datasets.
Prerequisites: GEOG 580 or instructor consent.

GEOG 585L - Advanced Satellite Remote Sensing Lab
Credits: 1
Hands-on experience using various software and applying advanced methods and principles of satellite remote sensing.
Prerequisites: GEOG 580L or instructor consent.

GEOG 590 - Seminar (COM)
Credits: 1-4
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

GEOG 591 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

GEOG 710 - Evolution of Geographic Thought
Credits: 3
The history and development of geography and its theories, schools of thought, and current ideas.

GEOG 714 - Research and Writing
Credits: 3
Development of geographic research and writing skills including a survey of data sources and literature, and preparation of reports, papers, articles, and the master's thesis.

GEOG 741 - Quantitative Remote Sensory for Terrestrial Monitoring
Credits: 3
The course will describe the science, algorithms, and computational approaches to generate and assess derived satellite products for long term Earth system monitoring. Emphasis will be on the principles of optical remote sensing and state-of- the-art quantitative algorithms for estimating biophysical and geophysical land surface variables from remotely sensed observations.
Cross-Listed: GSE 741.

GEOG 743 - Geospatial Analysis
Credits: 3
This course covers concepts and methods of spatial data analysis, focusing on the analysis of broad-scale geographic datasets characterizing physical, biological, and socioeconomic landscape features. Students learn to develop scientific hypotheses about spatial relationships, and to test these hypotheses using appropriate spatial datasets and analytical techniques. Topics include exploratory data analysis, methods for quantifying spatial pattern, development of explanatory models to test spatial hypotheses, and development of predictive models for spatial interpolation.
Prerequisites: One graduate level course in statistics (e.g. STAT 541 or equivalent).
Cross-Listed: GSE 743.

GEOG 750 - Agricultural Remote Sensing
Credits: 3
This course provides an overview of theories and concepts relating to various remote sensing platforms (satellite, aerial and drone), sensors (multispectral, hyperspectral, LiDAR and thermal) and datasets, and their applications in broad agriculture domains. It covers remote sensing applications in crop, horticulture and livestock system analysis, crop growth and health monitoring and stress detection, disease control and pest management, precision agriculture and plant breeding, water resource and soil management and risk assessment.

GEOG 760 - Advanced Methods in Geospatial Modeling: Topical
Credits: 3
Selected topics in advanced methods in geospatial modeling. May be repeated for credit. Specific topics covered will change each semester.
Prerequisites: Specific prerequisites dependent on topic.
Cross-Listed: GSE 760.

GEOG 766 - Advanced Remote Sensing Application
Credits: 3
Selected topics in advanced applications in remote sensing. May be repeated for credit. Specific topics covered will change each semester.
Prerequisites: Specific prerequisites dependent on topic.
Cross-Listed: GSE 766.

GEOG 767 - Fire and Ecosystems
Credits: 3
This course is a broad treatment of how fire and ecosystems combine to form the landscapes that we see. Course material examines the contributions of climate, topography, weather, and fuels to the fire environment and how these factors influence wildland fire behavior. We will explore the interactions between ecological processes and fire regimes in ecosystem dynamics and the ways in which human land use and land management affect the outcomes.
Cross-Listed: GSE 767/NRM 767.

GEOG 768 - Global Climate Change
Credits: 3
The course will provide a multidisciplinary examination of the drivers of the Earth's climate, how they interact, and how they change over time. We will critically examine the roles of greenhouse gases and anthropogenic land cover/use in affecting these changes as well as the types, strengths and limitations of global climate models. Class will combine lectures on various aspects of the Earth's climate system with class discussion of a variety of scientific papers exploring the current controversies and ideas central to climate research. Students will be challenged to develop their own projects/papers on course-related topics and use the most recent scientific research to decide for themselves about the importance of global climate change.
Cross-Listed: GSE/NRM 768.

GEOG 784 - Machine Learning for Remote Sensing and GIS
Credits: 3
This course provides a broad introduction to machine learning techniques in remote sensing, GIS and geospatial datasets and analysis. The topics will cover supervised learning and unsupervised algorithms in various remote sensing & GIS tasks, including remote sensing imagery-based classification, segmentation, prediction, and object detection problems using classical machine learning algorithms and cutting-edge deep learning methods.

GEOG 786 - Geographic Information Systems
Credits: 3
Practical application of GIS to problems and land-use planning, management of natural resources, transportation, as well as demographic data. Hands-on experience in the making of maps with computers, digitization, the storing and retrieving of geographic data, and the design of simple GIS.

GEOG 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

GEOG 790 - Seminar (COM)
Credits: 1-4
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

GEOG 791 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

GEOG 792 - Topics (COM)
Credits: 3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

GEOG 794 - Internship (COM)
Credits: 1-3
Applied, monitored and supervised, field based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

GEOG 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

GER (German)

GER 544 - German Culture and Language in Translation (COM)
Credits: 3
This course offers students a balanced approach to translating written German by equally emphasizing the basic rules of the language, reading skills, history, and culture. Students learn how cultural and historical contexts can make translation both easier and more challenging. Interdisciplinary comparisons and intercultural competence are of special concern. Topics and types of texts will differ according to student interest. This course is taught in English.

GER 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

GERO (Gerontology)

GERO 515 - Intergenerational Issues
Credits: 3
Exploration of intergenerational issues (impacting both younger and older generations). Examination of intergenerational practice in the United States and internationally, including naturally occurring intergenerational activities and intentional programming, as a means of addressing intergenerational issues.

GERO 520 - Grief and Loss
Credits: 3
Overview of the experiences of loss and grief due to death and non-death related causes over the lifespan. Exploration of theories, models, and concepts of grief and loss, impacts of loss at different stages in life, and contextual factors impacting grieving. Students will examine their own attitudes toward grief, locate resources to assist those during loss and grief, identify factors which indicate need for referral to other professionals, and develop a plan for self-care when working in the midst of those experiencing loss and grief.

GERO 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

GERO 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

GLST (Global Studies)

GLST 581 - Travel Studies
Credits: 1-6
This course is taken as part of an approved study abroad program under faculty supervision. The number of credit hours depends upon the length of the study abroad program, number of course contact hours, and course content.

GSE (Geospatial Science and Engineering)

GSE 740 - Introduction to Geospatial Science and Engineering
Credits: 3
The interdisciplinary course provides an overview of the science and technology of Earth observation, including the fundamentals of remote sensing, geographic information systems, computational and analytical approaches, and professional practices, including research information resources, graphical and oral presentation, proposal writing, publishing, and research ethics.
Registration Restriction: Admission to the GSE PhD program.

GSE 741 - Quantitative Remote Sensing for Terrestrial Monitoring
Credits: 3
The course will describe the science, algorithms, and computational approaches to generate and assess derived satellite products for long term Earth system monitoring. Emphasis will be on the principles of optical remote sensing and state-of-the-art quantitative algorithms for estimating biophysical and geophysical land surface variables from remotely sensed observations.
Cross-Listed: GEOG 741.

GSE 743 - Geospatial Analysis
Credits: 3
This course covers concepts and methods of spatial data analysis, focusing on the analysis of broad-scale geographic datasets characterizing physical, biological, and socioeconomic landscape features. Students learn to develop scientific hypotheses about spatial datasets and analytical techniques. Topics include exploratory data analysis, methods for quantifying spatial pattern, development of explanatory models to test spatial hypotheses, and development of predictive models for spatial interpolation.
Prerequisites: One graduate level course in statistics (e.g. STAT 541 or equivalent).
Cross-Listed: GEOG 743.

GSE 760 - Advanced Methods in Geospatial Modeling: Topical
Credits: 3
Selected topics in advanced methods in geospatial modeling. May be repeated for credit. Specific topics covered will change each semester. Recent topics have included: Image Geometry and Photogrammetry; Change Analysis; Land Cover Mapping.
Prerequisites: Specific prerequisites dependent on topic.
Cross-Listed: GEOG 760.

GSE 766 - Advanced Remote Sensing Applications: Topical
Credits: 3
Selected topics in advanced applications in remote sensing. May be repeated for credit. Specific topics covered will change each semester. Recent topics have included: Water Resources; Conservation; Weather & Climate.
Prerequisites: Specific prerequisites dependent on topic.
Cross-Listed: GEOG 766.

GSE 767 - Fire and Ecosystems
Credits: 3
This course is a broad treatment of how fire and ecosystems combine to form the landscapes that we see. Course material examines the contributions of climate, topography, weather, and fuels to the fire environment and how these factors influence wildland fire behavior. We will explore the interactions between ecological processes and fire regimes in ecosystem dynamics and the ways in which human land use and land management affect the outcomes.
Cross-Listed: GEOG 767/NRM 767.

GSE 768 - Global Climate Change
Credits: 3
The course will provide a multidisciplinary examination of the drivers of the Earth's climate, how they interact, and how they change over time. We will critically examine the roles of greenhouse gases and anthropogenic land cover/use in affecting these changes as well as the types, strengths and limitations of global climate models. Class will combine lectures on various aspects of the Earth's climate system with class discussion of a variety of scientific papers exploring the current controversies and ideas central to climate research. Students will be challenged to develop their own projects/papers on course-related topics and use the most recent scientific research to decide for themselves about the importance of global climate change.
Cross-Listed: GEOG/NRM 768.

GSE 790 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

GSE 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

GSE 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

GSE 898D - Dissertation (COM)
Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on- one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

GSR (Graduate School and Research)

GSR 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

GSR 601 - Research Regulations Compliance
Credits: 1
The course consists of lecture/seminars on compliance with governmental regulations in research at SDSU. The course includes completion of educational modules and associated paperwork required for the performance of research at South Dakota State University. The course also serves as the foundation for SDSU's education program for compliance with current and pending regulatory guidelines. Topics to be covered include: Animal Care and Use, Human Subjects Research, Recombinant DNA, Radiation Safety, Laboratory/Biological Safety, Integrity in Research, Conflict of Interest in Research, Financial Accountability, and Intellectual Property Issues.

GSR 602 - Program Continuation (COM)
Credits: 1
This course is suitable for graduate students to maintain enrollment in their programs of study.

GSR 691 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

GSR 701 - Graduate School and Beyond (COM)
Credits: 1
Focus on skills and knowledge necessary to succeed in a graduate program and post-graduate career including work/life balance, gender issues, and alternative career options.

HDFS (Human Development Family Study)

HDFS 501 - Foundations and Principles of Community Service
Credits: 3
An introduction to the field of family studies and related professions that involve working with families and communities.

HDFS 510 - Parenting
Credits: 3
The study of theories, models, research and skills regarding parenting effectiveness and parent-child relations in the context of Western, Native American, and other cultures living in the U.S. Included are comparisons of the relative strengths and weaknesses of various parenting approaches, historical perspective on parenthood and children, and the developmental perspectives of children and parenting. Best practices for individual and community parent education programs will be addressed.

HDFS 525 - Family Resiliency
Credits: 3
Literature on stress experienced by individuals and families with an emphasis on a systemic analysis of the conceptual/clinical literature of individual and family resilience will be examined. Individual and family characteristics of resilient families and prevention and solution-based principles will be explored in order to understand and promote family resilience in a developmental and ecological context. Students in counseling and human development as well as education, nursing, and other behavioral, social, and health sciences may benefit from this course.

HDFS 535 - Family Policy
Credits: 3
This course examines the impact of family policies, government laws, and programs related to family life. The course will emphasize the current state of families or family trends and the implications of such trends for family policy. The varied effects that policies and programs have on different types of families and different aspects of family functioning and well-being will be explored.

HDFS 544 - Diverse Families
Credits: 3
Assess and explore key theories and concepts in diversity, specifically examining the role of social context in shaping perspectives, experiences, and opportunities of families. Study the impact of factors such as race, culture, gender, economic status, religion, sexual orientation, and ability on family processes, socialization, residential patterns, and educational opportunities.

HDFS 551 - Infant and Early Childhood Mental Health
Credits: 3
This course provides students with a comprehensive understanding of socioemotional development and mental health during infancy and early childhood. Course content will examine history, theory, research, concepts, and pertinent developmental and mental health issues in infant and early childhood.

HDFS 586 - Service Learning
Credits: 1-3
Service learning in Human Development and Family Studies, including service planning, interaction with community, and reflection.

HDFS 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

HDFS 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

HDFS 602 - Research and Evaluation in Counseling and Human Development
Credits: 3
The course explores various research designs and methodologies applicable to the field of counseling. The course will emphasize qualitative and quantitative research, critical evaluation of research reports, the use of internet databases for writing a research paper, a thorough understanding of APA format.

HDFS 605 - Program Administration and Management
Credits: 3
An introduction to the development, administration, and management of youth, family, and community service organizations.

HDFS 610 - Family Resource Management
Credits: 3
Survey course of personal finance and family resource management literature to provide an overview of how individual and family members develop and exercise their capacity to obtain and manage resources to meet life needs. Resources include the self, other people, time, money, energy, material assets, space, and environment.

HDFS 614 - Adult Development
Credits: 3
Study of research, theoretical adult development; physical, intellectual and personality development of the adult integrates issues of individual, family, gender, and career development and provides opportunity for application in working with adults.

HDFS 620 - Family Dynamics
Credits: 3
An examination of theories of family function and dysfunction, techniques of assessment, and models of family intervention.

HDFS 630 - Lifespan Development
Credits: 3
An examination of human development from both lifespan and bio-ecological perspectives focusing on major theories of development and current research on micro-macro relationship.

HDFS 635 - Crises Across the Lifespan
Credits: 3
Exploration of resources related to managing stress and coping with crises across the lifespan including the bio psychosocial nature of stress; methods of coping with stress, anxiety, and conflict; models of effective family functioning in the presence of stress and crises; and the current literature on how families cope with a variety of life transitions and crises.

HDFS 640 - Interpersonal Relationships
Credits: 3
An in-depth examination of interpersonal relationships, including theoretical perspectives, research methods, relationship forms, relationship processes, and how context affects relationships.

HDFS 701 - Current Issues in Human Development and Family Science
Credits: 3
Current issues in the field of human development and family science. Introduction to current works and issues on individual, family, and community well-being from a bio-psycho-social perspective across the lifespan. Focus on implications for research and practice.

HDFS 702 - Advanced Human Sexuality
Credits: 3
Clinical, scientific, and philosophical studies of human sexuality. Emphasis on contemporary research and insights into human sexual experience, behavior, and social /cultural values and beliefs about sexuality throughout the lifespan. Topics will include sexual and psychosexual development, sexual health and disease, sexual variations, and sexual dysfunction and therapy.

HDFS 710 - Program Design, Evaluation, and Implementation
Credits: 3
An overview of the program development process and outcome evaluation of community, children, and family programs. Modes of outcome scholarship and their implications for community-based programs are discussed. Students will develop knowledge through participating in a community-based project involving the practical application of program design and evaluation methods.

HDFS 730 - Grant Writing
Credits: 3
An overview of the complete grant writing process and potential outcomes. Students will develop knowledge through the actual grant writing, budgeting, and reviewing grant proposals.

HDFS 742 - Family Theory and Research
Credits: 3
Current theoretical approaches to family interactions; impact of various forces (social, personal, intrapersonal) upon dynamic aspects of family relationships; patterns and sequences of coalitions and alliances; factors which result in stress and breakdown or enhanced and rewarding relationships. Emphasis upon normal families but families but family problems are also studied.

HDFS 745 - Work and Family
Credits: 3
The Work and Family course utilizes a bioecological perspective to explore the challenges individuals, families, employers, and communities of managing work and family in today's world. Topics include the history of the work-family relationship, gender roles and the work-family relationship, demographic and cultural changes within the workforce, leisure and the work-family relationship, and organizational work-family policies.

HDFS 753 - Family Public Policy
Credits: 3
The impact of the professional in shaping family policy and effecting positive family policy formation; study of family policy priority issues and alternative strategies.

HDFS 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

HDFS 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

HDFS 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

HIST (History)

HIST 509 - Environmental History of the U.S. (COM)
Credits: 3
Examines the relationship between the natural environment and the historical movements of humans by tracing U.S. environmental changes, beginning with the activities of the Native American peoples through the Euro-American presence to the Cold War era.

HIST 519 - World Environmental History (COM)
Credits: 3
Examines the history of interactions between human cultures and the natural world from the 1400s to the present day.
Cross-Listed: AIS 519.

HIST 545 - Nazi and Soviet Europe
Credits: 3
This course presents an analysis of Nazi and Soviet history in early twentieth-century Europe. The class will examine not only the political origins of these regimes, but also the economic, social, intellectual and cultural developments.

HIST 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

HLTH (Health)

HLTH 505 - Health Coaching Concepts and Skills
Credits: 3
This course will prepare students in the foundational knowledge for health and wellness coaching. The class includes health and wellness coaching structure, processes, and session management.

HLTH 551 - Public Health Law
Credits: 3
Will investigate issues across a range of specific contexts in public health such as communicable disease control, public health class action litigation and medical care e.g., the right to have and refuse medical care, confidentiality and privacy). Issues include how health policies are developed; the impact current and potential policies have and will have on public health; the courts role and interpretations of public health law; and the interaction of national, state, local, and interest group politics in the formation of policies. The course will focus on the states' roles and the constitutions of the states as well as the Tenth Amendment of the United States Constitution.
Cross-Listed: BLAW 551.

HMGT (Hospitality Management)

HMGT 581 - Travel Studies
Credits: 1-5
This travel study course is designed to provide extra-mural educational experiences as approved by and under the direction of a faculty member. Students will participate in hands-on activities and design educational activities for presentation at selected locations. Includes pre-travel orientation, post-travel self-evaluation, and a written report.

HNS (Health and Nutritional Science)

HNS 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

HNS 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

HNS 594 - Internship (COM)
Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

HNS 708 - Applied Research and Evidence Based Analysis
Credits: 3
This course will cover the knowledge required to understand and interpret published research. This course will also cover the process of evidence-based analysis which uses scientific evidence to formulate and standardize practice guidelines and to develop programs. A variety of disciplines such as dietetics, athletic training, medicine, psychology and education use evidence-based practice and/or programs. The emphasis of the course will be on a transdisciplinary process and how it can be utilized in a student's chosen field. When possible, students will be encouraged to use his/her research topic in order to complete required assignments and activities.
Cross-Listed: NUTR 708.

HNS 783 - Research Methods in Health and Nutritional Sciences
Credits: 3
By studying prevalent quantitative and qualitative research techniques, students will become critical consumers and potential producers of research relevant to Health, Nutrition, Physical Education, Sport, and Recreation. Computer work, development of grant and research proposals, and preparation for writing for professional papers.

HNS 788 - Research Problems/Projects (COM)
Credits: 1-7
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

HNS 790 - Seminar (COM)
Credits: 1
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

HNS 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

HNS 792 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

HNS 794 - Internship (COM)
Credits: 1-7
Applied, monitored and supervised, field based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

HNS 795 - Practicum (COM)
Credits: 1-9
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

HNS 796 - Field Experience (COM)
Credits: 1-9
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

HNS 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

HNS 890 - Seminar (COM)
Credits: 1
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

HNS 898D - Dissertation (COM)
Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

HO (Horticulture)

HO 511 - Fruit Crop Systems
Credits: 1-6
Studies in perennial fruit crop production and management systems. Credit earned will depend on the number of 1 credit modules taken. Course may be repeated as long as the topic module(s) are not repeated. Topic modules could include: tree fruit production systems; small fruit production systems; viticulture; perennial fruit integrated pest management; native fruit production systems; fruit harvest, quality, and postharvest care; vines and wines; fruit value-added systems; pruning fruit crops; cover crop management, marketing specialty fruit crops.
Cross-Listed: PS 511.

HO 513 - Greenhouse and High Tunnel Management
Credits: 2
Greenhouse construction, environmental control, production and scheduling of major greenhouse crops. Trips to commercial greenhouse operations and laboratory work in greenhouse crop production.
Corequisites: HO 513L.
Cross-Listed: PS 513.

HO 513L - Greenhouse and High Tunnel Management Lab
Credits: 1
Laboratory to accompany HO 513L.
Corequisites: HO 513.
Cross-Listed: PS 513L.

HO 514 - Plant Propagation
Credits: 2
Fundamental anatomical and physiological principles and methods of reproducing herbaceous and woody plants by seeds, cuttings, grafts, layers and division.
Corequisites: HO 514L.
Cross-Listed: PS 514.

HO 514L - Plant Propagation Lab
Credits: 1
Lab to accompany HO 514.
Corequisites: HO 514.
Cross-Listed: PS 514L.

HO 516 - Landscape Nursery Management
Credits: 3
A study of current nursery and garden center crop cultural practices and business management. Topics to be covered include nursery and garden center design and organization, field and container crop production, transplanting, pricing, and shipping techniques. The working relationship between nurseries, landscape designers and contractors is also discussed.

HO 526 - Production of Wine Beer Spirits
Credits: 2
Students will learn the procedures required for the biological and agricultural production of wine, beer and spirits coupled with the science of fermentation and the methodology required for the tasting of wine and beer for flavor/odor identification per industry guidelines. Lecture topics of student inquiry include: (1) the brewing of beer and the functional contributions of its ingredients, (2) wine production from vine to bottle, (3) the distillation of spirits and (4) the marketing, pairing and service of wine, beer and spirits. This course is designed for students/graduates who will potentially go into the business of not only growth and production, but also marketing and serving wine, beer and spirits.
Registration Restriction: Participants must be 21 years of age or older to enroll.
Corequisites: HO 526L.
Cross-Listed: NUTR/PS 526.

HO 526L - Production of Wine Beer Spirits Laboratory
Credits: 1
Laboratory investigation includes hands-on opportunities involving the production of beer and wine. Students will experiment with production parameters and investigate quality defects. Wine and beer quality will be assessed through laboratory testing coupled with taste testing without consumption (taste and spit) both per industry specifications. Students will develop skills in identifying specific flavors/odors such as oak, butter or lemon in wine and similar tasting techniques in beer.
Registration Restriction: Participants must be 21 years of age or older to enroll.
Corequisites: HO 526.
Cross-Listed: NUTR/PS 526L.

HO 534 - Local Food Production
Credits: 2
Topics include planning, planting, cultivation, harvest, season extension and marketing of fruits and vegetable crops. Experiential learning model.
Cross-Listed: PS 534.

HO 544 - Vegetable Crop Systems
Credits: 1-6
Studies in vegetable crop production and management systems. Credit earned will depend on the modules taken. Course may be repeated as long as the module(s) are not repeated. Potential topic modules could include: root crop systems; cucurbit production systems; vegetable legumes; herbs; solanaceous crops; heirloom vegetable crops; integrated pest management; market gardening; organic production systems; extended season crop management; leaf and cool season crops: annual crop rotation systems; marketing specialty crops.

HO 547 - Organic Plant Production
Credits: 3
This course provides a detailed overview of organic farming for both small scale suburban and urban settings. The topics covered will include: organic certification, soil and nutrient management, pest and disease ID and management, High-Tunnel management, and marketing.
Cross-Listed: PS 547.

HO 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

HRM (Human Resource Management)

HRM 560 - Human Resource Management (COM)
Credits: 3
This course provides a survey of managerial practices with respect to the management of the human resource function and an introduction to the topic of human resource management as an occupational choice. Major areas of inquiry include recruitment and selection, training, and development, compensation and benefits administration and work force integration and maintenance.

HRM 590 - Seminar (COM)
Credits: 3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

HRM 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

HRM 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

HRM 594 - Internship (COM)
Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

HRM 596 - Field Experience (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

HRM 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

HRM 792 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

HSC (Health Science)

HSC 502 - Rural Healthcare Matters
Credits: 3
This course explores the complexity and uniqueness of healthcare needs, trends, and issues faced in rural settings. Through investigation of evidence and literature, students will have the opportunity to explore the challenges in rural healthcare and examine strategies for improving rural healthcare delivery. Students will reflect on collaborative opportunities to address rural healthcare problems.

HSC 631 - Biostatistics I
Credits: 3
Basic principles of statistics applied to health science. Emphasis is on the role of statistics in evaluation of human health data and the use of a statistical computing package to input and manipulate datasets; explore, analyze, and interpret data; and present results. Topics include probability distributions, point and interval estimations, hypothesis tests, linear regression, correlation, analysis of variance, two-group pretest-posttest analysis, and tests of associations for categorical data.

HSC 731 - Biostatistics II
Credits: 3
Continuation of Biostatistics I. Intermediate principles and methods of statistics applied to health science. Emphasis is on the role of statistics in evaluation of human health data and the use of a statistical computing package to input and manipulate datasets; explore, analyze, and interpret data; and present results. Topics include introductions to multiple linear regression, logistic regression, survival analysis, selected ANOVA designs, and selected multivariate.
Prerequisites: HSC 631.

HSC 733 - Environmental Health
Credits: 3
This course examines causes and approaches to control environmental health problems including consideration of human health risks and effects of biological, chemical, and physical agents affecting individuals and communities. Topics include the environmental regulatory framework; identification of susceptible populations; approaches to environmental risk assessment, abatement, protection, and prevention; environmental justice principles and stakeholder interests; and the public health basis for environmental health policy decisions.
Registration Restriction: Admission into the Master of Public Health program or permission of instructor.
Cross-Listed: PUBH 733.

HSC 755 - Program Planning and Evaluation
Credits: 3
An introduction to public health program planning and evaluation including: target population needs assessment; stakeholder engagement; and public health program design, organization, leadership, utilization, resource management, and evaluation.
Registration Restriction: Admission into the Master of Public Health program or permission of instructor.
Cross-Listed: PUBH 755.

HSC 762 - Writing for Publication
Credits: 3
This course will guide students through the manuscript publication process, put into practice techniques of writing for publication, and follow the steps of publishing scholarly work in a scientific peer reviewed journal.
Cross-Listed: NURS 762.

HSC 764 - Applied Dissemination and Implementation Research in Health
Credits: 3
An introduction to theories and methods in dissemination and implementation research applied to clinical and public health. Analysis of factors and application of frameworks and processes to enhance uptake and utilization of population-based interventions (dissemination research) and successfully integrate and implement evidence-based interventions to achieve desired outcomes in targeted clinical and community settings (implementation research).
Cross-Listed: PUBH 764.

HSC 832 - Mixed Methods Research
Credits: 3
An introduction to the design and conduct of mixed methods research in health and human sciences including theoretical underpinnings, method designs, sampling strategies, analysis, and ethical issues common to mixed methods. Students will develop skills in conducting and evaluating mixed methods research.
Prerequisites: NURS 825 and NURS 830.
Cross-Listed: NURS 832.

HSC 840 - Health Promotion Theory and Research Methods
Credits: 3
Analysis of methods used in health promotion research across disciplines, spanning application of social psychology, interpersonal, population-focused, and community-based participatory research theories and models, interventions, and approaches to data collection and analysis.
Prerequisites: NURS 815, NURS 820, NURS 825, and NURS 830, or instructor consent.
Cross-Listed: NURS 840.

HSC 845 - Measurement and Instrument Evaluation in Health Sciences Research
Credits: 3
Analysis of measurement theories and approaches to measurement in health sciences research. Inductive and deductive processes of constructing and evaluating instruments to measure behavioral, biological, social, cultural, and clinical concepts are examined. Content includes instrument scaling techniques and procedures to evaluate psychometric properties including reliability, validity, and factor analysis. Examination of measurement issues with different concepts and populations. Basic knowledge of concept analysis and inferential statistics is expected prior to enrollment.
Prerequisites: HSC 631 and NURS 830, or instructor consent.
Cross-Listed: NURS 845.

MATH (Mathematics)

MATH 515 - Advanced Linear Algebra (COM)
Credits: 3
Advanced topics in linear algebra. This course may cover topics useful in such applications as matrix factorizations, finite element methods, multivariable statistics, stochastic models, and parallel programming for scientific computations.

MATH 535 - Complex Variables I
Credits: 3
Algebra of complex numbers, classifications of functions, differentiation, integration, mapping, transformations, infinite series.

MATH 571 - Numerical Analysis I (COM)
Credits: 3
Analysis of rounding errors, numerical solutions of nonlinear equations, numerical differentiation, numerical integration, interpolation and approximation, numerical methods for solving linear systems.

MATH 574 - Scientific Machine Learning
Credits: 3
This course introduces the integration of machine learning with scientific computing for modeling, simulation, and prediction in applications. Students will learn handling large datasets and scalable computing.

MATH 575 - Operations Research (COM)
Credits: 3
Philosophy and techniques of operations research, including game theory; linear programming, simplex method, and duality; transportation and assignment problems; introduction to dynamic programming; and queuing theory. Applications to business and industrial problems. Pre-requisites: Introductory statistics and one year of calculus; STAT 575 and CSC 575, or instructor consent.

MATH 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

MATH 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

MATH 625 - Advanced Calculus
Credits: 3
Topics will include set theory; point set topology in Rn and in metric spaces; limits and continuity; infinite series; sequences of functions.

MATH 630 - Differential Equations in Computing
Credits: 3
This course explores the theory and application of differential equations within computational frameworks. Students will study ordinary and partial differential equations (ODEs and PDEs) and learn how these models are implemented and solved using modern computational tools. Emphasis is placed on numerical methods, algorithm design, and software applications for solving real-world problems in science, engineering, and data-driven modeling.
Prerequisites: MATH 515.

MATH 675 - Operations Research II
Credits: 3
A continuation of Operations Research I. Topics include the theory of the simplex method, duality theory and sensitivity analysis, game theory, transportation and assignment problems, network optimization models, and integer programming.
Prerequisites: MATH 575.

MATH 691 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

MATH 716 - Theory of Algebraic Structures I
Credits: 3
Abelian Groups, homomorphisms, permutation groups, Sylow theorems, group representations and characters.

MATH 741 - Measure and Probability
Credits: 3
Fundamentals of measure theory and measure-theoretic probability, and their applications in advanced probabilistic and statistical modeling.

MATH 751 - Applied Functional Analysis
Credits: 3
Selected topics from functional analysis and its applications to differential equations and numerical methods, concept and theory of functional analysis, variational formulation of boundary value problem. Existence and uniqueness of solutions, variational methods of approximation, finite element methods.

MATH 770 - Numerical Linear Algebra
Credits: 3
Analysis of numerical methods for solving linear systems of equations. Methods for solving underdetermined and overdetermined systems. Methods for numerically calculating eigenvalues and eigenvectors of symmetric and non-symmetric matrices. Knowledge of programming language and of matrix algebra.
Prerequisites: MATH 571.

MATH 771 - Numerical Analysis II
Credits: 3
Continuation of MATH 571 including approximation theory, matrix iterative methods and boundary value problems for ordinary and partial differential equations.
Prerequisites: MATH 571.

MATH 773 - Numerical Optimization
Credits: 3
This course will survey widely used methods for continuous optimization, focusing on both theoretical foundations and implementation using numerical software. Topics include linear programming (optimization of a linear function subject to linear constraints), line search and trust region methods for unconstrained optimization, and a selection of approaches (including active-set, sequential quadratic programming, and interior methods) for constrained optimization.

MATH 779 - Advanced Mathematics Synthesis
Credits: 1
Synthesis of concepts from advanced mathematics courses.
Registration Restriction: Instructor consent.

MATH 788 - Research Problems/Projects (COM)
Credits: 1-2
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

MATH 791 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

MATH 792 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

MATH 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

MCOM (Mass Communication)

MCOM 512 - Cultural Issues in Mass Communication
Credits: 3
From the perspectives of media creator, audience and source, this course uses a decolonizing lens to examine the ways culture impacts strategic storytelling and representation.
Cross-Listed: AIS 512.

MCOM 513 - International Media (COM)
Credits: 3
This course is a survey of international media systems, news and related issues, the role and characteristics of international journalists, and issues facing media around the world.

MCOM 516 - Mass Media in Society
Credits: 3
Rights and responsibilities of the press; relation of the media to individuals and society; role of media in a free society.

MCOM 519 - Women in Media
Credits: 3
This course examines contributions of women to the mass media from colonial era to present. It also studies the portrayal of women by the news media and by advertising, and it studies the roles currently played by women in the media and in supporting areas of advertising and public relations.
Cross-Listed: WMST 519.

MCOM 520 - Indigenized Media: Rising Voices in Digital Storytelling
Credits: 3
A deep dive into the works of Indigenous filmmakers, journalists, artists, bloggers, influencers and pop culture creators. The course focuses on the growth of the Native media industry, its influence on Native and non-Native publics and discourses, and the future of Indigenous storytelling.
Cross-Listed: AIS 520.

MCOM 530 - Media Law (COM)
Credits: 3
Study of the sources, processes, content and application of law and regulation in the mass communication context and of the ethics of communications practitioners.

MCOM 574 - Entrepreneurial Media
Credits: 3
Business practices, newspaper, magazine, and broadcast management.

MCOM 585 - Science Writing (COM)
Credits: 3
This class explores the process of science writing and examines various kinds of science writing through readings, guest speakers, and writing assignments. A key emphasis is how to present scientific information to a lay audience.

MCOM 592 - Topics (COM)
Credits: 1-5
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

MCOM 620 - Writing for Media Audiences
Credits: 3
Writing skills, with emphasis on choosing the appropriate messaging approach and multiplatform media channel for the target audience. Focus on information gathering, effective writing practices, ethics, revising, critiquing and responding to feedback.

MCOM 653 - Mass Communications Teaching Methods
Credits: 1-4
Techniques, materials and resources for teaching mass communication in the classroom and supervising student media. For secondary school or college instructors and publication advisors.
Notes: Mass Communications teacher education candidates are required to earn at least 3 credits.

MCOM 691 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

MCOM 692 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

MCOM 705 - Introduction to Master of Mass Communication
Credits: 3
This course introduces students to the online professional master's degree program in Mass Communication. Students will become familiar with graduate procedures, program requirements, coursework, D2L, and online university resources.

MCOM 710 - Cross-Platform Storytelling
Credits: 3
In this course, students will explore several forms of professional journalistic and media writing. Students create a portfolio of writing samples.

MCOM 730 - Media Law Case Studies
Credits: 3
Students will examine current legal issues that affect professional media practice, e.g., First Amendment, fair use, copyright, privacy, freedom of speech, and freedom of expression.

MCOM 746 - Cross-Platform Campaigns
Credits: 3
In this course, students will investigate and create public relations, marketing and social media campaigns. Includes research, design, implementation and evaluation.

MCOM 761 - Social Media Management
Credits: 3
Students will examine social media tools from a strategic perspective, developing skills to understand audience engagement, create social media campaigns, and track campaign effectiveness.

MCOM 786 - Conducting Professional Research
Credits: 3
In this course, students will learn the application of research methods commonly used in the media professions, including but not limited to surveys, elementary statistical procedures, focus groups and media analytics.

MCOM 788 - Research Problems/Projects (COM)
Credits: 1-6
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

MCOM 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

MCOM 794 - Internship (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

MCOM 795 - Practicum (COM)
Credits: 3
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

MCOM 798 - Thesis (COM)
Credits: 1-6
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

ME (Mechanical Engineering)

ME 510 - Principles of HVAC Engineering
Credits: 3
Comfort and health requirements for space conditioning. Psychrometrics, steady-flow processes involving air-vapor mixtures. Heating and cooling load calculations. Basic air conditioning systems. Emphasis on systems design approach.

ME 512 - Internal Combustion Engines
Credits: 3
Theory, design and operation of spark ignition and compression-ignition engines. Performance characteristics and efficiencies; combustion and thermochemistry of fuel-air mixture exhaust emissions as they pertain to air pollution.

ME 513 - Turbomachinery
Credits: 3
Theory, design, operation and energy transfer in Turbo-machines. Steam, gas and hydraulic turbines. Pumps, fans and centrifugal and axial flow compressors.

ME 514 - Air Pollution Control
Credits: 3
Control of particulates and gaseous pollutants. Design and operating characteristics of gravity settlers, cyclones, electrostatic precipitators, fabric filters, scrubbers, incinerators, adsorption beds and absorption towers.

ME 516 - Renewable Energy Systems
Credits: 3
Students will learn to apply the principles of energy conversion, energy conservation, and value engineering to the analysis of energy conversion systems, renewable energy generation equipment and systems. Students will become familiar with energy consumption requirements for conventional systems and the applications of renewable energy systems to provide alternative energy sources. Energy efficiency and global environmental sustainability are emphasized. A background in basic thermodynamics is assumed.

ME 517 - Computer-Aided Engineering
Credits: 3
Introduction to applied structural and thermal design and analysis using the ANSYS finite element software package. One-, two-, or three-dimensional static structural problems modeled using the direct generation method as well as solid modeling techniques. Steady-state and transient thermal analyses are performed. Thermally-induced stressed and displacements that occur in non-uniform temperature structures, solutions of two- or three-dimensional fluid mechanics problems, and optimization techniques are discussed.

ME 518 - Design of Thermal Systems
Credits: 3
Systems approach to design, mathematical modeling, simulation and optimization of systems, with particular emphasis on thermal systems.

ME 531 - Aerodynamics
Credits: 3
Airfoil characteristics, wing shapes, static and dynamic forces, viscosity phenomena, boundary layer theory, flaps and slots, propellers, stability, control and performance.

ME 533 - Non-Destructive Testing and Evaluation
Credits: 3
Various non-destructive testing techniques will be introduced with emphasis on ultrasound techniques. For ultrasound, physical principles of acoustic waves in solid media will be introduced, and acoustic sensor design and properties will be discussed. For other techniques, including eddy current techniques, X-ray techniques, acoustic emission, etc., basic physics of the method and modern applications will be introduced. Experiments and demonstrations will be conducted to enhance students' understanding of the concepts and applications.

ME 537 - Gas Dynamics I
Credits: 3
Objectives, applications, and scope of the subject. Methods of fluid dynamics and thermodynamics. Compressible flow in ducts, nozzles and diffusers. Propagation of plane waves; shock dynamics, characteristics, interaction of waves. General theorems of gas dynamics.

ME 539 - HVAC System Design
Credits: 3
Analysis of heating, ventilating, and air conditioning requirements. Design of heating, ventilating, and air conditioning systems. Economic, energy, and environmental considerations. Use of computers as design aids.

ME 540 - Numerical Methods for Engineering Design
Credits: 3
The use of digital computer as a design tool. Techniques and algorithms which increase the rationality of the design process. Design principles and optimization theory. General approach to constrained optimization. Probabilistic approaches to design. Computer-aided design to reliability specification. Application of computer graphics to engineering design. The emphasis is on extending the designer's potential and not on automating those activities.
Registration Restriction: Competence of FORTRAN and instructor consent.

ME 541 - Robotic Systems
Credits: 3
This course develops understanding of the kinematic and dynamic modeling, design, and control of robots functioning in both terrestrial and aerial environments. Topics include inertial and body reference frames, rigid body motion, homogeneous transformations, Denavit-Hartenberg representation, forward and inverse kinematics, Lagrangian dynamics, modeling in Simulink, linear control design, introduction to advanced controllers, optimal control of a quadrotor. Students conduct hands-on experiments with mobile robots, manipulators and quadrotors.

ME 542 - Applications of Computational Fluid Dynamics
Credits: 3
This course provides a background and working knowledge of software analysis tools, techniques and methodologies utilized in modern engineering practice in computational fluid dynamics (CFD). The course builds upon fundamental concepts of thermodynamics, fluid mechanics, and computer-aided design and analysis and applies these principles within high-fidelity computational models to solve theoretical and practical problems commonly encountered with thermal fluid and energy systems. This course provides students with team-centered collaborative opportunities to practice CFD analysis in engineering design applications.

ME 546 - Engineering Mechanics in Biomedical Applications
Credits: 3
This course focuses on biomedical applications of the principles of engineering mechanics. The concepts of kinematics, dynamics, thermal-fluid system analysis, and transport phenomena are applied in developing engineering models of various aspects of anatomy and physiology and in the design of prosthetics and biomedical devices. Topics include biomechanics; engineering properties of biomaterials; computer applications in medicine; research and development in biomedical engineering; and ethics at the nexus of medicine and engineering.

ME 548 - Mechanical Behavior of Biomaterials
Credits: 3
The course explores the field of biomaterials with a focus on response to static and dynamic forces, structure-property correlation, and experimental techniques for biomedical applications. Material topics include mammalian tissue (skin, artery, muscle, bone etc.), interaction with properties of implant materials (metal, polymer, ceramic etc.) and related regulatory issues in material selection and design for medical implants. Students will learn through literature review, case studies, homework, labs and projects.

ME 561 - Analysis and Design Industrial System
Credits: 3
Problems in product design and development, marketing, forecasting, capacity evaluation, plant layout, materials handling from standpoint of interrelated and integrated systems.

ME 590 - Seminar (COM)
Credits: 1-2
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

ME 592 - Topics (COM)
Credits: 1-5
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ME 691 - Independent Study (COM)
Credits: 1-5
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

ME 692 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ME 703 - Thermo-Fluid Energy Systems
Credits: 3
Review of viscous fluid, basic modes of heat transfer, thermodynamics, and energy conversion. Discussion of energy sources, uses, conversion, transmission, and economics. Analysis of conventional energy generation, storage, and transmission systems, criteria for design and analysis of energy systems such as nuclear, wind, solar, geothermal, etc.

ME 711 - Advanced Heat Transfer I
Credits: 3
Review of principles of heat conduction. Multidimensional steady and transient heat conduction in cartesian and cylindrical coordinates. Separation of variables and integral transforms. Review of principles of radiation. Spectral and directional radiative properties. Gaseous radiation. Radiative transport equation.

ME 712 - Convection Heat Transfer
Credits: 3
Scale Analysis. Laminar Boundary Layer Flow. Laminar duct flow. Laminar natural convection. Natural convection in enclosures. Turbulent boundary Layer Flow. Turbulent duct flow.

ME 721 - Viscous Flow I
Credits: 3
Review of fluid motion with friction. Boundary layer theory. Exact solutions of the Navier-Stokes equations. Creeping flow and the theory of lubrication. Exact similarity solutions and approximate integral methods for boundary layer flow. Wall turbulence. Logarithimic law of the wall. Mixing length model.

ME 731 - Advanced Analytical Methods
Credits: 3
Differential systems related to practical engineering problems. Linear ordinary differential equations. Series solutions; Fourier series. Partial differential equations: parabolic, elliptic, hyperbolic. Integral equations.

ME 735 - Modeling and Simulation
Credits: 3
A systems approach to the analysis of electrical, mechanical and hydraulic systems. Generalized modeling methods, governing equations, system response, synthesis and design of dynamic systems, and specific applications of modeling technique.

ME 739 - Advanced Metallurgy
Credits: 3
Crystal lattices and diffraction by crystals. Structure determination, defects, registration by microscopic methods, single crystal orientation and analysis of stress caused by phase transformation.

ME 741 - Advanced Stress Analysis Mechanical Design
Credits: 3
Introduction to the theory of elasticity. Equilibrium equations, boundary conditions and compatibility relations. Plane stress and strain. Torsion and curved beams. Rectangular and polar-coordinates. Axisymmetric problems. Energy methods. Introduction to Finite Element methods.

ME 745 - Advanced Machine Design
Credits: 3
Experimental, empirical and analytical methods in advanced design. Thermal stresses. Stability. Theories of failure. Creep and fatigue considerations. Introduction to fracture mechanics. Plates and shells.

ME 763 - Topics in Reliability Engineering
Credits: 3
Probability concepts and typical models involved in the statistical prediction of reliability. Methods for estimating required parameters from experimental data. Reliability and maintainability techniques in practice, and a survey of recent developments in the field.

ME 765 - Systems Analysis
Credits: 3
Analysis of industrial problems as systems of servicing stations with deterministic and stochastic inputs and service times using queuing theory as a principal approach. Development of theoretical models. Digital computer simulation of complex systems.

ME 788 - Research Problems/Projects (COM)
Credits: 1-9
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

ME 790 - Seminar (COM)
Credits: 1
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

ME 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

ME 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

ME 798 - Thesis (COM)
Credits: 1-9
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

ME 898D - Dissertation (COM)
Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

MFL (Modern Foreign Languages)

MFL 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

MFL 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

MICR (Microbiology)

MICR 511 - Food Microbiology
Credits: 2
Microbiology of fresh and processed meats, dairy products, vegetables and modern convenience foods. Laboratory quality study of food preservation, processing and spoilage.
Corequisites: MICR 511L.

MICR 511L - Food Microbiology Lab
Credits: 2
Laboratory to accompany MICR 511.
Corequisites: MICR 511.

MICR 521 - Soil Microbiology
Credits: 2
Microbial species of agricultural soils, environmental factors affecting their numbers and activity, and biochemical changes brought about by these microorganisms.
Corequisites: MICR 521L.
Cross-Listed: PS 521.

MICR 521L - Soil Microbiology Lab
Credits: 1
Laboratory to accompany MICR 521.

MICR 524 - Medical and Veterinary Virology
Credits: 3
Basic course discussing the characterization, structure, and replication of viruses and the pathogenesis of viral disease in man and animals. Laboratory exercises emphasize techniques in virus isolation, characterization, and detection by immunological assays.
Cross-Listed: VET 524.

MICR 533 - Medical Microbiology (COM)
Credits: 3
Principles of medical microbiology including a survey of the most clinically significant bacterial, fungal, parasitic, and viral diseases in the world, with an emphasis on those most prevalent in North America. Case studies will address: morphology, physiology, and virulence of the microbes and the epidemiology, treatment, and prevention of the diseases they cause.

MICR 539 - Medical and Veterinary Immunology
Credits: 3
This course covers the theory and mechanisms of immune-responses as they relate to human and veterinary medicine.

MICR 548 - Molecular and Microbial Genetics
Credits: 4
This course in molecular genetics will cover the concepts and the molecular mechanisms in genetics of prokaryotic and eukaryotic organisms. Students will study the molecular processes underlying gene structure and function, will learn the major components and their basic structures in molecular genetics, will understand the molecular mechanisms of major biological processes such as gene expression and regulation, and will learn to interpret the results from the literature in molecular genetics. In addition, the course will provide a comprehensive coverage of the common molecular tools and their applications.
Cross-Listed: BIOL 548.

MICR 550 - Application of Microbiology & Biotechnology
Credits: 3
The rapid development of biotechnology techniques and their commercial application continues to be a major economic driver in the twenty-first century. Biotechnology uses living cells or their enzymes to produce chemicals, biomaterials, pharmaceuticals, and energy from renewable biomass feedstocks. This interdisciplinary course will examine theoretical and practical aspects of cell metabolism, metabolic engineering, fermentation and fermentor design, product recovery, process control, energy balances, and economics as related to several current bioprocesses. This course will integrate principles from microbiology, biochemistry, and engineering to provide students with the skills needed to fill roles in research, operations and commercialization.

MICR 590 - Seminar (COM)
Credits: 1-6
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

MICR 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

MICR 667 - Bacteriology
Credits: 3
Study of prokaryotes with focus on bacteria. The course will address cell morphology and organization, cell division, gene regulation and response to change, signaling, and systematics and evolution of bacteria.

MICR 791 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

MICR 792 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

MICR 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on- one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

MGMT (Management)

MGMT 564 - Organizational Behavior (COM)
Credits: 3
This course is a study of individuals and groups. Traditional organization theory and concepts are presented and study is given to motivation, group dynamics, and methods of coordination, change, and adaptation within an organization.

MGMT 590 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

MGMT 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

MGMT 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

MGMT 594 - Internship (COM)
Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

MGMT 596 - Field Experience (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

MGMT 751 - Advanced Managerial Economics
Credits: 3
Advanced analysis of management decisions that business industry professionals face on a daily basis in their role as managers of agribusiness, commercial and manufacturing enterprises using microeconomics and econometric methods. Topics include economic analysis of demand, production, cost, market structure, government regulation, risk, and capital budgeting.
Cross-Listed: ECON 751.

MGMT 759 - Integrated Operations and Business Systems Management
Credits: 3
This advanced course challenges students to synthesize and apply the comprehensive knowledge they have acquired throughout their graduate studies in operations management to develop and execute strategic business decisions, drawing on topics in operations, marketing, management, economics, and finance.
Registration Restriction: Department consent.

MGMT 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

MGMT 792 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

MKTG (Marketing)

MKTG 575 - Consumer Behavior (COM)
Credits: 3
This course is a study of the various factors that influence consumers in their decisions relative to buying, using and disposing of goods, services and ideas. The course examines concepts and theories from the behavioral sciences and analyzes their application in developing marketing strategies.

MKTG 576 - Marketing Research (COM)
Credits: 3
This course provides an in-depth study of the primary methodologies of marketing research. Emphasis is placed on collecting, analyzing, interpreting and presenting information for the purpose of reducing uncertainty surrounding marketing and management decisions.
Cross-Listed: ECON 576.

MKTG 590 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

MKTG 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

MKTG 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

MKTG 594 - Internship (COM)
Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

MKTG 596 - Field Experience (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

MKTG 754 - Marketing Strategy and Analytics
Credits: 3
This rigorous, case-based course integrates advanced quantitative modeling with executive-level marketing strategies. Students will master foundational frameworks, directly applying analytical tools for product design and new product forecasting. A core focus is on profitability, leveraging comprehensive data analysis to guide optimal resource allocation and demonstrate a clear Return on Marketing Investment (ROMI). Students will be equipped to manage the full data-to-decision cycle.

MKTG 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

MKTG 792 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

MKTG 793 - Workshop (COM)
Credits: 1-3
Special, intense sessions in specific topic areas. 45 hours of student work is required for each hour of credit earned. Workshops may vary in time range, but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity.

MNET (Manufacturing Engineering Technology)

MNET 560 - Engineering Economic Analysis
Credits: 2
Economic analysis for practical application on industry projects; engineering economics; cost analysis, evaluation, and budget justification for capital expenditures.
Prerequisites: GE 501.

MNET 567 - Principles of Surface Mount Technology
Credits: 3
This course introduces students to automated surface mount technology circuit board assembly. Students will be provided an overview of the print, placement, reflow, and inspections processes involved. In depth discussion of process parameters, typical defects and how to correct them will be presented.

MNET 568 - Manufacturing Plant Management
Credits: 3
Science of operations in manufacturing applied to achieve optimization of key manufacturing metrics based on manufacturing plant strategy.

MNET 569 - Immersive Experience in Surface Mount Technology
Credits: 3
This course provides hands-on experiences in using state of the art automated surface mount technology circuit board assembly. Students will be provided an opportunity to learn about printing, placement, reflow, and inspection processes. Control of process parameters, typical defects and how to correct them will be practiced.
Prerequisites: MNET 567.

MUS (Music)

MUS 591 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

MUS 592 - Topics (COM)
Credits: 1-5
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

NE (Nuclear Engineering)

NE 535 - Introduction to Nuclear Engineering
Credits: 3
This course considers the design of nuclear fission and fusion reactors and particle accelerators including discussion of basic nuclear properties, the fission process and reactor control, fusion reactors, environmental effects and nuclear waste management.

NE 537 - Foundations of Health Physics
Credits: 3
Health Physics studies the risk to health from radiation and the measures to assess and reduce that risk. This course is an introduction to several aspects of health physics including radiation quantities, limits and risk assessment, external and internal dosimetry, biological effects of radiation, interactions of radiation with matter, radioactive decay, radiation detection, and various applications of radiation.
Cross-Listed: PHYS 537.

NRM (Natural Resource Management)

NRM 541 - Wetland Ecology and Management
Credits: 3
This course will explore the physical, chemical, and biological dynamics of wetlands, with an emphasis on understanding types of wetlands, wetland hydrology, wetland soils, and wetland plants.

NRM 550 - Freshwater Monitoring and Assessment
Credits: 2
This course will introduce policies related to monitoring assessment of fresh waters, design of freshwater monitoring and assessment programs, standard field and laboratory techniques used by monitoring agencies, analysis and interpretation of monitoring data and uses of monitoring data to improve management of freshwater resources.
Corequisites: NRM 550L.

NRM 550L - Freshwater Monitoring and Assessment Lab
Credits: 1
Laboratory to accompany NRM 550.
Corequisites: NRM 550.

NRM 564 - Ecosystem Ecology
Credits: 3
Study of energy and material flows through the living (plants, animals, microbes) and non-living (soils, atmosphere) components of ecological systems. Discussion of the major elements cycles and patterns of energy flow through ecosystems, including how those fluxes and their controls differ for different ecosystems. Linkages between ecosystem structure and function will be emphasized.
Notes: Spring, even years.

NRM 582 - Natural Resource Management Biometry
Credits: 2
Study and application of advanced quantitative methods used to assess natural resources. Estimation of parameters, hypothesis testing, and use of classical fisheries and wildlife sciences, ecology, environmental science, and range science statistical techniques.
Corequisites: NRM 582L.
Notes: Spring.

NRM 582L - Natural Resource Management Biometry Lab
Credits: 1
Laboratory to accompany NRM 582.
Corequisites: NRM 582.
Notes: Spring.

NRM 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

NRM 706 - Landscape Ecology
Credits: 3
Study of the structure function and management of landscape ecosystems. Integrates the study of plants, animals and the physical environment at larger spatial scales, and application of these concepts to land management issues. An understanding of ecological principles is recommended prior to enrollment.

NRM 724 - Advanced Human Dimensions in Natural Resource Management
Credits: 3
Students in this course will explore the human dimensions literature and discuss practical applications in current natural resource management issues. Students will learn about different approaches and methodological tools to advance social science research in natural resource management.

NRM 730 - Movement Ecology
Credits: 3
This course will provide a foundational understanding of the causes and motivations for organisms to move. Students will discuss multiple types of movement (foraging, dispersal, etc.), mechanisms, causes, and consequences of these movements. Students will also learn how to conduct common statistical analyses in the discipline.

NRM 767 - Fire and Ecosystems
Credits: 3
This course is a broad treatment of how fire and ecosystems combine to form the landscapes that we see. Course material examines the contributions of climate, topography, weather, and fuels to the fire environment and how these factors influence wildland fire behavior. We will explore the interactions between ecological processes and fire regimes in ecosystem dynamics and the ways in which human land use and land management affect the outcomes.
Cross-Listed: GEOG 767/GSE 767.

NRM 768 - Global Climate Change
Credits: 3
The course will provide a multidisciplinary examination of the drivers of the Earth's climate, how they interact, and how they change over time. We will critically examine the roles of greenhouse gases and anthropogenic land cover/use in affecting these changes as well as the types, strengths and limitations of global climate models. Class will combine lectures on various aspects of the Earth's climate system with class discussion of a variety of scientific papers exploring the current controversies and ideas central to climate research. Students will be challenged to develop their own projects/papers on course-related topics and use the most recent scientific research to decide for themselves about the importance of global climate change.
Cross-Listed: GEOG/GSE 768.

NRM 783 - Ecological Modeling
Credits: 3
Students will gain a better understanding of frequentist statistical methods for answering ecological questions in the R computing environment. This course covers the basics of data wrangling, visualization, and generating and testing statistical hypotheses using basic linear, generalized linear, and mixed models as well as their interpretation and standard reporting.
Prerequisites: STAT 515 and (STAT 541 or NRM 582).

NRM 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

NRM 790 - Seminar (COM)
Credits: 1
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

NRM 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

NRM 792 - Topics (COM)
Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

NURS (Nursing)

NURS 615 - Foundations of Advanced Nursing
Credits: 3
Introduction to contemporary core concepts, issues, and trends common to multiple roles and educational pathways in the nursing discipline beyond basic licensure. Content includes overview of topics emphasized across roles and curricula following advances in nursing knowledge, clinical practice, technology, and priorities of the profession in changing healthcare environments.

NURS 620 - Role Development of the Nurse Educator
Credits: 2
This course will focus on the issues and challenges related to the nurse educator role in both academic and clinical environments.
Registration Restriction: Department consent.

NURS 623 - Pathophysiology Across the Lifespan - Application to Advanced Practice Nursing
Credits: 2-4
Normal physiologic and pathophysiologic concepts will be examined with emphasis on problems of the major body systems. Changes in normal function that result in symptoms indicative of illness and assessment of an individual's response to illness will be interpreted. Pathophysiologic changes will be examined in relation to expected growth and development throughout the lifespan.

NURS 626 - Research in Nursing and Health Care
Credits: 3
Overview of the research process in nursing science to understand development of the evidence base for nursing practice in healthcare and the discipline of nursing. Content includes research appraisal and basic elements of qualitative and quantitative methods including concepts, frameworks, and approaches in the design, conduct, analysis, and interpretation of nursing research studies.
Prerequisites: NURS 615 (or concurrent).

NURS 630 - Advanced Assessment Across the Lifespan for the CNL/Nurse Educator
Credits: 3
This course provides the opportunity for students to build on basic skills of individual health assessment and apply those skills to their respective practices. It includes assessment of physiological and psychosocial processes relevant to the health of all age groups, and the assessment of selected human pathologies. The course focuses on mastering advanced physical assessment skills for use in formulating plans for education of students or developing quality improvement plans for patient-centered care.
Registration Restriction: Department consent.

NURS 631 - Advanced Assessment Across the Lifespan
Credits: 3
This course builds on basic skills of individual health assessment. It includes assessment of physiological and psychosocial processes relevant to the health of all age groups, and the assessment of selected human pathologies. Advanced assessment skills and tools necessary to identify health care needs and apply health maintenance protocols are included.
Prerequisites: NURS 615.
Corequisites: NURS 631L.

NURS 631L - Advanced Assessment - Lifespan Clinical Laboratory
Credits: 1
Laboratory experience to accompany NURS 631.

NURS 644 - Introduction to the Clinical Nurse Leader Role
Credits: 1
History and evolution of the Clinical Nurse Leader (CNL) role and CNL competencies recognized by the American Association of Colleges of Nursing (AACN).
Registration Restriction: Must be admitted to the Nursing (DNP) – Clinical Nurse Leader Specialization.
Corequisites: NURS 644L.

NURS 644L - Introduction to the Clinical Nurse Leader Role Practicum
Credits: 3
Students will spend 180 hours with an approved preceptor in a clinical setting, focusing on the AACN competencies.
Registration Restriction: Must be admitted to the Nursing (DNP) – Clinical Nurse Leader Specialization.

NURS 645 - CNL Improvement Science: A Microsystem Approach
Credits: 3
This course will focus on the clinical nurse leader role within complex healthcare systems and across various healthcare settings using evidence based knowledge for strategic leadership. Students will develop skills and knowledge in integrating patient evaluation, risk assessment information, and inter-professional communication.
Prerequisites: NURS 615, NURS 626, NURS 670, NURS 675, NURS 760, and NURS 860.
Corequisites: NURS 645L.

NURS 645L - CNL Improvement Science: A Microsystem Approach Practicum
Credits: 2
Using information systems in a practicum experience, students will perform in depth analyses of microsystems, population focused programs, and strategies that promote health, improve outcomes, and facilitate the design of high-performing systems.

NURS 646 - CNL Clinical Immersion and Project
Credits: 1
This course provides the opportunity for the CNL student to demonstrate understanding of clinical role practice within various healthcare settings and specialties through a guided role immersion experience.
Prerequisites: NURS 645.
Corequisites: NURS 646L.

NURS 646L - CNL Clinical Immersion and Project Practicum
Credits: 5
Students will participate in a practicum experience with an approved preceptor in a selected clinical setting and complete a quality improvement project.

NURS 670 - Health Policy, Legislation, Economics and Ethics
Credits: 3
Legal, political, economic, and ethical issues related to health policy will be examined from the perspective of advanced practice nursing roles.
Prerequisites: NURS 615.

NURS 675 - Cultivating a Practice of Cultural Humility in Healthcare
Credits: 3
This course will provide students the tools necessary to cultivate and integrate cultural humility into their professional practice. This course will be grounded in the Lakota values of fortitude, wisdom, courage, generosity, honor, respect, and humility. Students' awareness, skills, and knowledge will be enhanced regarding the dimensions and complexities involved in caring for persons from diverse cultural backgrounds.
Registration Restriction: Admission to a graduate program in nursing or instructor consent.

NURS 691 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

NURS 710 - Curriculum Development and Program Evaluation in Nursing
Credits: 3
This course will introduce the student to traditional and contemporary considerations for curriculum development and program evaluation as applied to nursing education in both academic and clinical environments

NURS 720 - Teaching and Learning Methodologies in Nursing
Credits: 3
This course will examine innovations in education that support and promote a culture of active teaching and learning. Use of technologies, including but not limited to, online learning and simulation will be included. Evidence-based teaching strategies that be utilized for the design and delivery of instruction in both academic and clinical environments will be identified.

NURS 721 - Assessment and Evaluation in Nursing Education
Credits: 3
This course will examine assessment and evaluation methods used by educators in both academic and clinical environments. Current issues, trends, and research related to educational testing instruments, alternatives to standardized evaluation methods, and outcome measurement in nursing education will be discussed.
Prerequisites: NURS 720.
Registration Restriction: Department consent.

NURS 732 - Psychopharmacology and Neurobiology Across the Lifespan
Credits: 2
The study of advanced psychopharmacological treatment of psychiatric symptoms and disorders. Neurobiological processes are emphasized. Medication selection, dosage and monitoring is covered including prescriptive issues.
Prerequisites: PHA 645.
Registration Restriction: Department consent.

NURS 733 - Psychopathological Disorders Across the Lifespan
Credits: 2
Emphasis on the etiology and epidemiology of selected psychopathological disorders and introduction to assessment and diagnosis of common clinical variations in health patterns. Use of the DSM is foundational.
Prerequisites: NURS 623.
Registration Restriction: Department consent.

NURS 734 - Theories and Interventions for Individuals and Groups
Credits: 2
An overview of theories, interventions and research related to psychotherapeutic treatments utilized by the advanced practice psychiatric nurse in planning, implementing and evaluating care for individuals across the lifespan. Brief applications of cognitive behavioral therapy and motivational interviewing are studied.
Registration Restriction: Department consent.
Corequisites: NURS 734L.

NURS 734L - Theories and Interventions for Individuals and Groups Practicum
Credits: 1
Practicum experience related to psychiatric mental health.
Corequisites: NURS 734.

NURS 735 - Advanced Psychiatric Assessment and Differential Diagnosis Across the Lifespan
Credits: 2
Communication skills, comprehensive history-taking techniques, advanced psychosocial and physical assessment skills, screening/diagnostic testing, and diagnostic reasoning skills required in advanced nursing practice are developed. The focus is on developing these skills from an evidence-based, culturally responsive perspective.
Prerequisites: NURS 631.
Registration Restriction: Department consent.

NURS 736 - Psychiatric/Mental Health Advanced Practice Across the Lifespan I
Credits: 1-5
This course expands clinical training in the full role of the psychiatric mental health nurse practitioner. Emphasis is on the integration of content areas to advance competencies in the ethical, safe, collaborative and evidenced-based provision of mental health care for all ages.
Prerequisites: NURS 732, NURS 733, NURS 734, and NURS 735.
Registration Restriction: Department consent.

NURS 737 - Psychiatric/Mental Health Advanced Practice Across the Lifespan II
Credits: 1-5
This course continues and expands clinical training in the full role of the psychiatric mental health nurse practitioner. Emphasis is on the integration of content areas to advance competences in the ethical, safe, collaborative and evidence-based provision of mental health care for all ages.
Prerequisites: NURS 736.
Registration Restriction: Department consent.

NURS 738 - AGACNP Integration I
Credits: 3
This course explores the role of the Adult-Gerontology Acute Care Nurse Practitioner. Emphasis is on content areas to advance competencies in the ethical, safe, collaborative, and evidence-based provision of care to adults, older adults, and elderly adults in the acute care settings.
Registration Restriction: Admission to Post-Graduate Adult-Gerontology Acute Care Nurse Practitioner Certificate.

NURS 739 - AGACNP Integration II
Credits: 3
This course continues to expand upon the role of the Adult-Gerontology Acute Care Nurse Practitioner. Emphasis is on content areas to advance competencies in the ethical, safe, collaborative, and evidence-based provision of care to adults, older adults, and elderly adults in the acute care settings.
Prerequisites: NURS 738.
Registration Restriction: Admission to Post-Graduate Adult-Gerontology Acute Care Nurse Practitioner Certificate.

NURS 741 - AGACNP Practicum
Credits: 1-9
This course provides a practicum experience for the AGACNP with qualified preceptors in the clinical setting.
Registration Restriction: Admission to Post-Graduate Adult-Gerontology Acute Care Nurse Practitioner Certificate program.

NURS 749 - PMHNP Integration Practice Initiation
Credits: 1-5
The emphasis of the course is on the application of evidence-based knowledge to clinical practice in psychiatric care settings. Students will provide evidence-based care in the psychiatric mental health clinical setting alongside a preceptor to gain proficiency and competency in the treatment of mental health conditions.
Registration Restriction: Department consent.

NURS 750 - Transformational Leadership in Nursing
Credits: 3
Analysis of effective and efficient methods of providing leadership and management for an education program, administrative unit or clinical area. Discussion of a variety of situations that leaders negotiate with regard to program and personnel development, strategic planning, budget preparation, fundraising, and program evaluation.

NURS 760 - Advanced Concepts in Health Promotion and Disease Prevention
Credits: 3
Critical analysis and applications of health promotion and disease prevention strategies to impact individual and population health. Epidemiologic data in addition to social, cultural, behavioral, political, and environmental factors will be utilized to analyze and evaluate the health of populations and plan interventions.

NURS 762 - Writing for Publication
Credits: 3
This course will guide students through the manuscript publication process, put into practice techniques of writing for publication, and follow the steps of publishing scholarly work in a scientific peer reviewed journal.
Cross-Listed: HSC 762.

NURS 764 - Introduction to FNP
Credits: 5
This course focuses on applying evidence-based knowledge to clinical practice in primary care, enhancing students' skills in assessing, diagnosing, and managing acute and chronic diseases across the lifespan. It lays the foundation for integrating assessment findings and clinical data with pathophysiology to develop diagnostic hypotheses and evidence based treatment plans.
Registration Restriction: Department consent.

NURS 765 - FNP Integration: Practicum I
Credits: 4
Students will strengthen their health history and physical examination skills in assessment, formulation of differential diagnoses, and clinical decision-making relative to acute and chronic conditions and developmental variations in the primary care setting throughout the lifespan. Development of primary care procedural skills will be included.
Prerequisites: NURS 623, NURS 631, and PHA 645.
Corequisites: NURS 765L.

NURS 765L - FNP Integration Practicum I Lab
Credits: 1
Practicum experience offered in the simulation laboratory.
Corequisites: NURS 765.

NURS 768 - FNP Integration: Practicum II
Credits: 4
Emphasis is placed on obtaining an accurate health history and performing appropriate physical examination skills to formulate differential diagnoses and utilize clinical decision-making relative to primary care conditions throughout the lifespan. Developmental variations, culture, and patient preference are considered to determine appropriate diagnostic tests as well as pharmacologic and non-pharmacologic treatment plans.
Prerequisites: NURS 765.

NURS 771 - FNP Integration: Practicum III
Credits: 6
Emphasizes the integration of pathophysiology and specific disease and symptom complexes in the assessment, formulation of differential diagnoses, and clinical management of acute and chronic health problems throughout the lifespan.
Prerequisites: NURS 768.

NURS 772 - Healthcare Technology and Informatics
Credits: 3
This course will discuss the use of healthcare technology and informatics to inform clinical decisions, management of systems, and improve population health. Emphasis will be on the collection of data through technology, analysis of data, and decision-making. Aspects of ethical principles, best practices, and information security will be addressed.

NURS 774 - Nurse Administrator: Practicum
Credits: 2
Provides the opportunity to integrate principles and theories from support courses in health service administration and nursing courses to the administration of a nursing department or agency. Emphasis is placed on advanced nursing practice needed to administer the work of nursing. This is a supervised administrative practicum focused on broad participation in the administrative process in a health care organization.
Registration Restriction: Instructor consent.
Corequisites: NURS 774L.

NURS 774L - Nurse Administrator Practicum Clinical Laboratory
Credits: 3
Laboratory experience to accompany NURS 774.

NURS 776 - FNP Integration: Practicum IV
Credits: 6
Emphasizes the integration of pathophysiology, physical assessment, and pharmacology along with specific disease and symptom complexes in the formulation of differential diagnoses and clinical management of complex health problems seen in primary care throughout the lifespan.
Prerequisites: NURS 771.

NURS 778 - Nurse Educator Didactic
Credits: 2
This course is designed to provide teaching experience in nursing education in either the academic or clinical environment under the supervision of a preceptor. Students will design, implement, and evaluate didactic or clinical education in either the academic or clinical environment.
Prerequisites: NURS 615, NURS 710 and NURS 720.

NURS 778L - Nurse Educator Practicum
Credits: 1-3
Practicum experience offered in either the academic or clinical environment.

NURS 780 - Clinical Genetics and Genomics: Advanced Concepts
Credits: 1
Application of genetics and genomics concepts are presented to strengthen clinical decision-making skills and improve health outcomes of patients, families, and communities.
Registration Restriction: Department consent.

NURS 781 - Clinical Epidemiology: Advanced Concepts
Credits: 1
Application of epidemiological concepts are presented to strengthen clinical decision-making skills and improve health outcomes of patients, families, and communities.
Registration Restriction: Department consent.

NURS 783 - Healthcare System Management and Evaluation
Credits: 3
This course will provide an analysis of the effects of healthcare delivery and policy on healthcare systems. The course analyzes regulatory, technological, policy, and social influences that impact healthcare organizations, providers, populations, and patients. The development and implementation of initiatives to meet the quadruple aim will be integrated.

NURS 784 - Quality Metrics for the CNL
Credits: 2
This course focuses on skills needed to influence and improve healthcare quality. Principles of quality improvement tools and systems thinking, along with the use of informatics and data to improve the safety of healthcare will be examined.
Registration Restriction: Enrollment in a graduate Nursing program.
Corequisites: NURS 784L.

NURS 784L - Quality Metrics for the CNL Practicum
Credits: 2
Students will complete 120 hours of clinical with an approved preceptor to apply these skills to selected specialty areas.
Registration Restriction: Enrollment in a graduate Nursing program.

NURS 789 - DNP Capstone I
Credits: 1
This course equips DNP students with the skills to plan and develop their DNP project, focusing on evidence-based practice, project design, implementation strategies, and funding sources.
Registration Restriction: Department consent.

NURS 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

NURS 800 - Introduction to the DNP-CNL Project
Credits: 1
In this course gain an understanding of the process for development of an evidence-based quality improvement project, work with stakeholders within a health care system to identify a topic and complete a comprehensive review of the related literature.
Registration Restriction: Must be admitted to the Nursing (DNP) – Clinical Nurse Leader Specialization.
Corequisites: NURS 800L.

NURS 800L - Introduction to the DNP-CNL Project Practicum
Credits: 2
Students will complete 120 hours in the clinical setting with an approved preceptor.
Registration Restriction: Must be admitted to the Nursing (DNP) – Clinical Nurse Leader Specialization.

NURS 810 - Doctoral Seminar
Credits: 1
Orientation to the PhD program to support the beginning student through the doctoral program. Topics include an overview and orientation to university and college resources, review of PhD program requirements, expectations, advising, and plan of study.
Registration Restriction: Admission to the Nursing (Ph.D.) program.

NURS 815 - Philosophical Basis for Nursing Inquiry
Credits: 3
Analysis of philosophy of science traditions and their relationship to knowledge development in nursing.
Registration Restriction: Admitted to PhD in Nursing.

NURS 820 - Theory Development in Nursing
Credits: 3
Critical analysis of theory development and theory construction in nursing science. Evaluation of the relationship between theory construction and research methods to generate and test theories is explored. Emphasis is placed on analysis of theories and their relationships with research, practice, and the fit between theoretical and operational foundations of research.
Prerequisites: NURS 815.

NURS 825 - Qualitative Research Methods in Nursing
Credits: 3
Critique of qualitative research designs using quality indicators. Qualitative designs and methods for sampling, data collection, and analysis are evaluated. Qualitative research techniques in data collection and analysis are refined.
Prerequisites: NURS 815 and NURS 820.

NURS 830 - Quantitative Methods in Nursing Research
Credits: 3
Appraising and designing quantitative studies in nursing and healthcare, with an emphasis on formulation of a problem, research aims, and methods to include sampling, measurement, data collection, data analysis and data interpretation.
Prerequisites: HSC 631, NURS 815, and NURS 820, or instructor consent.

NURS 832 - Mixed Methods Research
Credits: 3
An introduction to the design and conduct of mixed methods research in health and human sciences including theoretical underpinnings, method designs, sampling strategies, analysis, and ethical issues common to mixed methods. Students will develop skills in conducting and evaluating mixed methods research.
Prerequisites: NURS 825 and NURS 830.
Cross-Listed: HSC 832.

NURS 835 - Ethical Issues Influencing Practice and Research in Health
Credits: 2
An in-depth critical analysis of ethical dimensions encompassing health care, politics, policy, medicine, research, and clinical practice. Interdisciplinary perspectives are utilized to synthesize ethical positions and viewpoints on health-related issues for individuals, groups, and populations in contemporary society.
Prerequisites: Admission to the Nursing Ph.D. or D.N.P. program or instructor consent.

NURS 840 - Health Promotion Theory and Research Methods
Credits: 3
Analysis of methods used in health promotion research across disciplines, spanning application of social psychology, interpersonal, population-focused, and community-based participatory research theories and models, interventions, and approaches to data collection and analysis.
Prerequisites: NURS 815, NURS 820, NURS 825, and NURS 830, or instructor consent.
Cross-Listed: HSC 840.

NURS 845 - Measurement and Instrument Evaluation in Health Sciences Research
Credits: 3
Analysis of measurement theories and approaches to measurement in health sciences research. Inductive and deductive processes of constructing and evaluating instruments to measure behavioral, biological, social, cultural, and clinical concepts are examined. Content includes instrument scaling techniques and procedures to evaluate psychometric properties including reliability, validity, and factor analysis. Examination of measurement issues with different concepts and populations. Basic knowledge of concept analysis and inferential statistics is expected prior to enrollment.
Prerequisites: HSC 631 and NURS 830, or instructor consent.
Cross-Listed: HSC 845.

NURS 849 - PMHNP Integration Synthesis
Credits: 1
The emphasis of the course is on the application of evidence-based knowledge to clinical practice in psychiatric care settings. Students will strengthen their knowledge of the assessment, diagnosis, and management of acute and chronic mental health disease processes throughout the lifespan. This course provides the basis for integrating clinical data with knowledge of pathophysiology to formulate diagnostic hypotheses for patients across the lifespan.
Registration Restriction: Department consent.

NURS 849L - PMHNP Integration Synthesis Practicum
Credits: 1
Application of evidence-based knowledge to clinical practice in psychiatric care settings.
Registration Restriction: Department consent.

NURS 850 - Philosophical and Theoretical Foundations for Evidence-Based Care
Credits: 3
This course will prepare the student to analyze significant practice issues with the theoretical and scientific underpinnings of knowledge-based practice. The student will employ advanced clinical judgment to assess the evidence from nursing theories and models, interdisciplinary theories, research findings, and value systems of clients.

NURS 855 - Translational Research in Health Care
Credits: 3
Students will determine how evidence derived from research will guide the DNP Project's methodology to improve quality care provided to a population. Analysis, ethical considerations, and impact of the project will be explored.
Prerequisites: NURS 850.

NURS 860 - Health Operations and Financial Management for Nurse Leaders
Credits: 3
Focuses on business skills needed by the nurse executive or advance practice nurse to lead, influence, and develop healthcare delivery systems. Principles of financial management, healthcare economics, human resource and productivity management, strategic management, marketing, and information management and their application to healthcare delivery systems will be examined. Students will apply these business skills to selected specialty areas.

NURS 870 - DNP Project Proposal Development
Credits: 2
In this course develop a plan for implementation of a Doctor of Nursing Practice (DNP) project within a health system and develop the proposed methodology for an intervention that improves health care practice and quality of care. Students will complete 120 hours in the clinical setting with an approved preceptor.
Prerequisites: NURS 800.
Registration Restriction: Must be admitted to the Nursing (DNP) – Clinical Nurse Leader Specialization.

NURS 875 - DNP Intensive
Credits: 1-9
Focused clinical experiences aligned with the practice doctorate. Students and the program adviser and/or faculty will develop clinical experiences that augment current practice expertise.

NURS 880 - DNP Project (COM)
Credits: 1-8
Literature and evidence will be synthesized with stakeholders and inter-professional collaborators to develop and implement a Doctor of Nursing Practice (DNP) Project for a rural or underserved population, health system, or community. The advanced practice registered nursing student will implement, evaluate, and defend an intervention that improves health care practice and quality of care. Seminar content will be followed by collaboration with the major advisor whose expertise matches the intent of the DNP Project.

NURS 889 - DNP Capstone II
Credits: 1
This course builds on previous content and continues to equip DNP students with the skills to plan and develop their DNP project, focusing on evidence-based practice, project design, implementation, and dissemination strategies.
Registration Restriction: Department consent.

NURS 890 - Seminar (COM)
Credits: 1
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

NURS 895 - Practicum (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

NURS 898D - Dissertation (COM)
Credits: 1-24
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on- one interaction between the candidate and the professor with more limited interaction between and among the candidate and other members of the committee.

NUTR (Nutrition and Dietetics)

NUTR 522 - Advanced Human Nutrition and Metabolism
Credits: 4
Principles of metabolism and application to human nutrition.

NUTR 523 - Medical Nutrition Therapy I
Credits: 3
This course introduces the role of nutritional intervention in pathological conditions. Students will demonstrate the ability to screen for nutritional risk, collect data for nutritional assessment and calculate and/or define diets for common conditions.

NUTR 525 - Medical Nutrition Therapy II
Credits: 3
Continuation of NUTR 523.
Prerequisites: NUTR 523.

NUTR 526 - Production of Wine Beer Spirits
Credits: 2
Students will learn the procedures required for the biological and agricultural production of wine, beer and spirits coupled with the science of fermentation and the methodology required for the tasting of wine and beer for flavor/odor identification per industry guidelines. Lecture topics of student inquiry include: (1) the brewing of beer and the functional contributions of its ingredients, (2) wine production from vine to bottle, (3) the distillation of spirits and (4) the marketing, pairing and service of wine, beer and spirits. This course is designed for students/graduates who will potentially go into the business of not only growth and production, but also marketing and serving wine, beer and spirits.
Registration Restriction: Participants must be 21 years of age or older to enroll.
Corequisites: NUTR 526L.
Cross-Listed: HO/PS 526.

NUTR 526L - Production of Wine Beer Spirits Laboratory
Credits: 1
Laboratory investigation includes hands-on opportunities involving the production of beer and wine. Students will experiment with production parameters and investigate quality defects. Wine and beer quality will be assessed through laboratory testing coupled with taste testing without consumption (taste and spit) both per industry specifications. Students will develop skills in identifying specific flavors/odors such as oak, butter or lemon in wine and similar tasting techniques in beer.
Registration Restriction: Participants must be 21 years of age or older to enroll.
Corequisites: NUTR 526.
Cross-Listed: HO/PS 526L.

NUTR 560 - Nutrigenomics and Molecular Nutrition
Credits: 3
Non-communicable diseases (NCD) or chronic diseases though highly preventable are the leading killer in both developing and developed economies around the world. This indicates inadequacy of current clinical practices and underscores the importance of lifestyle and dietary approaches in tackling this growing epidemic. Traditional nutrition research and education has focused on determining optimal dietary-needs and dietary-behavior for human development and sustenance. This course will introduce the principles of Nutrigenomics, a newer science that seeks to provide a molecular understanding for how diet and common dietary constituents affect human health by altering gene expression.

NUTR 580 - Travel Studies
Credits: 1-5
This travel-study course is designed to provide extra-mural educational experiences, as approved by and under the direction of a faculty member, and may be in cooperation with faculty and administrators at other institutions. Students will participate in hands-on activities and design educational activities for presentation at selected locations. Includes pre-travel orientation, post-travel self-evaluation, and a written report.

NUTR 591 - Independent Study (COM)
Credits: 1-6
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

NUTR 660 - Maternal and Child Nutrition
Credits: 3
Fundamental principles of nutrition during pregnancy, lactation, infancy, and childhood. Topics include: the physiologic and genetic events that occur during the process of conception, pregnancy and growth; nutritionally critical periods during pregnancy, lactation and growth; implications of nutrition on health, growth and mental/emotional development; development of food habits in children; and the current educational and support programs available to the mother and child.

NUTR 662 - Sociocultural Aspect of Nutrition
Credits: 3
The study of diverse dietary patterns and their impact on nutritional health including food attitudes, socioeconomic structures, cultural patterns of food intake and their effect on nutrient composition of the diet.

NUTR 695 - Practicum (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

NUTR 702 - Macronutrients in Human Nutrition
Credits: 3
The course is an overview of macronutrients, including carbohydrates, lipids and proteins. It will cover recent findings on their functions in human nutrition and health.

NUTR 704 - Phytochemicals
Credits: 3
The course is an overview of phytochemicals (non-nutritive biologically active compounds) from fruits, vegetables, cereals, and oilseeds. It will cover recent findings on chemistry, physiological functions, potential health implications of phytochemicals. It has been developed as an Internet-based course.

NUTR 705 - Functional Foods: Disease Prevention
Credits: 3
Integrate and evaluate the regulatory principles, food science, nutrient science, and nutritional metabolism for the development of functional foods, nutraceuticals, and dietary supplements for chronic disease prevention.

NUTR 706 - Nutrition and Immunology
Credits: 3
Principles and issues related to nutrition and immunology. Impact of nutrients and nutritional status on immune responses. Impact of disease states on nutritional status.

NUTR 708 - Applied Research and Evidence Based Analysis
Credits: 3
This course will cover the knowledge required to understand and interpret published research. This course will also cover the process of evidence-based analysis which uses scientific evidence to formulate and standardize practice guidelines and to develop programs. A variety of disciplines such as dietetics, athletic training, medicine, psychology and education use evidence-based practice and/or programs. The emphasis of the course will be on a transdisciplinary process and how it can be utilized in a student's chosen field. When possible, students will be encouraged to use his/her research topic in order to complete required assignments and activities.
Cross-Listed: HNS 708.

NUTR 712 - Advanced Medical Nutrition Therapy
Credits: 3
This course is designed to provide the student with advanced understanding of medical nutrition therapy to include advanced knowledge of specialized nutrition assessment for acute and chronic disease, swallowing screening, current methods for initiation and management of enteral and parenteral nutrition therapy, and nutrition-related pharmacotherapy.
Prerequisites: NUTR 525.

NUTR 715 - Public Health Nutrition
Credits: 3
This course provides information and activities related to the broad topic of public health nutrition and will focus on how nutrition research, policies and programs impact populations. Students will gain a broader understanding of public health nutrition through case studies, discussions and experiential learning experiences.

NUTR 722 - Nutrition Counseling/ Ed Methods
Credits: 3
Nutrition education for groups and individuals in clinical and community settings. Includes discussion and experience in applying learning theory, assessing educational needs, stating goals and objectives, selecting learning activities, implementing and evaluating instruction, and documenting care provided.

NUTR 723 - Nutrition Focus on Life Stages
Credits: 3
The influence of normal physiological stresses on nutritional needs throughout the life span will be explored. Evaluating dietary intake and identifying appropriate community nutrition services will be included in the on-line discussions. Specific considerations, such as the influence of age and cultural heritage, will be incorporated. An opportunity will be given to each student to plan, present, and evaluate a mini nutrition education lesson.

NUTR 724 - Nutrition Education in the Community
Credits: 3
Principles and practices of teaching individuals and groups to translate nutrition knowledge into action. Emphasis on research in and evaluation of nutrition education for registered dietitians.

NUTR 725 - Nutrition and Human Performance
Credits: 3
This course is designed to develop an understanding of nutrition, based upon knowledge of the biochemical and physiological process and functions of specific nutrients in meeting nutritional requirements. Emphasis will be placed upon the relationship of optimal nutrition and physical efficiency and performance.

NUTR 726 - Nutrition and Wellness
Credits: 3
Course will address wellness promotion through nutrition. Nutritional risk and protective factors will be examined as they relate to public health and individual nutrition.

NUTR 728 - Pediatric Clinical Nutrition
Credits: 3
This course examines the physiological, biochemical, and nutritional aspects of disease processes relevant to infants and children up to 18 years of age. Medical nutrition therapy for a variety of medical conditions found in this population will be discussed including inborn errors of metabolism, food hypersensitivity, obesity, and diseases of all major organ systems.

NUTR 735 - Current Trends in Dietetics Practices
Credits: 3
Review of current issues in the economic, social, ethical, political, legal, technological, and ecological environments and the effect of these changes on dietetics practice.

NUTR 742 - Entrepreneurship in Dietetics
Credits: 3
Development and management of small businesses or private practice within the dietetics industry. Business plan development, marketing, cost considerations. Overview of consulting to healthcare and hospitality operations and examination of skills required for success.

NUTR 751 - Nutrition Assessment and Evaluation
Credits: 3
Students will gain in-depth knowledge about nutrition assessment tools. Students will have the opportunity to discuss the strengths and weaknesses of different tools and gain experience collecting, analyzing, and interpreting nutrition assessment data.

NUTR 760 - Vitamins and Minerals in Human Nutrition
Credits: 3
The study of the functional rolls of vitamins and minerals in human nutrition. Course content will include: identification of essential functions for the vitamins and minerals; health implications of varying amounts vitamins and minerals in the diet; interactions between vitamins; interactions between minerals; vitamin and mineral interactions and the process of establishing nutrient requirements.

NUTR 761 - Nutrition and Aging
Credits: 3
Physiological and behavioral changes associated with aging and their impact on nutrition. Effect of nutrition on aging and lifespan. Common health problems of the aged and their implications.

NUTR 775 - Nutrigenomics and Health
Credits: 3
Nutritional genomics (nutrigenomics), the junction between health and diet can be seen as the combination of molecular nutrition and genomics. Diet is the most important environmental factor influencing expression of genetic information because of the constant exposure to nutrients in foods. The advent of omics-based sciences has created unprecedented opportunities for increasing our understanding of how nutrients modulate gene expression, influence cellular and organismal metabolism and ultimately influence health. The course will be taught using integrative concepts of nutritional biochemistry, gene function, signal transduction and molecular biology in context of human diseases.

NUTR 782 - Epidemiology
Credits: 3
The course introduces concepts and methodologies for the study of health and disease in human populations. Different study designs and their methods of analysis will be discussed, as well as sources, handling, and interpretation of epidemiologic data.
Cross-Listed: BIOL 782.

NUTR 794 - Internship (COM)
Credits: 1-4
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

NUTR 795 - Practicum (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

NUTR 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

OM (Operations Management)

OM 515 - Logistics and Transportation Management
Credits: 3
This course addresses the movement of goods in the global supply chain. Processes used in planning and coordinating the delivery of goods. Transportation systems analysis, cost reduction, import/export issues, distribution and sourcing.

OM 535 - Warehouse Management
Credits: 3
This course covers inventory control and materials handling in the warehouse setting. Receiving, storing, picking and shipping goods are addressed. Equipment, software systems and emerging technologies used to track goods are analyzed.

OM 562 - Quality Management
Credits: 3
Course focus is on managerial philosophies and techniques of quality planning and control. This includes quality improvement tools, reliability, cost of quality, and human factors that affect quality initiatives.

OM 563 - Supply Chain Management
Credits: 3
Study and analysis of activities in the flow of materials from the supplier to the consumer. These include physical supply, operations planning and control, storage and warehousing, and physical distribution.

OM 565 - Quality Control Applications
Credits: 3
Quality control theory applied to problems in production systems, including probability concepts, control chart concepts, sampling inspection plans; mean time between failure; and, application of statistics for quality control in discrete-item manufacturing systems.

OM 572 - Cross-disciplinary Project Experience
Credits: 3
This is a project-based course dedicated to student teamwork on an assigned industry project facilitated by a team of faculty with relevant expertise. The course focuses on cross-disciplinary application of technical skills in collaboration with students from diverse disciplines to solve complex industry problems. It emphasizes professional communication and teamwork skills and involves close interaction with industry representatives to accomplish goals.
Registration Restriction: Instructor permission.

OM 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

OM 603 - Designing the Work Place for Production
Credits: 3
Designing the workplace to support the structuring of interpersonal communication and action in the workspace and to optimize the use of human energy through the total integration of corporate policy and culture with the physical environment. Includes the evaluation of operation procedures, the construction of behavior, computer assisted facilities management, developing control and order in the workplace, perceived stability as corporate support, flexibility as a catalyst to successful innovation.

OM 620 - Analysis in Operations Management
Credits: 3
Management analytics with emphasis on problem identification, model construction, data analysis-summary-interpretation, solution procedures, risk & uncertainty.

OM 650 - Manufacturing Systems Management
Credits: 3
Principles and methods of applied research in business and industry. Examination of methods to initiate research projects, generate proposals and execute research plans; data acquisition, analysis and interpretation are covered.
Prerequisites: STAT 541.

OM 660 - Operations Management
Credits: 3
Product planning, demand forecasting and management, capacity planning, scheduling, inventory planning and timing, materials management, quality, work standards and measurement.

OM 669 - Project Management
Credits: 3
An overview of project management as it relates to integrated systems, product/project life cycle, and organizational change. Defining, estimating, scheduling, risk management, and project team leadership issues will be covered as they relate to projects.

OM 670 - Research Methods in Management
Credits: 3
Principles and methods of applied research in business and industry. Examination of appropriate methods to conduct literature reviews, design methodology, develop proposals for research projects, and present results.

OM 690 - Seminar (COM)
Credits: 1
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

OM 760 - Quality Control
Credits: 3
Application of statistical techniques to the control of quality and the development of economical inspection methods. Collection analysis, and interpretation of operations data; control charts and sampling procedure.

OM 767 - Decision Theory
Credits: 3
Examination and evaluation of modern techniques of decision making. Mathematical models and measurements theory. Certainty, risk, and uncertainty.

OM 788 - Research Problems/Projects (COM)
Credits: 1-2
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

OM 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

OM 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

OM 796 - Field Experience (COM)
Credits: 1-6
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

OM 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

PE (Physical Education)

PE 742 - Psychological Aspects of Sport and Exercise
Credits: 3
Psychological theories and principles applied to physical education, sport, and exercise. Interpretation and analysis of human behavior. Pre-requisite: instructor consent. Topics include personality, arousal and anxiety, motivation, self efficacy and self-esteem, attentional focus, audience effects, aggression, leadership, as well as intervention strategies.

PHA (Pharmacy)

PHA 565 - Techniques in Pharmaceutical Research
Credits: 3
A study of the current techniques in pharmaceutical research.
Registration Restriction: Instructor consent.

PHA 570 - Introduction to Drug Discovery and Development
Credits: 3
This course explores the fundamental principles and processes involved in discovering novel drugs, including the drug approval process and related regulatory aspects, principles of drug action, fundamentals of drug chemistry, and an overview of pharmacokinetics and drug delivery. It provides insights into the latest trends, technologies, and regulatory frameworks shaping the new drug discovery landscape.
Registration Restriction: Instructor consent.

PHA 610 - Introductory Practice Experience II
Credits: 3
Students apply the academic and theoretical knowledge they have acquired in didactic courses to practical situations within a pharmacy setting. The drug dispensing process, patient counseling, and management of the pharmacy will be emphasized during the course.
Notes: Pass/fail grading.

PHA 645 - Pharmacotherapeutics Across the Lifespan: Application to Advanced Practice
Credits: 2-4
To provide the student with the knowledge and skills to assess, diagnose and manage (including the prescription of pharmacologic agents) a client's common health problems throughout the lifespan in a safe, high quality, and cost-effective manner.
Notes: Graduate nursing students only.

PHA 700 - Directed Studies Practice Experience
Credits: 4-5
Advanced experiential course in pharmacy.

PHA 701 - Home Health/Hospice Practice Experience
Credits: 5
In this pharmacy practice experience the student will be placed with a preceptor that specializes in home health care practice and / or hospice care. Preceptors are typically involved in delivering home care services / patient monitoring. These patients have a variety of needs often including long-term intravenous antibiotics, total parenteral nutrition (TPN) on a continuing basis, pain management services, wound care and management of multiple medication regimens.

PHA 702 - Indian Health Services Practice Experience
Credits: 5
Indian health service pharmacy practice is a significant part of pharmaceutical care in the state of South Dakota. There are a variety of locations where this experience is available. During this experience, the student will be introduced to pharmaceutical care practice in the Federal Government setting of the Indian Health Service. Areas of emphasis will include patient counseling, federal rules and regulations regarding pharmacy practice and formulary management techniques.

PHA 703 - Pharmacy Administration Practice Experience
Credits: 5
This pharmacy practice experience will give the student an opportunity to focus on the administrative leadership and management functions in pharmacy practice. The APPE can be done in a variety of settings including hospitals, health systems, community and other pharmacy settings. Topics covered will include but are not limited to human resources, legal and regulatory issues, inventory management, financial management, operational strategies, practice management, project/service development and other administrative functions of the site.

PHA 705 - Clinical Research Practice Experience
Credits: 5
In this pharmacy practice experience the student is expected to conduct routine experiments as related to the research project assigned to the student. In addition, the student is expected to participate in experimental design and data analysis.

PHA 706 - Critical Care Practice Experience
Credits: 5
This pharmacy practice experience provides the student with an introduction to the care of critically ill adult patients. Patient care rounds, topic discussions and interactions with multiple healthcare professionals are key components of this experience.

PHA 707 - Infectious Disease Practice Experience
Credits: 5
This pharmacy practice experience is designed to provide students an opportunity to participate in the delivery of infectious disease medication therapy management as a member of an inpatient healthcare team providing services to adult patients.

PHA 709 - Nephrology Practice Experience
Credits: 5
This pharmacy practice experience provides the student with a specialty practice focus to the care of patients with chronic kidney disease and/or present or past solid organ transplantation.

PHA 711 - Oncology Practice Experience
Credits: 5
This pharmacy practice experience is designed to provide students the opportunity to participate in the delivery of antineoplastic therapy management, at an advanced level, to patients with cancer.

PHA 712 - Nuclear Pharmacy Practice Experience
Credits: 5
This pharmacy practice experience will vary by site, but in general the student will be introduced to the practice of nuclear pharmacy, which deals with the handling of radioactive materials used for diagnostic imaging studies. The student selecting this experience should have interest in learning more about nuclear pharmacy, additional training required, and how the nuclear pharmacist plays a role in diagnostic imaging.

PHA 713 - Managed Care Practice Experience
Credits: 5
This pharmacy practice experience may encompass a variety of experiences dependent upon the assigned site. Mail-order pharmacy, PBM management, formulary selection, disease state management, contracting, medication use evaluation, claims adjudication, and clinical guideline development are examples of topics that may be covered.

PHA 714 - Community Pharmacy Care Practice Experience
Credits: 5
Clerkship experience at an affiliated site.
Registration Restriction: P4 year standing.

PHA 715 - Community Pharmacy Systems Practice Experience
Credits: 5
This pharmacy practice experience will provide the student with an opportunity to learn and perform professional services in all relevant systems employed in traditional community pharmacy practice. While patient care is a component of the practice experience, the focus of the course is on medication use systems in the community pharmacy environment including pharmacy workflow, drug information systems, technology systems, policy & procedures, management/administration systems, and pharmacy law.
Prerequisites: PHA 762.
Registration Restriction: P4 year standing.

PHA 716 - Hospital/Health-System Pharmacy Practice Experience
Credits: 5
Clerkship experience at an affiliated site.
Registration Restriction: P4 year standing.

PHA 717 - Community Health and Patient Monitoring Practice Experience
Credits: 5
Clerkship experience in pharmaceutical care in a community pharmacy.

PHA 718 - Long Term Care Practice Experience
Credits: 5
This pharmacy practice experience will provide the student with an opportunity to learn and perform professional services in the long term care setting. Activities performed include patient care conferences, chart reviews, and comprehensive medication management.
Prerequisites: PHA 762.
Registration Restriction: P4 year standing.

PHA 719L - Pharmacy Capstone
Credits: 1
Capstone course evaluating integration and application of pharmacy knowledge and skills as well as readiness to enter Advanced Pharmacy Practice Experiences (APPEs).

PHA 721 - Advanced Concepts in Medicinal Chemistry
Credits: 3
A study of the current advances in the area of drug design and discovery.

PHA 724 - U.S. Health Care Systems
Credits: 2
An overview of the health care system in the United States and its impact on pharmacy practice.

PHA 725 - Advanced Concepts in Biomedical Sciences and Pharmacogenomics
Credits: 3
This course will cover advanced biomedical and pharmacogenomics concepts in human disease and therapy. The course will provide an understanding of molecular and cellular basis of current and new therapeutic targets. The course will emphasize gene expression regulation, relevance of cell cycle, cell division and programmed cell death in disease development and progression, immunotherapeutics, cellular signaling cascades and relevant therapeutic targets. The course will also cover the pharmacogenomics of drug transporters, drug receptors and drug metabolizing enzymes.
Registration Restriction: Instructor consent.

PHA 726L - Integrated Pharmacy Laboratory III
Credits: 1
Continuation of Integrated Pharmacy Laboratory II. Enhancement, integration, and application of knowledge and skills from the biomedical, pharmaceutical, clinical, and social/administrative pharmacy sciences.
Registration Restriction: P3 year standing.

PHA 727 - Professional Resources Management
Credits: 4
Professional, economic, and social considerations influencing the organization and management of the delivery of pharmaceutical services.
Registration Restriction: P3 standing.

PHA 730 - Topics in Advanced Pharmaceutical Sciences
Credits: 3
A detailed study of selected topics in Pharmaceutical Sciences.

PHA 738 - Health Informatics
Credits: 1
This course will introduce health professions graduate students to the field of health informatics. Students will explore a diverse range of topics including electronic health records, clinical decision support, telehealth, and regulatory issues.

PHA 740 - Advanced Concepts in Pharmacology
Credits: 3
A study of the current advances in the area of pharmacology especially at molecular level.
Registration Restriction: Instructor consent.

PHA 741 - Public and Population Health
Credits: 2
This course explores the role of the pharmacist in public health, disease prevention and health promotion, as well as key concepts and theoretical frameworks used in developing health promotion and health behavior interventions. Pharmaceutical care skills for assessment of humans in health and disease are also developed and applied.
Registration Restriction: P3 standing.

PHA 742 - Self Care Pharmacotherapeutics II
Credits: 2
Discussion of over-the-counter and dietary supplement products, common medical conditions amenable to self treatment, and recognition of situations when self-treatment is appropriate. Pharmaceutical care skills for assessment of humans in health and disease are also developed and applied.
Registration Restriction: P3 standing.

PHA 743 - Pharmacogenomics
Credits: 1
Students will gain advanced knowledge on the effect of genetic variation on drug response, the ability to evaluate patients' genotyping data and retrieve pharmacogenomic data from databases, and an understanding of how the information can be used to provide quality personalized pharmaceutical care for patients.

PHA 744 - End of Life Care
Credits: 1
Discussion of the dying process and how to improve end-of-life care for patients and families. An emphasis will be placed on legal and ethical principles relative to end-of-life care, resources available for end-of-life care, financial aspects, pain management, non-pain symptom management, and overview of cultural and spiritual diversity related to end-of life.

PHA 745 - Ambulatory Care Practice
Credits: 2
This course is designed to provide the student with an introduction to ambulatory care. Various aspects of ambulatory care practice settings and opportunities for pharmacist involvement in ambulatory care practices will be discussed. At the end of the course, the student should have an increased ability to provide quality pharmaceutical care for patients in an ambulatory care setting, specifically through the development of clinical skills, including drug information, and oral and written communication.

PHA 746 - Professional Pharmacy Leadership Skills
Credits: 1
This course will provide advanced instruction in professional leadership skills for students with an interest in becoming effective leaders and role models in the profession of pharmacy.
Registration Restriction: P3 year standing.

PHA 748 - Topics in Neonatal and Pediatric Pharmacotherapy
Credits: 1
Advanced study of organ development and system maturation that includes drug delivery, drug therapy, patient safety, medication error prevention, and drug related problem identification and problem solving in the pediatric patient population.
Registration Restriction: P3 year standing.

PHA 749 - Care of the Geriatric Patient
Credits: 1
This course will enhance the student's ability to care for geriatric patients by providing the student with an understanding of age related socio-behavioral aspects that influence care, skills in the management of geriatric syndromes, practice in managing drug therapy for complex, frail geriatric patients, and training in the provision of pharmaceutical care in select settings and in a team approach.
Registration Restriction: P3 year standing.

PHA 750 - Critical Care Therapeutics
Credits: 2
Principles of medication use in the critically ill patient.
Registration Restriction: P3 standing.

PHA 751 - Cultural Perspectives in Pharmacy Practice
Credits: 1
Students will explore the ways in which social, psychological, political, cultural, and economic circumstances influence the chances for a healthy life. The course will combine theory from the social sciences with rigorous epidemiological methods to explain the connections between social factors and health status. An emphasis will be placed on social inequalities and health inequalities and disparities.

PHA 752 - Drugs of Abuse and Addiction
Credits: 2
Discussion of psychoactive drugs, both legal and illegal, that have potential for abuse.
Registration Restriction: P3 standing.

PHA 753 - Women and Children's Health
Credits: 2
Diseases and drug-related issues pertaining to women's and children's health.
Registration Restriction: P3 standing.

PHA 754 - Complementary and Alternative Medicine
Credits: 1
Discussion of alternative, natural, and homeopathic medicines, with emphasis on their appropriate evaluation and use.

PHA 756 - Pharmacotherapeutics III
Credits: 4
Discussion of pharmacotherapeutic principles for the development of patient specific drug regimens in patients with acute and chronic disease states and conditions.
Registration Restriction: P3 standing.

PHA 757 - Pharmacotherapeutics IV
Credits: 4
This course is a continuation of PHA 756, Pharmacotherapeutics I with an emphasis on the discussion of pharmacotherapeutic principles for the development of patient specific drug regimens in patients with acute and chronic disease states and conditions.
Registration Restriction: P3 standing.

PHA 758 - Institutional Practice Based Research I
Credits: 1
This course is part one of a two course series providing students with experience in pharmacy research and quality improvement in the institutional setting. In part one, students gain knowledge and experience in research design and IRB submission. Students will identify a research question and design a project protocol.

PHA 759 - Institutional Practice Based Research II
Credits: 1
This course is part one of a two course series providing students with experience in pharmacy research and quality improvement in the institutional setting. In part one, students gain knowledge and experience in research design and IRB submission. Students will identify a research question and design a project protocol.
Registration Restriction: PHA 758.

PHA 760 - Advanced Concepts in Pharmaceutics
Credits: 3
A study of the current advances in the area of drug formulations and delivery.

PHA 761 - Pharmacotherapeutics V
Credits: 5
This course is the continuation of PHA 757, Pharmacotherapeutics IV with an emphasis on the discussion of pharmacotherapeutic principles for the development of patient specific drug regimens in patients with acute and chronic disease states and conditions.
Registration Restriction: P3 standing.

PHA 762 - Pharmacotherapeutics VI
Credits: 5
This course is a continuation of PHA 761, Pharmacotherapeutics V with an emphasis on the discussion of pharmacotherapeutic principles for the development of patient specific drug regimens in patients with acute and chronic disease states and conditions.
Registration Restriction: P3 standing.

PHA 763L - Pharmacy Skills Laboratory V
Credits: 1
Continuation of Pharmacy Skills Laboratory IV. Application of contemporary pharmacy knowledge and skills and patient care principles.
Registration Restriction: P3 year standing.

PHA 764L - Pharmacy Skills Laboratory VI
Credits: 1
Continuation of Pharmacy Skills Laboratory V. Application of contemporary pharmacy knowledge and skills and patient care principles.
Registration Restriction: P3 year standing and PHA 763L.

PHA 766 - Oncology Pharmacotherapeutics
Credits: 1
The major emphasis of this course will be placed on integration of pathophysiology and drug therapy principles to develop patient specific drug regimens for oncology patients.
Registration Restriction: Department approval.

PHA 769 - Pharmaceutical Sciences Capstone
Credits: 2
A capstone project demonstrating integration and application of program content in pharmaceutical/biomedical sciences.
Registration Restriction: Department approval.

PHA 770 - Pediatrics Practice Experience
Credits: 5
This pharmacy practice experience is designed to teach the student patient care skills in a pediatric subspecialty area. Using an educator/practitioner as a role model, the student will directly involve himself/herself in pediatric patient care.

PHA 772 - Internal Medicine I Practice Experience
Credits: 5
This pharmacy practice experience is designed to provide students an opportunity to participate in the delivery of medication therapy management as a member of an inpatient healthcare team providing services to adult patients.

PHA 773 - Internal Medicine II Practice Experience
Credits: 5
This pharmacy practice experience is designed to provide students an opportunity to participate in the delivery of medication therapy management at an advanced level, as a member of an inpatient healthcare team providing services to adult patients.

PHA 774 - Ambulatory Care I Practice Experience
Credits: 5
This pharmacy practice experience is designed to teach the student fundamental patient care skills in an outpatient practice environment. Direct patient involvement is emphasized with students being expected to obtain patient histories, conduct appropriate physical assessments, interpret and apply laboratory parameters, provide patient education, follow-up on assigned patients, advise other healthcare providers on the clinical use of drugs, and, overall, participate as part of a multidisciplinary healthcare team.

PHA 775 - Psychiatry Practice Experience
Credits: 5
This pharmacy practice experience is designed to provide students an opportunity to participate in the delivery of medication therapy management as a member of an inpatient healthcare team providing services to psychiatry patients.

PHA 776 - Ambulatory Care II Practice Experience
Credits: 5
An advanced pharmacy practice experience that builds upon Ambulatory Care I Practice Experience. Direct patient involvement is emphasized with students being expected to obtain patient histories, conduct appropriate physical assessments, interpret and apply laboratory parameters, provide patient education, follow-up on assigned patients, advise other healthcare providers on the clinical use of drugs, and participate as part of a multidisciplinary healthcare team.
Prerequisites: PHA 762 and PHA 774.
Registration Restriction: P4 year standing.

PHA 777 - Pharmacogenomics Practice Experience
Credits: 5
The Pharmacogenomics Advanced Pharmacy Practice Experience provides the student with an introduction to pharmacogenomics. Students will be expected to learn and apply patient care skills/knowledge while being introduced to the concepts of precision medicine, pharmacogenetics, and pharmacogenomics in clinical decision making.
Prerequisites: PHA 762.
Registration Restriction: P4 year standing.

PHA 778 - Compounding Practice Experience
Credits: 5
This elective pharmacy practice experience provides advanced study in pharmaceutical compounding. Students will compound prescriptions, explore compounding pharmacy management, and apply laws and regulations governing compounded medications for human and veterinary use.
Prerequisites: PHA 762.
Registration Restriction: P4 year standing.

PHA 779 - Academic Practice Experience
Credits: 5
This elective pharmacy practice experience is designed to provide the student with an opportunity to understand the role of a faculty member and to become actively engaged in teaching, service, and scholarship. The student will have the opportunity to teach in the pharmacy curriculum under the supervision of a faculty member and will further develop critical thinking as well as written and verbal communication skills.
Prerequisites: PHA 762.
Registration Restriction: P4 year standing.

PHA 780 - International Pharmacy Practice Experience
Credits: 5
Study of healthcare systems and the practice of pharmacy at designated international sites.
Registration Restriction: P4 standing with consent.

PHA 788 - Research Problems/Projects (COM)
Credits: 1-8
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

PHA 790 - Seminar (COM)
Credits: 1
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

PHA 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

PHA 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

PHA 798 - Thesis (COM)
Credits: 1-8
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

PHA 847 - Grant Proposal and Academic Development
Credits: 3
A study of the current policies, procedures and skills required for successful grants writing. An understanding of ethics and scientific conduct needed for academic development.
Registration Restriction: Instructor consent.

PHA 898D - Dissertation (COM)
Credits: 1-10
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on- one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

PHIL (Philosophy)

PHIL 554 - Environmental Ethics (COM)
Credits: 3
Presents humanity's relationship to the environment, its responsibility to nature, and its obligations to future generations, attending to both theory and applications, including the debate over causes of environmental crisis, the value of endangered species, the wilderness, and natural objects; the seriousness of the growing global population and obligations to feed the poor, the feasibility of sustaining an ecological responsible society.
Cross-Listed: REL 554.

PHIL 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

PHIL 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

PHYS (Physics)

PHYS 521 - Electromagnetism (COM)
Credits: 4
Principles of electricity and magnetism, with applications to dielectric and magnetic materials. Development of Maxwell's equations, and applications.

PHYS 533 - Nuclear and Elementary Particle Physics (COM)
Credits: 4
Radioactivity, nuclear spectra and structure, nuclear models, elementary particle theories and high energy physics.

PHYS 537 - Foundations of Health Physics
Credits: 3
Health Physics studies the risk to health from radiation and the measures to assess and reduce that risk. This course is an introduction to several aspects of health physics including radiation quantities, limits and risk assessment, external and internal dosimetry, biological effects of radiation, interactions of radiation with matter, radioactive decay, radiation detection, and various applications of radiation.
Cross-Listed: NE 537.

PHYS 539 - Condensed Matter Physics (COM)
Credits: 3-4
This course looks at solid materials from a microscopic level. Topics include basic crystal structure; mechanical and thermal properties; and electronic processes with reference to electrical properties of metals, semiconductors, and insulators.

PHYS 549 - Computational Physics (COM)
Credits: 4
The course emphasizes ideas of computational physics and programming languages and skills for solving problems. Areas of application may include quantum mechanics, atomic physics, nuclear and particle physics, astrophysics, condensed matter physics, nonlinear dynamics and chaos, biophysics, materials science, engineering, and chemistry.

PHYS 551 - Classical Mechanics (COM)
Credits: 4
Newton's Laws, motion in one and three dimensions, central forces, harmonic oscillations, non-inertial reference frames, rotations of rigid bodies, and Lagrangian Mechanics.

PHYS 571 - Quantum Mechanics (COM)
Credits: 4
This is a systematic introduction to quantum mechanics, emphasizing the Schrodinger equation. Topics include simple soluble problems, the hydrogen atom, approximation methods and other aspects of quantum theory.

PHYS 581 - Mathematical Physics (COM)
Credits: 4
This course looks at mathematical methods used to formulate and solve problems in various fields of physics. Topics are chosen from: series solutions, special functions, computational methods, complex variables, multi-variate methods, transform methods, and other areas of mathematical applications to physics.

PHYS 590 - Seminar (COM)
Credits: 1-2
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

PHYS 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

PHYS 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

PHYS 691 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

PHYS 721 - Electrodynamics I (COM)
Credits: 3
Electrostatics and magnetostatics, including a study of boundary value problems and the multi-pole expansions, leading to the study of Maxwell's equations. The relationship between special relativity and electromagnetism will also be discussed.

PHYS 723 - Electrodynamics II (COM)
Credits: 3
This course is the second course in a two-semester sequence and covers advanced topics in electrodynamics.
Prerequisites: PHYS 721.

PHYS 739 - Condensed Matter Physics I (COM)
Credits: 3
Topics include crystal structure and the reciprocal lattice, quantum theory of electrons and phonons, x-ray diffraction, crystal binding energies, and energy band theory. Additional topics may be chosen from the properties of metals, semiconductors, and insulators.
Prerequisites: PHYS 539.

PHYS 743 - Statistical Mechanics (COM)
Credits: 3
This is a one-semester course in classical and quantum statistical mechanics. Topics include ensembles, partition functions, identical particles, Fermi-Dirac and Bose-Einstein statistics. Other topics will be chosen from mean field theory, phase transformations, renormalization group theory, Monte Carlo techniques, and other topics of interest.

PHYS 749 - Condensed Matter Physics II
Credits: 3
This course is the second course in a two-semester sequence and covers advanced topics in condensed matter physics.
Prerequisites: PHYS 739.

PHYS 751 - Classical Mechanics (COM)
Credits: 3
This is a one-semester course in classical mechanics. Topics include Newtonian Mechanics, Hamilton's Principle, Non-Inertial Frames of Reference, Lagrangian Mechanics. Other topics will be chosen from such areas of study as Rigid Body Motion, Chaos theory, Hamilton-Jacobi theory, Perturbation Theory, Quaternion applications to rotations, Lagrangian/Hamiltonian formulations for Continuous systems and fields, and other topics of interest.

PHYS 761 - Nuclear and Particle Physics (COM)
Credits: 3
This is a one-semester course in nuclear and elementary particle physics. Nuclear physics topics may include nuclear structure (nuclear form factors, multipole moments, liquid and shell models); nuclear decay; nuclear reactions; and other topics of interest. Elementary particle physics topics may include the role of symmetry in particle physics. Quantum Electrodynamics and Quantum Chromodynamics; the Standard Model of Particle Physics; Strong and Weak interactions; Accelerator and Experimental Particle Physics; and other selected topics beyond the Standard Model.
Prerequisites: PHYS 771.

PHYS 771 - Quantum Mechanics I (COM)
Credits: 3
This is the first course of a two-semester sequence in quantum physics. Topics include the Schrodinger equation and its solutions, matrix mechanics, operator methods, the harmonic oscillator, the hydrogen atom, spin and angular momentum.

PHYS 773 - Quantum Mechanics II (COM)
Credits: 3
This is the second course in a two-semester sequence. Additional topics include perturbation methods. Applications will be chosen from such topics as scattering theory, second quantization, theory of identical particals, relativistic quantum mechanics, creation and annihilation operators and other topics of interest.
Prerequisites: PHYS 771.

PHYS 775 - General Relativity (COM)
Credits: 3
This course includes study of Minkowski Space, tensor algebra and calculus, non-Euclidean Geometry, and the Einstein Field Equations. Applications will be chosen from such topics as the Schwarzchild, Kerr, and Reisner-Nordstrom solutions, gravitational waves, Post-Newtonian Formulisms, 3 + 1 formulism, and other topics of interest.

PHYS 779 - Group Theory (COM)
Credits: 3
Topics may include symmetry transformations, continuous groups, finite groups, applications to valence theory, Lorentz group, and fundamental particles.

PHYS 783 - Quantum Field Theory (COM)
Credits: 3
This course is the study of relativistic quantum field theory and its application to the standard model. The course covers quantization of relavistic field; perturbation theory and Feynman diagram; S-matrix; introduction to gauge theories and the standard model; and other topics of interest.
Prerequisites: PHYS 771.

PHYS 785 - Astrophysics and Cosmology (COM)
Credits: 3
This course introduces the broad base of fundamental topics in astrophysics and cosmology. Topics include observational properties of stars; stellar physics; stellar atmospheres; distance scales; galactic structures; interstellar medium, normal and peculiar galaxies and high energy astrophysics, cosmological observations and Friedmann models; the early universe at different epochs; the origin of dark matter and formation of galaxies and large scale structure.
Prerequisites: PHYS 771.

PHYS 787 - Research
Credits: 1-9
Students will examine qualitative and quantitative methods used in physics research.

PHYS 788 - Research Problems/Projects (COM)
Credits: 1-5
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

PHYS 790 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

PHYS 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

PHYS 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

PHYS 798 - Thesis (COM)
Credits: 1-9
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

PHYS 898D - Dissertation (COM)
Credits: 1-9
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

PLAN (Planning)

PLAN 571 - Principles of State, Regional and Community Planning
Credits: 3
Purpose, structure, and dynamics of the planning process. Identification of different types of planning. Inter-dependencies among persons who contribute to the planning process and are trained in separate academic disciplines. Basic techniques employed within different phases of the planning process.

PLAN 572 - Techniques of State, Regional and Community Planning
Credits: 3
Brief review of basic approaches, procedures and methods employed within different phases of the planning process. Coordination required among persons trained in separate academic disciplines in order to carry out these basic techniques. Exercises in the practical application of selected techniques and review of their applications in ongoing to completed planning efforts.
Prerequisites: PLAN 571.

PLAN 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

POLS (Political Science)

POLS 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

PRAG (Precision Agriculture)

PRAG 510 - Soil Geography and Land Use Interpretation
Credits: 2
Relationship of soil characteristics and soil classification to land use interpretations. Laboratory exercises involve field and laboratory procedures used in soil survey investigations.
Corequisites: PRAG 510L.
Cross-Listed: GEOG 510.

PRAG 510L - Soil Geography and Land Use Interpretation Lab
Credits: 1
Laboratory to accompany PS 510.
Corequisites: PRAG 510.
Cross-Listed: GEOG 510L.

PRAG 523 - Soil Fertility and Plant Nutrient Management
Credits: 3
Soil fertility management and its effects on the growth of crops, including evaluation, uptake and utilization of specific ions by plants, use of fertilizer elements to alter soil fertility, importance of crop residue management to maintain and improve productivity, and chemical composition of fertilizers and their characteristics.

PRAG 524 - Wheat Production
Credits: 2
Topics in this course address agronomic management for spring and winter wheat production. Topics covered in this course include determining wheat crop insurance; seeding rates; seed treatments; weed management; wheat impact on crop rotations; nitrogen, phosphorus, potassium, chloride, and sulfur fertilizer management; fungicide and disease management; fertilizing for grain protein and yield; estimating yield in season; harvest parameters; and cover crops.

PRAG 525 - Soybean Production
Credits: 2
Soybean crop production and management across all growth stages. Among the topics addressed in this course include soybean crop insurance; variety selection; seeding rates; seed treatments and inoculations; weed, disease, and pest management; fertilizers and applications; crop maturity factors that impact harvest.

PRAG 526 - Corn Production
Credits: 2
The objective of this course is corn production management ranging across a year. Topics addressed in this course include corn crop insurance; variety selection; seeding rates; fertilizers and application methods; weed, disease and pest management; harvest issues; crop rotations and cover crops.

PRAG 527 - Precision Ag Data Mapping
Credits: 2
Mapping agronomic field data and generating management zones using appropriate industry software on the commercial market.

PRAG 528 - Use of Soil and Plant Sensors in Crop Production
Credits: 3
Use of sensors commonly used in agronomy to measure soil and plant parameters in crop production. Commercially available sensors are used in experiential learning modules.

PRAG 540 - Crop Management with Precision Farming
Credits: 2
Principles of precision farming for crop production will be the focus. An integrated approach to crop management based on global positioning, geographic information systems, soil testing and fertility recommendations, spatial data storage, and data interpretation for farming and land use decisions will be covered. The use of spatial statistics to make site specific management recommendations will be discussed.
Corequisites: PRAG 540L.

PRAG 540L - Crop Management with Precision Farming Lab
Credits: 1
Corequisites: PRAG 540.

PS (Plant Science)

PS 503 - Seed Technology
Credits: 2
Seed testing; history, testing methods, and seed testing organizations. Seed development, maturation, anatomy, physiology, dormancy, and aging processes. Identification and classification of crop and weed seeds.
Corequisites: PS 503L.

PS 503L - Seed Technology Lab
Credits: 1
Laboratory to accompany PS 503.
Corequisites: PS 503.

PS 505 - Entomology (COM)
Credits: 2
An introduction to the general biology and classification of insects. Course emphasis placed on taxonomy, methods of identification, and ecological role of insects. Students will become familiar with basic insect anatomy and morphology, classification at the order level with exemplary families that include taxa of agricultural or environmental interest, and acquire an ability to sight recognize particular species that have agricultural, environmental, wildlife, and human and livestock health importance.
Corequisites: PS 505L.

PS 505L - Entomology Lab
Credits: 1
Laboratory experience that accompanies PS 505.
Corequisites: PS 505.

PS 507 - Insect Pest Management
Credits: 2
Covers the major insect pests of the Northern Great Plains with emphasis on field biology, recognition, field scouting, and economic thresholds. Pest management strategies of insects affecting row crops, small grains, hayland and rangeland will be included. Pesticide application methods and safety are included.

PS 507L - Insect Pest Management Lab
Credits: 1
Laboratory to accompany PS 507.
Corequisites: PS 507.

PS 511 - Fruit Crop Systems
Credits: 1-6
Studies in perennial fruit crop production and management systems. Credit earned will depend on the number of 1 credit modules taken. Course may be repeated as long as the topic module(s) are not repeated. Topic modules could include: tree fruit production systems; small fruit production systems; viticulture; perennial fruit integrated pest management; native fruit production systems; fruit harvest, quality, and postharvest care; vines and wines; fruit value-added systems; pruning fruit crops; cover crop management, marketing specialty fruit crops.
Cross-Listed: HO 511.

PS 512 - Environmental Soil Chemistry
Credits: 3
Fundamentals of soil chemical properties and processes important for the sound management of soil resources. Topics include sorption/desorption of inorganic and organic compounds, bioavailability of nutrients and contaminants, oxidation/reduction, phase equilibria, soil organic matter, soil mineralogy, ion exchange, and saline/sodic soils.

PS 513 - Greenhouse and High Tunnel Management
Credits: 2
Greenhouse construction, environmental control, production and scheduling of major greenhouse crops. Trips to commercial greenhouse operations and laboratory work in greenhouse crop production.
Corequisites: PS 513L.
Cross-Listed: HO 513.

PS 513L - Greenhouse and High Tunnel Management Lab
Credits: 1
Lab to accompany PS 513.
Corequisites: PS 513.
Cross-Listed: HO 513L.

PS 514 - Plant Propagation
Credits: 2
Fundamental anatomical and physiological principles and methods of reproducing herbaceous and woody plants by seeds, cuttings, grafts, layers and division.
Corequisites: PS 514L.
Cross-Listed: HO 514.

PS 514L - Plant Propagation Lab
Credits: 1
Lab to accompany PS 514.
Corequisites: PS 514.
Cross-Listed: HO 514L.

PS 515 - Mycology (COM)
Credits: 2
Comprehensive taxonomic survey of the Kingdom Fungi; reproductive biology, physiology, genetics, and ecology of fungal organisms; relationship of fungi to human affairs.
Corequisites: PS 515L.
Cross-Listed: BIOL 515.

PS 515L - Mycology Lab (COM)
Credits: 1
Laboratory experience that accompanies PS 515.
Corequisites: PS 515.
Cross-Listed: BIOL 515L.

PS 521 - Soil Microbiology
Credits: 2
Microbial species of agricultural soils, environmental factors affecting their numbers and activity, and biochemical changes brought about by these organisms.
Corequisites: PS 521L.
Cross-Listed: MICR 521.

PS 521L - Soil Microbiology Lab
Credits: 1
Laboratory experience to accompany PS 521.
Corequisites: PS 521.
Cross-Listed: MICR 521L.

PS 526 - Production of Wine Beer Spirits
Credits: 2
Students will learn the procedures required for the biological and agricultural production of wine, beer and spirits coupled with the science of fermentation and the methodology required for the tasting of wine and beer for flavor/odor identification per industry guidelines. Lecture topics of student inquiry include: (1) the brewing of beer and the functional contributions of its ingredients, (2) wine production from vine to bottle, (3) the distillation of spirits and (4) the marketing, pairing and service of wine, beer and spirits. This course is designed for students/graduates who will potentially go into the business of not only growth and production, but also marketing and serving wine, beer and spirits.
Registration Restriction: Participants must be 21 years of age or older to enroll.
Corequisites: PS 526L.
Cross-Listed: HO/NUTR 526.

PS 526L - Production of Wine Beer Spirits Lab
Credits: 1
Laboratory investigation includes hands-on opportunities involving the production of beer and wine. Students will experiment with production parameters and investigate quality defects. Wine and beer quality will be assessed through laboratory testing coupled with taste testing without consumption (taste and spit) both per industry specifications. Students will develop skills in identifying specific flavors/odors such as oak, butter or lemon in wine and similar tasting techniques in beer.
Registration Restriction: Participants must be 21 years of age or older to enroll.
Corequisites: PS 526.
Cross-Listed: HO/NUTR 526L.

PS 531 - Insect Ecology and Biological Control
Credits: 3
This course will examine the ecological relationships between insects and their environment. Topics will include natural history; population dynamics; interactions between insects and their food plants, predators, and diseases; insect evolutionary ecology; and insect agroecology. These topics will also be explored in the context of the biological control of arthropod and weed pests by natural enemies.

PS 533 - Field Crop Diseases and Management
Credits: 3
Learn principles of plant disease management; develop strategies to manage plant diseases using fungicides (mode of action, product label, equipment, formulation, fungicide resistance, etc.), host resistance, cultural practices (cover crops, plant nutrition, etc.), biological control and precision agriculture.

PS 534 - Local Food Production
Credits: 2
Topics include planning, planting, cultivation, harvest, season extension and marketing of fruits and vegetable crops. Experiential learning model.
Cross-Listed: HO 534.

PS 545 - Weed Science
Credits: 2
Fundamentals of mechanical, cultural, biological and chemical weed control practices and factors affecting control. Herbicide classification and mechanism of action. Plant and seed identification of common weeds of North Central States and their interaction with desirable plants.
Corequisites: PS 545L.

PS 545L - Weed Science Lab
Credits: 1
Laboratory to accompany PS 545.
Corequisites: PS 545.

PS 547 - Organic Plant Production
Credits: 3
This course provides a detailed overview of organic farming for both small scale suburban and urban settings. The topics covered will include: organic certification, soil and nutrient management, pest and disease ID and management, High-Tunnel management, and marketing.
Cross-Listed: HO 547.

PS 562 - Environmental Soil Management
Credits: 2
Management systems designed to maintain soil productivity and environmental quality are examined. Soil problems important in production systems and environmental management including compaction, erosion, and nonpoint pollution are analyzed based on underlying environmental and agronomic principles. Computer simulation models are used and applied to soil problems.
Corequisites: PS 562L.

PS 562L - Environmental Soil Management Lab
Credits: 1
Laboratory experience that accompanies PS 562.
Corequisites: PS 562.

PS 664 - Molecular Plant Physiology
Credits: 3
This course discusses current molecular advances in plant biology. A wide range of topics in plant growth and development as well as plant interactions with abiotic and biotic factors will be covered. Each topic is led by a researcher who is experienced in the subject area being discussed, and consists of an introduction lecture and a case study followed by a class discussion on a recent research paper in the field.
Cross-Listed: BIOS 664.

PS 714 - Genetics of Disease Resistance and Host-Plant Pathogen Interactive
Credits: 3
Physiology, genetics, and molecular biology of host-plant pathogen interactions and disease resistance; pathogenic diversity and virulence dynamics of plant pathogens; crop vulnerability and plant disease epidemiology; and breeding plants for disease resistance.
Registration Restriction: Instructor consent.
Corequisites: PS 714L.

PS 714L - Genetics of Disease Resistance and Host-Plant Pathogen Interactive Lab
Credits: 1
Laboratory experience to accompany PS 714.
Corequisites: PS 714.

PS 721 - Advanced Integrated Pest Management
Credits: 3
The biological and ecological basis of integrated pest management for midwestern crop insects and the understanding of economic thresholds are emphasized. Pest scouting techniques for major crop pests and simulated management decisions are discussed.

PS 723 - Hydrologic Modeling
Credits: 1
This course will involve simulation of water, sediment and chemical movement at watershed scale using the Soil Water Assessment Tool (SWAT) model. The course will cover different methods used to estimate and measure the surface hydrologic processes (infiltration, evapotranspiration, runoff, peak runoff rate, soil water erosion, and chemical movement) include both field scale measurement method and empirical model. Students will use the process based hydrologic (SWAT) model with a better understanding of the underlying process to predict the stream flow and water quality parameters at watershed scale. The course involves detail understanding of the step involved in modeling, model setup, sensitivity analysis, calibration, validation and long-term scenario analyses.
Corequisites: PS 723L.

PS 723L - Hydrologic Modeling Lab
Credits: 2
This course will involve simulation of water, sediment and chemical movement at watershed scale using the Soil Water Assessment Tool (SWAT) model. The course will cover different methods used to estimate and measure the surface hydrologic processes (infiltration, evapotranspiration, runoff, peak runoff rate, soil water erosion, and chemical movement) include both field scale measurement method and empirical model. Students will use the process based hydrologic (SWAT) model with a better understanding of the underlying process to predict the stream flow and water quality parameters at watershed scale. The course involves detail understanding of the step involved in modeling, model setup, sensitivity analysis, calibration, validation and long-term scenario analyses.
Corequisites: PS 723.

PS 732 - Field Studies in Pedology
Credits: 2
Field techniques used in soil classification will be learned by studying soils during a week-long field exercise. Soil genesis and land use applications will be investigated. The impact of soils upon agronomic management and research will be presented. The class may be repeated for a maximum of 4 credits.

PS 733 - Advanced Soil Genesis
Credits: 3
Detailed study of the processes of soil genesis and an examination of soil and ecosystems with respect to the soil forming factors of time, parent material, topography, climate and organisms.

PS 735 - Next Generation Sequencing Data Analysis
Credits: 2
This course covers bioinformatics applications in next-generation sequencing (NGS) data analysis for students in plant science, biology and microbiology, computer science, and mathematics and statistics. The students will be exposed to general/advanced computational techniques for NGS data analysis, public databases/web servers, and major bioinformatic algorithms and programs. A project-based strategy will be adopted throughout the class so that students can understand algorithms in the context of solving the biological problems.
Prerequisites: STAT 535 or STAT 541.

PS 741 - Crop Breeding Techniques
Credits: 1
A techniques course where artificial hybridization of crop plants will be demonstrated and carried out. Background material will be offered with each crop. Both field and horticultural crops are included.

PS 743 - Environmental Soil Physics
Credits: 2
The exchange of energy and water at soil surfaces, infiltration and redistribution of water and soil physical properties related to plant growth. Emphasis on applications in development and utilization of soil and water resources in a manner consistent with preservation of environmental quality.
Corequisites: PS 743L.

PS 743L - Environmental Soil Physics Lab
Credits: 1
The exchange of energy and water at soil surfaces, infiltration and redistribution of water and soil physical properties related to plant growth. Emphasis on applications in development and utilization of soil and water resources in a manner consistent with preservation of environmental quality.
Corequisites: PS 743.

PS 744 - Soil Nitrogen, Phosphorous, and Potassium
Credits: 3
Plant-soil nutrient relationships including nutrient sink development, uptake, transport to roots, labile soil sources, nutrient deficiencies, and their corrections. Emphasis on nitrogen, phosphorus and potassium.

PS 746 - Plant Breeding
Credits: 3
Plant Breeding applied to field crops and horticultural varieties with particular emphasis on the relationship of genetics and allied subjects.

PS 753 - Soil Water Quality in Bioenergy Feedstock Production Systems
Credits: 3
An examination of the fundamentals of soil and water quality applied to proposed and existing bioenergy feedstock production systems. Current research results related to biomass removal and by-product addition to soils will be discussed and evaluated.

PS 756 - Quantitative Genetics and Data Analytics
Credits: 3
This course provides advanced training in quantitative genetics and analytics for large datasets thus equipping students with tools to analyze complex traits in breeding programs and research. Combining lectures with hands-on activities, it covers both fundamental and advanced concepts for students across various disciplines.
Prerequisites: STAT 541.

PS 763 - Crop Physiology
Credits: 3
Systems analysis of factors which limit or increase crop production and the potential for qualitative and quantitative adjustments.

PS 781 - Plant Science Graduate Seminar
Credits: 1
Students will explore and learn best practices in scientific communication, particularly the development and delivery of scientific presentations. Course activities include discussing and learning components of scientific presentations, developing and peer evaluation of single component communications, visual and oral presentations, and abstracts, and presenting their final work to other researchers in the Department.

PS 785 - Soil and Plant Analysis
Credits: 2
The analysis of soil and plant material for constituent elements. Topics include: Material sampling and preparation, extraction and determination method, theoretical principles of analysis, accuracy and precision. Emphasis on common soil and plant test indices.
Registration Restriction: Instructor consent.
Corequisites: PS 785L.

PS 785L - Soil and Plant Analysis Lab
Credits: 1
Laboratory experience to accompany PS 785.
Corequisites: PS 785.

PS 787 - Advanced Plant Breeding
Credits: 3
This course addresses the principles and methodologies of plant breeding and discusses their applications to practical breeding programs. Students formulate, develop, and implement strategies for managing the operation of plant breeding endeavors. This course covers issues relating to the development of crop cultivars and germplasm, e.g. genetic principles, methodologies, technologies, evaluation and selection, and perpetuation through a plant breeding program. In addition, the course covers advanced genomic techniques of selection and genomic characterization of agronomic and biotic, and abiotic stress tolerance traits in plant breeding programs.
Prerequisites: PS 746 and PS 756.

PS 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

PS 791 - Independent Study (COM)
Credits: 1-5
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

PS 792 - Topics (COM)
Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

PS 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

PS 898D - Dissertation (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

PSYC (Psychology)

PSYC 505 - Behavior Technician Fundamentals
Credits: 3
This course will introduce students to the application of Applied Behavior Analysis (ABA). Students will gain knowledge on operant behavior, applications of instructional, measurement, and graphing strategies, as well as ethical and professional skills related to working on a team, building each of these areas to competency. Students successfully completing the course requirements will leave with a completed Registered Behavior Technician (RBT) initial competency exam.
Cross-Listed: SPED 505.

PSYC 532 - Human Factors Psychology (COM)
Credits: 3
A broad overview of and foundation for research and practice in the field of human factors and ergonomics. Attention to human capabilities and limitations in systems tasks, design of human-machine interfaces, and systems design and analysis.

PSYC 691 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

PSYC 692 - Topics (COM)
Credits: 1
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

PSYC 717 - Applied Research Methods in I/O Psychology
Credits: 4
Integration of research design, methodology, and statistical analysis (regression and analysis of variance) as typically used by I/O psychologists. Students learn how to select appropriate methodologies for the study of issues in I/O psychology, analyze quantitative data using SPSS statistical software, interpret results accurately, and discuss and report statistical findings.

PSYC 730 - Tests and Measurements
Credits: 3
An overview of the development, use, and validation of psychological tests used in organizational contexts. Topics include reliability and validity, test construction, item analysis, ethics, test administration, and computerized testing.

PSYC 731 - Work Attitudes Theory and Measurement
Credits: 3
Exploration of employee attitudes, attitude change, and the measurement of job-related attitudes through the use of organizational surveys. Through practical experience with surveys, students develop skills in survey techniques.

PSYC 735 - Organizational Development
Credits: 3
This course explores the theory and practice of organizational change and development, change processes, organizational development interventions, and the evaluation organizational development initiatives within organizations.

PSYC 792 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

PSYC 794 - Internship (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

PSYC 798 - Thesis (COM)
Credits: 1-6
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

PUBH (Public Health)

PUBH 540 - Health Geography
Credits: 3
The course will explore the history of health geography, its role in public health and other health applications, the use of maps, geospatial methods and GIS within health programs and initiatives, all from the geographic perspective and how place impacts the overall health of communities.
Cross-Listed: GEOG 540.

PUBH 702 - Public Health Theory and Practice (COM)
Credits: 3
Introduction to the theory and practice of public health. This course will address foundational public health knowledge including topics related to the profession and science of public health as well as public health factors related to human health.

PUBH 720 - Public Health Practice (COM)
Credits: 3
This is a supervised graduate practicum in a public health environment for MPH students to integrate program curriculum in an applied setting. Special attention will be given to ethical considerations of public health practices.

PUBH 721 - Public Health Applied Practice Experience I (COM)
Credits: 1
Students will have the opportunity to build on public health knowledge gained throughout the program and develop practice-based skills that enhance individual career goals. Through course projects and community engagement, students will be able to demonstrate additional skills such as leadership, communication, and teamwork.
Registration Restriction: Admission into the Master of Public Health program.

PUBH 722 - Public Health Applied Practice Experience II (COM)
Credits: 1
This course builds on knowledge and skills gained in Public Health Applied Practice Experience I. Students will continue to build on and apply knowledge gained throughout the program and develop practice-based skills that enhance individual career goals. Throughout this course students will gain community-based public health practice experience and begin developing their final capstone project.
Prerequisites: PUBH 721.

PUBH 723 - Public Health Applied Practice Experience III (COM)
Credits: 1
This is the final course in the Public Health Applied Practice Experience series. Students will finalize their capstone project outlines in preparation for the Public Health Integrative Learning Experience.
Prerequisites: PUBH 722.

PUBH 729 - Leadership and Project Management in Public Health (COM)
Credits: 3
This course will cover fundamentals of leadership and project management as they apply to public health. Students will apply this knowledge in the development of capstone project plans in preparation for the Public Health Integrative Learning Experience.
Registration Restriction: Admission into the Master of Public Health program and PUBH 721.

PUBH 730 - Public Health Integrative Learning Experience (COM)
Credits: 3
This culminating course in the MPH program allows students to integrate and synthesize the curriculum in seminar discussion and through a large research paper on contemporary public health science and practices that can be published in a peer-reviewed journal or presented at a state or national professional meeting.
Prerequisites: (PUBH 720 or PUBH 723) and PUBH 729.

PUBH 733 - Environmental Health
Credits: 3
This course examines causes and approaches to control environmental health problems including consideration of human health risks and effects of biological, chemical, and physical agents affecting individuals and communities. Topics include the environmental regulatory framework; identification of susceptible populations; approaches to environmental risk assessment, abatement, protection, and prevention; environmental justice principles and stakeholder interests; and the public health basis for environmental health policy decisions.
Registration Restriction: Admission into the Master of Public Health program or permission of instructor.
Cross-Listed: HSC 733.

PUBH 751 - Public Mental Health
Credits: 3
Explore topics on the connection between physical and mental health, social determinants linked to behavioral disorders, community-based approaches to mental health care, and prevention strategies.

PUBH 752 - Injury Epidemiology, Prevention and Intervention
Credits: 3
This course will cover injury prevention to include both unintentional and intentional injury. Students will become familiar with the leading causes of fatal and non-fatal injuries in the United States, critically analyze the injury prevention literature, become familiar with injury surveillance data, and explore successful intervention and implementation strategies.
Prerequisites: PUBH 710 or instructor consent.

PUBH 753 - Maternal and Child Health
Credits: 3
This course provides a public health perspective for assessing and approaches to meeting the health needs of women, children, adolescents, and families in the United States. Historical and current principles, programs, policies, and practices related to Maternal and Child Health (MCH) populations are examined.

PUBH 754 - Mixed Methods in Public Health Research
Credits: 3
This course outlines a public health approach for conducting mixed methods research. Students will integrate quantitative and qualitative research methods into research designs, and will explore specific methodologies, such as community-based participatory research. Students will also examine the strengths and limitations of using mixed methods frameworks to address public health questions of interest.
Prerequisites: PUBH 710.

PUBH 755 - Program Planning and Evaluation
Credits: 3
An introduction to public health program planning and evaluation including: target population needs assessment; stakeholder engagement; and public health program design, organization, leadership, utilization, resource management, and evaluation.
Registration Restriction: Admission into the Master of Public Health program or permission of instructor.
Cross-Listed: HSC 755.

PUBH 761 - Social Epidemiology
Credits: 3
This course will combine theory from the social sciences with rigorous epidemiological methods to explain the connections between social factors and health status. An emphasis will be placed on social inequalities and health inequalities/disparities. Throughout this course, students will gain an understanding of the ways in which social, psychological, political, cultural, and economic circumstances influence our chances for a healthy life.

PUBH 762 - Cultural Perspectives in Public Health
Credits: 3
This course will offer an in-depth view of the concept of culture as one framework for understanding human behavior as it relates to the general relationship between culture and health and specifically population health.

PUBH 764 - Applied Dissemination and Implementation Research in Health
Credits: 3
An introduction to theories and methods in dissemination and implementation research applied to clinical and public health. Analysis of factors and application of frameworks and processes to enhance uptake and utilization of population-based interventions (dissemination research) and successfully integrate and implement evidence-based interventions to achieve desired outcomes in targeted clinical and community settings (implementation research).
Cross-Listed: HSC 764.

PUBH 767 - Public Health Toxicology
Credits: 3
This course describes how selected classes of environmental contaminants interact with cellular processes, biochemical reactions, organs, tissues and the endocrine system. Students will explore the influences on individuals, populations and ecosystems and identify key public health prevention, removal techniques, and risk communication strategies with a focus on rural and underserved populations.

PUBH 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

PUBH 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

PUBR (Public Relations)

PUBR 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

RANG (Range Science)

RANG 510 - Grassland Monitor and Assessment
Credits: 2
A course emphasizing the quantitative measures used in vegetation analysis, root growth, and utilization. Vegetation sampling theory and plot selection will be covered. Use of similarity index, health, and trend for grassland monitoring and assessment will be explained. Basic statistics and the microcomputer will be used to analyze biomass, basal cover, frequency, and density data.
Notes: Sections of this course are provided online through the Innovative Digital Education Alliance.

RANG 520 - Watershed Management
Credits: 3
Study of the management of physical/biological settings and processes along with the human activities on water and watershed considering preventative and restorative strategies in a natural resource rangeland setting.
Notes: Sections of this course are provided online through the Innovative Digital Education Alliance.

RANG 521 - Grassland Fire Ecology
Credits: 3
The course is designed to describe the ecological effects of fire on grassland ecosystems. It also provides insight into the history of fires, the people who use them and why, the parts of a fire, how fires behave in relation to fuel and weather, and the conducting and safety of prescribed burns.
Notes: Spring, even years. Sections of this course are provided online through campus and the Innovative Digital Education Alliance.

RANG 525 - Rangeland Assessment and Monitoring
Credits: 2
Principles and practical application of the assessment and monitoring of rangeland plant communities. Students will learn how to set objectives, determine parameters to measure, select appropriate techniques, and analyze quantitative data. The laboratory portion will cover a wide variety of sampling techniques, collecting and analyzing of assessment and monitoring data, and learn how state and federal agencies assess and monitor rangelands. Students will also work in teams to develop a monitoring plan for a specific property, collect and analyze initial data, and present the plan and results to the land owner.
Corequisites: RANG 525L.
Notes: Fall, odd years.

RANG 525L - Rangeland Assessment and Monitoring Lab
Credits: 1
The laboratory portion of this course will cover a wide variety of sampling techniques, collecting and analyzing of assessment and monitoring data, and learn how state and federal agencies assess and monitor rangelands.
Corequisites: RANG 525.
Notes: Fall, odd years.

RANG 530 - Ecology of Invasive Species
Credits: 3
Ecological principles and their application to invasive species. Discussion of population, community, and ecosystems level characteristics affecting a wide variety of invasive plant and animal species. Discussions will include current global consequences and governmental policies/programs designed to limit the spread of invasives.
Notes: Sections of this course are provided online through the Innovative Digital Education Alliance.

RANG 540 - Grassland Plant Identification
Credits: 2
Study of plants that have ecological and/or agricultural importance in the Great Plains, Plant identification, Grassland ecosystems and plants forage value, palatability, and utilization by both domestic livestock and wildlife. Cultural and historical uses of grassland.
Notes: Sections of this course are provided online through the Innovative Digital Education Alliance.

RANG 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

RANG 592 - Topics (COM)
Credits: 1-4
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

RANG 710 - Principles of Forage Quality
Credits: 3
The course provides an in-depth study of the chemical characteristics of forage components and the interactions with ruminant physiology and digestion that influence forage feeding value and the laboratory procedures used to evaluate forages for grazing livestock. Students should have knowledge of the basic principles of chemistry, ruminant nutrition, and plant physiology so that they can develop an understanding of the chemical characteristics of forages and how they affect the value of forages to grazing livestock.
Notes: Sections of this course are provided online through the Innovative Digital Education Alliance.

RANG 750 - Grazing Ecology and Management
Credits: 3
Ecological principles of domesticated livestock grazing and their application to manage grazing lands will be discussed. Theoretical and applied models of plant/animal interactions will be presented. Grazing systems and their management of ecosystem services will be presented as balance between production and conservation outcomes.
Notes: Sections of this course are provided online through campus and the Innovative Digital Education Alliance.

RANG 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

RANG 792 - Topics (COM)
Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

RECR (Recreation)

RECR 515 - Sport and Recreation Facility Management
Credits: 3
This course provides students with an advanced study of the management of recreation and sport facilities. Including planning and design, operations, fiscal and personnel management, legal considerations, safety and control, maintenance, and equipment.

RECR 586 - Sport Law
Credits: 3
The course will demonstrate how constitutional law, contract law, tort law, labor and anti-trust law, apply to the sport industry. In addition the course will provide a fundamental understanding of the court system and how legal issues are decided.

RECR 750 - Foundations of Sport and Recreation Administration
Credits: 3
This course will emphasize the management functions of planning, organizing, implementing, and controlling of the different fields within the sport and recreation management industry. Decision-making, problem solving, communications, ethics, issues, and trends will be covered.

RECR 760 - Advanced Sport and Recreation Marketing
Credits: 3
This course provides students with an advanced study of the principles of marketing through sport and recreation including market research and analysis, development of a strategic marketing plan, using the 4 P's of marketing (promotion, place, price, and product) as they apply primarily to the collegiate sport and recreation setting.

RECR 762 - Ethics in Sport and Recreation
Credits: 3
This course will enable students to gain a deeper understanding of the moral reasoning processes of sport and recreation administration professionals primarily in the collegiate setting. Students will develop the knowledge, skills, and abilities to apply moral reasoning in dealing with ethical dilemmas in sport and recreation administration. Additionally, students will explore and clarify their career goals, as well as, gain hands on experience to further their professional development.

RECR 770 - Sport and Recreation Administration
Credits: 3
This course provides theoretical and practical knowledge in the administration and leadership of sport and recreation organizations. Specific administration techniques and theories will be studied to provide the foundation for effective leadership in sport and recreation organizations.
Registration Restriction: Instructor consent.

RECR 771 - Seminar in Sport and Recreation Administration
Credits: 3
This course examines a variety of current issues related to the administration of sport and recreation organizations. Topics include social-cultural issues, mass communication, economic issues, legal issues, event management, fundraising and development, etc.

RECR 772 - Financial Aspects of Sport and Recreation Administration (COM)
Credits: 3
This course examines basic financial and managerial accounting concepts necessary to be financially literate in sport and recreation organizations. Budgeting and fundraising concepts will also be addressed, as well as, corporate financial principles.

REL (Religion)

REL 554 - Environmental Ethics (COM)
Credits: 3
Presents humanity's relationship to the environment, its responsibility to nature, and its obligations to future generations, attending to both theory and applications, including the debate over causes of environmental crisis, the value of endangered species, the wilderness, and natural objects; the seriousness of the growing global population and obligations to feed the poor, the feasibility of sustaining an ecological responsible society.
Cross-Listed: PHIL 554.

SE (Software Engineering)

SE 592 - Topics (COM)
Credits: 1-5
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

SEED (Secondary Education)

SEED 502 - Methods in Career and Technical Education (COM)
Credits: 2-3
This course will introduce participants to the field of Career and Technical Education (CTE) and focus on effective teaching practices, curriculum development and methods of delivering instruction. The course is designed for individuals who are presently teaching in a technical education field and/or currently working toward CTE teacher certification. Instructional techniques appropriate for CTE are developed based on the models identified in competency-based or performance-based education.

SEED 550 - Reading and Content Literacy (COM)
Credits: 2-3
This course explores methods for teaching middle and high school students to read, write, think, and learn in ways that allow them to master the subject matter and meaningfully apply their understanding. Participants learn to plan lessons that teach content and nurture greater literacy. Pre-, during-, and post-reading strategies and writing strategies are explored, along with assessment methods that give students a continual view of their literacy progress and achievement. Classroom adaptations for culturally and linguistically diverse populations in the content areas are also addressed.

SOC (Sociology)

SOC 500 - Social Policy (COM)
Credits: 3
A review of social welfare legislation; current trends and issues in, and implementation and administration of, social policy in a variety of practice areas.

SOC 501 - The Research Process
Credits: 3
Topics include conceptions of research, the philosophy of science, formal and grounded theory construction, the use of research literature, and qualitative, quantitative, and mixed approaches to research design.

SOC 502 - Social Deviance (COM)
Credits: 3
This course examines the nature of negatively evaluated behaviors and the process by which customs, rules and normative structure of society are constructed.

SOC 504 - Sociological Inquiry
Credits: 3
An introduction to philosophy of science and connections with quantitative and qualitative research. Students will learn how to apply framework as used in applied sociology.

SOC 516 - Drugs and Society
Credits: 3
The course will examine explanations of drug use and the social construction of drug policies. Students will discuss the methods used to study patterns of drug use and theories of drug abuse and take an in-depth look at the histories, pharmacologies, and patterns associated with the most popular drugs. Students will study the social control of drugs, the connections between drugs and crime, and the causes and consequences of modern U.S. international drug policies.
Cross-Listed: CJUS 516.

SOC 533 - Leadership and Organizations
Credits: 3
Emphasis is on the emergence of leadership patterns, group dynamics, small groups, and leadership in management.

SOC 540 - Urban Sociology (COM)
Credits: 3
A study of the urban community, focusing on its development, social structures and institutional patterns.

SOC 555 - Juvenile Delinquency (COM)
Credits: 3
A study of the youthful offender and the causes and consequences of delinquent behavior; preventive and rehabilitative programs are also discussed.

SOC 562 - Population Studies
Credits: 3
A study of human populations with respect to size, distribution, and structure, with emphasis on theories of population growth and decline, population policies, and impacts on the environment.

SOC 583 - Sociology of Gender Roles (COM)
Credits: 3
Female and male roles in relation to on another in a changing world are foci of this course. the nature of gender roles, their origin and maintenance, institutional features, and their variations over time and across cultures are examined.

SOC 590 - Seminar (COM)
Credits: 1-3
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

SOC 594 - Internship (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

SOC 707 - Sociological Practice and Public Policy
Credits: 3
This is an advanced course in the history, issues, theories, and methods of sociological practice; the social and political issues involved in sociological practice will also be covered.

SOC 709 - Evaluation Research
Credits: 3
Focus on the conceptualization and design of evaluation studies of various governmental programs. Design includes clarification of objectives, selection of appropriate collection techniques, and specification of target groups.

SOC 710 - Research Methods
Credits: 3
Major emphasis will be given to research design, problems of measurement, methods of data collection, and analysis and interpretation of data; including implications for basic and applied sociologies. An integral part of the course will be the development of a research project dealing with a current sociological issue or applied problem.

SOC 711 - Qualitative Research Methods
Credits: 3
Qualitative research methods of data collection, analysis, and presentation are examined; emphasis on fieldwork involving participant observation and intensive interviewing; includes consideration of the rationale, theoretical underpinnings and limitations of qualitative research; including implications for basic and applied sociologies.

SOC 712 - Sociological Theory I
Credits: 3
Critical examination and application of the main schools of sociological theory beginning with the system of Auguste Comte and ending with World War II.

SOC 713 - Sociological Theory II
Credits: 3
Sociological theories and issues from World War II to present; includes implications for basic and applied sociologies.

SOC 714 - Race, Class, Gender Intersections
Credits: 3
This class examines past and current research and theory in the discipline of sociology addressing race, class and gender intersections. Students will explore the transformation of these frameworks into concrete research at the micro-, meso- and macro-levels.

SOC 721 - Social Stratification
Credits: 3
Theories of social stratification. Relationship between social class and education, occupational choice, political preference, religious affiliation and social mobility.

SOC 725 - Social Organization
Credits: 3
Elements of social organization. Analysis of social groups and complex social organizations. Examination of conditions and factors related to the integration and disintegration of social organizations.

SOC 726 - Teaching Sociology
Credits: 2
This course deals with pedagogical issues, theories, and techniques for teaching face-to-face and on-line college/university courses in sociology; students will identify and discuss the goals and purposes of higher education as they relate to teaching sociology; they will also design a course and develop a teaching philosophy statement, student learning outcomes, a course syllabi, lesson plans/training modules, and means of student assessment consistent with the teaching philosophy.

SOC 727 - Teaching Sociology Practicum
Credits: 1-3
This is a supervised teaching experience; theoretical, pedagogical, and teaching issues will be discussed as they relate to this experience.
Prerequisites: SOC 726.

SOC 738 - Scholarship of Teaching and Learning
Credits: 2
This course focuses on the methods of systematic inquiry used to determine the extent to which an instructor's teaching produces desired learning outcomes.

SOC 739 - Scholarship of Teaching and Learning Practicum
Credits: 1-3
This is a supervised SoTL experience; students will use systematic inquiry to determine the extent to which an instructor's teaching produces desired learning outcomes. Theoretical, methodological, and pedagogical issues will be discussed as they relate to this experience.
Prerequisites: SOC 738.

SOC 740 - Rural Community Development
Credits: 3
Changes occurring in rural areas and their effects upon rural communities. Basic concepts, procedures, and processes for planning in a rural environment. Some alternative approaches to rural planning. National and International perspectives.

SOC 762 - Applied Demography
Credits: 3
Focus on demographic publications and resources including Census data material; areas included are population, housing, agriculture, economics, vital statistics reports, special surveys and international materials. Emphasis on a variety of applications across disciplines. Students will also learn techniques for producing, locating, analyzing, and disseminating sociodemographic information for various geographical areas, statistical units, and political divisions; students will complete projects and sociodemographic reports.

SOC 764 - Modern Demographic Theory
Credits: 3
Overview of the explanatory factors and determinants related to the population process of fertility, mortality, and migration. Emphasis on theoretical models that focus on developed and developing countries.

SOC 766 - World Population Issues
Credits: 3
Focus on policy formulation and program evaluation as related to population issues; the political economy of national and international efforts are considered; planning a micro- and macro-level decision-making is examined; issues covered are population and resources, the value of children, international migration and major health problems.

SOC 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

SOC 790 - Seminar (COM)
Credits: 1-4
A highly focused and topical course. The format includes student presentations and discussions of reports based on literature, practices, problems, and research.

SOC 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

SOC 792 - Topics (COM)
Credits: 1-6
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

SOC 794 - Internship (COM)
Credits: 1-6
Applied, monitored and supervised, field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and or directed plan of study. A higher level of supervision is provided by the instructor in these courses.

SOC 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

SOC 898D - Dissertation (COM)
Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

SPAN (Spanish)

SPAN 591 - Independent Study (COM)
Credits: 1-6
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

SPED (Special Education)

SPED 505 - Behavior Technician Fundamentals
Credits: 3
This course will introduce students to the application of Applied Behavior Analysis (ABA). Students will gain knowledge on operant behavior, applications of instructional, measurement, and graphing strategies, as well as ethical and professional skills related to working on a team, building each of these areas to competency. Students successfully completing the course requirements will leave with a completed Registered Behavior Technician (RBT) initial competency exam.
Cross-Listed: PSYC 505.

STAT (Statistics)

STAT 510 - SAS Programming
Credits: 3
Base SAS language and procedures for accessing data, manipulating data, creating data structures, managing data, producing graphs, producing reports, error handling, accessing data using SQL, and advanced programming techniques.

STAT 514 - Basic R Programming
Credits: 1
An introduction to the R programming language. Topics will include the R programming language and environment, preparation and summarization of data, presentation of data, and programming basics.

STAT 515 - R Programming
Credits: 3
The R programming language and environment, preparation and summarization of data, programming basics, data presentation and visualization, app creation, and advanced programming techniques.

STAT 535 - Applied Bioinformatics
Credits: 3
This practical course is designed for students with biological background to learn how to analyze and interpret genomics data. Topics include finding online genomics resources, BLAST searches, manipulating/editing and aligning DNA sequences, analyzing and interpreting DNA microarray data, and other current techniques of bioinformatics analysis.

STAT 541 - Statistical Methods II
Credits: 3
Review introductory statistical experiments and basics of programming with data. Topics include parameter estimation, hypothesis testing, and model assumption evaluation in various contexts such as one-way and two-way analysis of variance, simple and multiple linear regression, factorial designs, and experimental design. Students will use statistical software to analyze data and will learn to effectively communicate the scientific reasoning, statistical procedures, and interpretations of their analysis.
Notes: Credit not given for both STAT 541 and STAT 581.

STAT 542 - Exploratory and Cloud-Based Data Analysis
Credits: 3
Introduction to the complete exploratory data analysis process, including both local and cloud-based data collection, preparation, and analysis, interpretation of analysis, and communication of interpretation. Data sets used will be related to the majors, disciplines, or professions of class participants.

STAT 545 - Nonparametric Statistics (COM)
Credits: 3
Covers many standard nonparametric methods of analysis. Methods will be compared with one another and with parametric methods where applicable. Attention will be given to: (1) analogies with regression and ANOVA; (2) emphasis on construction of tests tailored to specific problems; and (3) logistic analysis.

STAT 551 - Predictive Analytics I
Credits: 3
Introduction to Predictive Analytics. This course will examine the fundamental methodologies of predictive modeling used in financial and predictive modeling such as credit scoring. Topics covered will include logistic regression, tree algorithms, customer segmentation, cluster analysis, model evaluation, and credit scoring.
Prerequisites: STAT 686 and (STAT 515 or STAT 600).

STAT 553 - Applied Bayesian Statistics
Credits: 3
Introduction to the philosophy and practice of Bayesian statistics. Statistical methods from simple regression models through generalized linear multilevel models are studied from a Bayesian perspective. Emphasis is placed on building understanding through computational approaches using examples and simulation exercises.
Prerequisites: STAT 514 or STAT 515.

STAT 554 - Statistical Machine Learning and AI
Credits: 3
Local and cloud-based implementation and deployment of statistical machine learning for pattern recognition, clustering, and artificial intelligence.
Prerequisites: (STAT 515 or STAT 600) and STAT 601.

STAT 560 - Time Series Analysis (COM)
Credits: 3
Statistical methods for analyzing data collected sequentially in time where successive observations are dependent. Includes smoothing techniques, decomposition, trends and seasonal variation, forecasting methods, models for time series: stationarity, autocorrelation, linear filters, ARMA processes, nonstationary processes, model building, forecast errors and confidence intervals.
Prerequisites: STAT 541 or STAT 581 or STAT 686.

STAT 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

STAT 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

STAT 600 - Statistical Programming
Credits: 3
Fundamentals of statistical programming languages including descriptive and visual analytics in R and SAS, and programming fundamentals of SAS and R including logic, loops, macros, and functions.

STAT 601 - Modern Applied Statistics I
Credits: 3
This course will build upon STAT 541 and assume students have knowledge of SLR, MLR, ANOVA, and basics of statistical inference. The class will start by covering statistical graphics and the associated modern statistical computing language(s). The next section of the class will focus on non- and semi-parametric methods with a focus on the application and interpretation of the methods. The last section of the class will focus on longitudinal and repeated measure models and conclude with an overview of techniques from meta-analysis and large-scale inference.
Prerequisites: STAT 541.
Corequisites: STAT 600.

STAT 602 - Modern Applied Statistics II
Credits: 3
This course will start with an introduction to data mining techniques from multivariate data such as Principal Component Analysis, Multidimensional Scaling, and Cluster Analysis. From there we will move on to an introduction to supervised learning methods and pattern recognition with a focus on algorithmic methods. The course will finish with an overview of statistical prediction analysis relevant to business intelligence and analytics.
Prerequisites: STAT 601.

STAT 651 - Predictive Analytics II
Credits: 3
This course will examine advanced methodologies used in financial and predictive modeling. Topics covered include segmented scorecards, population stability, ensemble models, neural networks, MARS regression, and support vector machines.
Prerequisites: STAT 551.

STAT 661 - Design of Experiments I
Credits: 3
Analysis of variance, block designs, fixed and random effects, split plots and other experimental designs. Includes use of SAS proc GLM, Mixed, etc.
Prerequisites: STAT 541.

STAT 684 - Statistical Inference I
Credits: 3
The course covers various fundamental topics in mathematical statistics including probability, random variables, expectations, distribution functions and common univariate and multivariate distributions, and inequalities and convergence theorems.

STAT 685 - Statistical Inference II
Credits: 3
The course will cover fundamental topics in statistical inference. Topics will include parametric and non-parametric models and estimation, Bootstrap methods, maximum likelihood estimation, method of moments estimation, confidence intervals, and hypothesis testing.
Prerequisites: STAT 684.

STAT 686 - Regression Analysis I
Credits: 3
Covers linear regression theory using matrix formulations, inferences on parameters, BLUE properties, general linear hypothesis, and simultaneous inferences. The course also covers variables selection, model validation, diagnostic techniques, and remedial measures in multiple linear regression models.
Prerequisites: MATH 515 and STAT 684.

STAT 687 - Regression Analysis II
Credits: 3
This course is an introduction to the concepts, theory, and methods for Linear and Generalized Linear Models. The main objective for this course is to study the theory underlying LM and GLM. This includes, but not restricted to, parameter estimations and interpretations, predictions, and inference.
Prerequisites: STAT 686.

STAT 691 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

STAT 715 - Multivariate Analysis I
Credits: 3
Multiple, partial, canonical correlation test of hypothesis on means; multivariate analysis of variance; principal components; factor analysis; and discriminant analysis.
Prerequisites: MATH 515 and STAT 685.

STAT 716 - Asymptotic Statistics
Credits: 3
This course will cover modern statistical approximation theorems relating to the current statistical and machine learning literature in Mathematical Statistics. Specific topics to be covered are: Review of Stochastic Convergence (Almost-Sure representations, Convergence of Moments, Lindeberg-Feller Central Limit Theorem, etc.), Delta Method, Moment Estimators, and M- and Z-Estimators. An additional selection of 2-4 topics will also be covered that are related to the research focus of the PhD students in the class.
Prerequisites: STAT 715, STAT 684, and MATH 741.

STAT 721 - Statistical Computing and Simulation
Credits: 3
Computationally intensive statistical methods that would not be feasible without modern computational resources and statistical simulation techniques, including random variable generation methods, Monte Carlo simulation and importance sampling, Kernel smoothing and smoothing splines, bootstrap, jackknife and cross validation, regulation and variable selection in regression, EM algorithm, concepts of Bayesian inference, Markov chain Monte Carlo methods such as Gibbs sampling, and the Metropolis-Hasting algorithm.
Prerequisites: STAT 686 and STAT 715.

STAT 731 - Survival Analysis
Credits: 3
Introduction to survival data, censoring and truncation, survival function and hazard function, non-parametric methods for estimating survival curves, comparing two or more survival curves, semi-parametric proportional hazards regressions, model diagnostics, accelerated failure time and other parametric models.
Prerequisites: STAT 541 or STAT 381.

STAT 732 - Statistical Genomics
Credits: 3
Topics will include genomic data, data visualization, regression modeling and applications in genomics, dimension reduction, variable selection, genome-wide association mapping, experimental design, dose-response modeling, and simultaneous inferences in genomic data analyses.
Prerequisites: STAT 541.

STAT 736 - Bioinformatics
Credits: 3
This course is an introduction to bioinformatics for students in mathematics and physical sciences. This course will include a brief introduction to cellular and molecular biology and will cover topics such as sequence alignment, phylogenetic trees and gene recognition. Existing computational tools for nucleotide and protein sequence analysis, protein functional analysis and gene expression studies will be discussed and used.

STAT 742 - Spatial Statistics
Credits: 3
Geostatistical data analysis with variogram, covariogram and correlogram modeling. Spatial prediction and kriging, spatial models for lattices, spatial patterns.
Prerequisites: STAT 541 or STAT 560 or STAT 684 or STAT 686.

STAT 752 - Advanced Data Science
Credits: 3
This course will cover current research in the Mathematical and Statistical Sciences. The focus of the class is to introduce PhD students to the ongoing research programs of the faculty and advanced methodologies outside of the traditional core classes related to the rapidly evolving disciple of Data Science. This class can be taken multiple times for credit.
Prerequisites: STAT 687 and STAT 715.

STAT 762 - Advanced Experimental Design
Credits: 3
Linear Model interpretation in vector spaces and projections, use of generalized inverses, identifiability and estimability of contrasts, normal equations, Gauss-Markov Theorem, MVUE, distribution theory for quadratic forms, complex designs such as crossover, splitplot and repeated measures, asymptotics for general linear models, familiarity with nonparametric regression models.
Prerequisites: STAT 685 and STAT 687.

STAT 779 - Advanced Statistics Synthesis
Credits: 1
Synthesis of concepts from advanced statistics courses.
Registration Restriction: Instructor consent.

STAT 788 - Research Problems/Projects (COM)
Credits: 1-2
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

STAT 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

STAT 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

STAT 794 - Internship (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study. A higher level of supervision is provided by the instructor in these courses than is the case with field experience courses.

STAT 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

THEA (Theatre)

THEA 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

VET (Veterinary Science)

VET 524 - Medical and Veterinary Virology
Credits: 3
Basic course discussing the characterization, structure, and replication of viruses and the pathogenesis of viral disease in man and animals.
Cross-Listed: MICR 524.

VET 576 - Advanced Mammalian Physiology
Credits: 4
An advanced study of the physiological mechanisms utilized by mammals to regulate body functions with the nervous and endocrine systems, to acquire and use chemical energy from their environment, and to integrate the functions of the organs systems to maintain the health of the animal. Emphasis is placed on applying physiological concepts and principles to solve problems.
Notes: Previous courses in anatomy, physiology, and biochemistry are recommended.

VET 591 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

VET 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

VET 600 - Jackrabbit Orientation and Leadership Experience (JOALE)
Credits: 1
Orientation to the Professional Program in Veterinary Medicine, peer and faculty mentoring, and an introduction to the academic and personal skills necessary for success in the curriculum and profession.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine.

VET 601 - Microscopic Anatomy I
Credits: 1
Introduction to microscopic and ultrastructural morphology of cells, tissues, organs, and organ systems.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.
Corequisites: VET 601L.

VET 601L - Microscopic Anatomy I Lab
Credits: 1
Discussion of histology and microanatomy with an emphasis on mammalian systems via study of microscopy slides.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.
Corequisites: VET 601.

VET 602 - Integrated Biochemistry and Physiology
Credits: 7
Applications of basic biochemistry and physiology (muscle, cardiovascular, gastrointestinal, and nervous system) to the maintenance of animal wellness and interpretation of disease scenarios involving changes in physiological processes of these systems.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 603 - Anatomy I
Credits: 2
Gross and developmental anatomy of domesticated mammals and carnivore dissection using the dog as a model with comparative features of the cat.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.
Corequisites: VET 603L.

VET 603L - Anatomy I Lab
Credits: 2
Cadaver dissection of canine and feline specimens to identify specific anatomical structures of the thoracic limb, pelvic limb, neck, thorax, abdomen and head.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.
Corequisites: VET 603.

VET 604 - Clinical Skills I
Credits: 1
Basics of animal handling and restraint, foundational clinical skills in large and small animals.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 605 - Professional Development I
Credits: 1
Personal management, animal welfare, ethics, and personal finance.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 606 - Critical Scientific Reading
Credits: 1
Introduction to critical analysis and review of scientific literature, statistical analysis, and evidence-based medicine.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 607 - Immunology
Credits: 3
Introduction to innate and adaptive immunity; multidisciplinary study of cells, molecules, and mechanisms of host defense against infectious agents and cancers; overview of antibody-antigen-based testing; immune-mediated pathologies.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 608 - Rural Veterinary Practice I
Credits: 1
Introduction and development of skillsets needed for rural veterinary practitioners in the Midwest. Animal husbandry practices, production systems and management in rural settings and wellness and wellbeing topics will be explored.
Registration Restriction: Admission in the Professional Program in Veterinary Medicine or instructor consent.

VET 621 - Professional Development II
Credits: 1
Social, economic, legislative, and health consequences of human-animal interaction and an introduction to production agriculture, population medicine, and veterinary career paths.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 622 - Anatomy II
Credits: 2
Gross and developmental anatomy of domesticated mammals and an ungulate dissection that focuses on the horse with emphasis on clinically important aspects of ruminant and swine anatomy.
Prerequisites: VET 603.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.
Corequisites: VET 622L.

VET 622L - Anatomy II Lab
Credits: 2
Cadaver dissection of ruminant and swine specimens to identify specific anatomical structures.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.
Corequisites: VET 622.

VET 623 - Clinical Skills II
Credits: 1
Basics of animal handling and restraint, foundational clinical skills in large and small animals.
Prerequisites: VET 604.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 624 - Physiology II
Credits: 4
Applications of basic biochemistry and physiology (muscle, cardiovascular, gastrointestinal, and nervous system) to the maintenance of animal wellness and interpretation of disease scenarios involving changes in physiological processes of these systems.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 625 - Basic Pathology
Credits: 2
Reactions of cells and tissues to injury, including retrogressive changes, cell death, pigments, circulatory disturbances, inflammation, and alterations of cell growth.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 626 - Agents of Disease I
Credits: 4
Virology, bacteriology, and parasitology of common domestic species of animals.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 627 - Preventative Medicine
Credits: 4
Preventive care of common domestic species. Behavior, nutrition, vaccinology, parasite control, reproduction control, management of neonates, biosecurity, dentistry, drug management.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 628 - Microscopic Anatomy II
Credits: 1
Identification, description, and understanding of basic structure and elements of cells and basic tissues and the identification and description of the structure and organization of organ systems.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.
Corequisites: VET 628L.

VET 628L - Microscopic Anatomy II Lab
Credits: 1
Discussion of histology and microanatomy with an emphasis on mammalian systems via study of microscopy slides.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.
Corequisites: VET 628.

VET 629 - Clinical Correlations I
Credits: 1
Integrative problem-based discussion of animal species to prepare students for clinical decision making and diagnostics.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 630 - Veterinary Genetics and Genomics
Credits: 1
Genetic factors and modes of inheritance influencing animal health, including autosomal recessive disorders, inbreeding, mutation, and gene regulation and expression.
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 631 - Non-Traditional Pets
Credits: 1
General biology, behavior, husbandry, nutrition, restraint and handling, and management of common disorders of special species commonly encountered in small/mixed animal practices including mammals and basic aquarium species
Registration Restriction: Admission into the Professional Program in Veterinary Medicine or instructor consent.

VET 632 - Rural Veterinary Practice II
Credits: 1
Continuation of Rural Veterinary Practice I. Introduction and development of skillsets needed for rural veterinary practitioners in the Midwest. Animal husbandry practices, production systems and management in rural settings, leadership, and wellness and wellbeing topics will be explored.
Registration Restriction: Admission in the Professional Program in Veterinary Medicine or instructor consent.

VET 640 - Agents of Disease II
Credits: 5
Virology, bacteriology, and parasitology of common domestic species of animals, and international diseases (continuation of VET 626).
Prerequisites: VET 626.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 641 - Pharmacology I
Credits: 2
Principles of pharmacokinetics as applied to the use of antimicrobials and other drugs in animal patients; clinical pharmacology of antibacterial, antifungal, and anti-parasitic drugs; principles of pharmacodynamics and adverse drug reactions; and the pharmacology of drugs affecting the autonomic nervous system and the medically-important target organs it innervates.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 642 - Systemic Pathology
Credits: 5
Reactions of specific organ systems to injury and applications to diagnosis of specific diseases at gross and microscopic levels.
Registration Restriction: Enrollment in Year Two of the Professional Program in Veterinary Medicine or instructor consent.

VET 643 - Clinical Pathology I
Credits: 3
Hematology; cytology; and integration of diagnostic plan, generation of clinical pathology data, statistical concepts, and interpretation of results to guide patient management.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 644 - Clinical Skills III
Credits: 1
Advanced clinical skills and experiential learning with large and small animals.
Prerequisites: VET 623.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 645 - Clinical Epidemiology
Credits: 2
Statistical and epidemiological concepts applied to veterinary medicine.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 646 - Public Health
Credits: 2
An epidemiological approach to veterinary public health, including major zoonoses, animal sentinels, meat and milk inspection, food safety, environment, occupational health and safety, euthanasia and carcass disposal methods, cruelty investigation, and animal welfare issues.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 647 - Small Animal Medicine I
Credits: 2
Multisystemic infectious diseases and hematological and immunological disorders in small animal species.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 648 - Diagnostic Laboratory Methods
Credits: 1
Hands-on diagnostic laboratory, including sample- handling, parasitology, microbiology, urinalysis, and serologic testing.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.
Corequisites: VET 648L.

VET 648L - Diagnostic Laboratory Methods Lab
Credits: 1
Application of diagnostic laboratory methods.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.
Corequisites: VET 648.

VET 649 - Large Animal Medicine I
Credits: 2
Multisystemic infectious diseases and hematological and immunological disorders of large animal species.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 650 - Professional Development III
Credits: 1
Problem-oriented medical records, clinical decision-making, clinical communications, and medical professionalism.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 651 - Rural Veterinary Practice III
Credits: 1
Continuation of Rural Veterinary Practice II. Introduction and development of skillsets needed for rural veterinary practitioners in the Midwest. Animal husbandry practices, production systems and management in rural settings, leadership, rural practice management, and wellness and wellbeing topics will be explored.
Registration Restriction: Admission in the Professional Program in Veterinary Medicine or instructor consent.

VET 660 - Small Animal Medicine II
Credits: 5
Common disorders of the gastrointestinal, endocrine, urinary, and dental systems in small animal species.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 661 - Small Animal Surgery I
Credits: 2
Orthopedic disorders, lameness, and abdominal surgery in small animals.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.
Corequisites: VET 661L.

VET 661L - Small Animal Surgery I Lab
Credits: 1
Cadaver labs on techniques for onychectomy, reconstructive surgery, anesthesia machine assembly/operation/identification, abdominal exploratory, bandaging/splinting, and orthopedic exams in small animals.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.
Corequisites: VET 661.

VET 662 - Large Animal Surgery I
Credits: 3
Orthopedic disorders, lameness, hoof and foot disorders, and abdominal surgery in large animals.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 663 - Veterinary Imaging I
Credits: 3
General principles of interpretation of diagnostic radiographs and musculoskeletal and abdominal radiography in large and small animals.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 664 - Pharmacology II
Credits: 2
Pharmacology of drugs affecting the urinary and digestive systems and pharmacological alleviation of inflammation and pain in animal patients.
Prerequisites: VET 641.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 665 - Clinical Skills IV
Credits: 1
Advanced clinical skills and experiential learning with large and small animals.
Prerequisites: VET 644.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 666 - Clinical Pathology II
Credits: 2
Serum chemistry analysis and integration of diagnostic plan, generation of clinical pathology data, statistical concepts, and interpretation of results to guide patient management.
Prerequisites: VET 643.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.
Corequisites: VET 666L.

VET 666L - Clinical Pathology II Lab
Credits: 1
Interpretation of clinical pathology data and results and case-based learning for enzymes, liver, protein, GI/metabolic, renal, electrolytes, acid/base, and minerals.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.
Corequisites: VET 666.

VET 667 - Avian Core
Credits: 2
Avian nutrition, physiology, anatomy, and disease.

VET 668 - Large Animal Medicine II
Credits: 3
Common disorders of the gastrointestinal, endocrine, and urinary systems in large animal species.
Prerequisites: VET 649.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 669 - Dermatology
Credits: 2
Case-based discussion of common dermatological conditions that affect animals.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 670 - Clinical Correlations II
Credits: 1
Integrative problem-based discussion of animal species to prepare students for clinical decision making and diagnostics.
Prerequisites: VET 629.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 671 - Thrive Through Life
Credits: 4
Key concepts of optimal animal care from birth to geriatric stage of life are explored in an integrative approach to develop comprehensive health care plans for the animal's life cycle.
Registration Restriction: Enrollment in Year Two of the Professional Program in Veterinary Medicine or instructor consent.

VET 672 - Professional Development IV
Credits: 1
Career planning, wellbeing, ethics, and clinical decision making for veterinary medicine students.
Registration Restriction: Enrollment in year two of the Professional Program in Veterinary Medicine or instructor consent.

VET 673 - Rural Veterinary Practice IV
Credits: 1
Continuation of Rural Veterinary Practice III. Introduction and development of skillsets needed for rural veterinary practitioners in the Midwest. Animal husbandry practices, production systems and management in rural settings, leadership, rural practice management, and wellness and wellbeing topics will be explored.
Registration Restriction: Admission in the Professional Program in Veterinary Medicine or instructor consent.

VET 788 - Research Problems/Projects (COM)
Credits: 1-3
Independent research problems/ projects that lead to research or design paper, but not to a thesis. The plan of study is negotiated by the faculty member and the candidate. Contact between the two may be extensive and intensive.

VET 791 - Independent Study (COM)
Credits: 1-4
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

VET 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

VET 793 - Workshop (COM)
Credits: 1-4
Special, intense sessions in specific topic areas. Approximately 45 hours of work is required for each hour of credit. Workshops may vary in time range but typically use a compressed time period for delivery. They may include lectures, conferences, committee work, and group activity.

VET 796 - Field Experience (COM)
Credits: 1-3
Applied, monitored, and supervised field-based learning experience for which the student may or may not be paid. Students gain practical experience; they follow a negotiated and/or directed plan of study established by the student, instructor, and field-based supervisor. Due to the presence of a field experience supervisor, a lower level of supervision is provided by the instructor in these courses than is the case with an internship or practicum course.

WL (Wildlife and Fisheries Sciences)

WL 515 - Upland Game Ecology and Management
Credits: 2
Upland game birds and mammals as components of ecosystems. Effects of farming; industry; social change; technology; and federal, state, and private programs on game and non-game species. Techniques for individual species management.
Corequisites: WL 515L.

WL 515L - Upland Game Ecology and Management Lab
Credits: 1
Laboratory experience to accompany WL 515.
Corequisites: WL 515.

WL 517 - Large Mammal Ecology and Management
Credits: 2
Explores key concepts in wildlife ecology and management, with a focus on large mammal conservation. Students will examine population dynamics, research methods, and contemporary issues such as climate change and rewilding, while integrating legal, social, and political considerations. Through lectures, labs, and fieldwork, students will develop critical thinking, data analysis, and communication skills. Guest speakers will provide real-world insights, and group research projects will address the challenges of managing large mammal populations in human-dominated landscapes.
Corequisites: WL 517L.
Notes: Spring, odd years.

WL 517L - Large Mammal Ecology and Management Lab
Credits: 1
Laboratory experience to accompany WL 517.
Corequisites: WL 517.
Notes: Spring, odd years.

WL 519 - Gamebird Ecology and Management
Credits: 2
Study of the ecological and socio-economic factors affecting upland gamebirds, waterfowl, and their habitats. Exploration of habitat management programs (federal, state, and private) and land-use practices (e.g., agriculture, grazing, fire) on game and non-game species, in all portions of their annual cycle. Techniques for individual species management.
Corequisites: WL 519L.

WL 519L - Gamebird Ecology and Management Lab
Credits: 1
Laboratory experience to accompany WL 519.
Corequisites: WL 519.

WL 525 - Wildlife Disease
Credits: 2
Expands on general ecology and wildlife management principles with a focus on diseases, population dynamics, disease monitoring, and research techniques. Students will critically evaluate wildlife literature and address contemporary issues, integrating biological, ecological, legal, social, and political aspects. Through hands-on labs and fieldwork, students will enhance their ability to synthesize complex concepts, collaborate on research projects, and communicate findings through written and oral assignments.
Corequisites: WL 525L.
Notes: Spring, even years.

WL 525L - Wildlife Disease Lab
Credits: 1
To accompany WL 525.
Notes: Spring, even years.

WL 527 - Limnology and Stream Ecology
Credits: 2
Physical, chemical, and biological characteristics of lentic freshwater ecosystems. Analysis of and methods for quantifying processes that function in lentic freshwater ecosystems.
Corequisites: WL 527L.
Notes: Fall.

WL 527L - Limnology and Stream Ecology Lab
Credits: 1
Laboratory to accompany WL 527.
Corequisites: WL 527.
Notes: Fall.

WL 529 - Ecology of Fishes and Habitat
Credits: 3
Study of fish as an organism and the interrelations of fish with other organisms and with their habitat.
Notes: Spring, odd years.

WL 531 - Advanced Fisheries Management
Credits: 2
Advanced management and ecology of public and private water bodies through manipulation of habitat, organisms, and human users. The course will address water body design and construction, limnology, hydrology, channel morphology, water quality, biological production, fish management, troubleshooting, and pond and stream opportunities.
Corequisites: WL 531L.
Notes: Fall, odd years.

WL 531L - Advanced Fisheries Management Lab
Credits: 1
Laboratory to accompany WL 531.
Corequisites: WL 531.

WL 713 - Population Dynamics
Credits: 3
Methods of analysis and interpretation of vital statistics of organismal populations. Current theories on natural regulation of organismal populations. Particular emphasis on vertebrate species of economic and/or recreational importance. Comparison of environmental controls on of various organism groups.

WL 715 - Theory and Practice of Natural Resource Science
Credits: 3
Use of the scientific method for designing wildlife research and developing proposals. Familiarization with field and laboratory methods. Practical experience with statistical data analysis.

WL 717 - Aquatic Trophic Ecology
Credits: 3
Analysis of selected biological processes influencing the organization of aquatic communities. Complex trophic interactions and their effects on the life histories and bioenergetics of aquatic organisms are examined.

WL 720 - Quantitative Fisheries Science
Credits: 3
An advanced analytical fisheries course that focuses on quantitative techniques. Emphasis is placed on populations (e.g., recruitment, growth, mortality), and quantitative assessment of communities (e.g., predatory-prey interactions) and ecosystems (e.g., biostressors). Suggested background courses include population dynamics, experimental design, and graduate statistics and/or biometry.

WL 723 - Fisheries Ecology and Management
Credits: 3
Principles and techniques of selected practices for reservoir, lake, pond and lotic fisheries management.

WL 791 - Independent Study (COM)
Credits: 1-3
Students complete individualized plans of study which include significant one-on-one student-teacher involvement. The faculty member and students negotiate the details of the study plans.

WL 792 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.

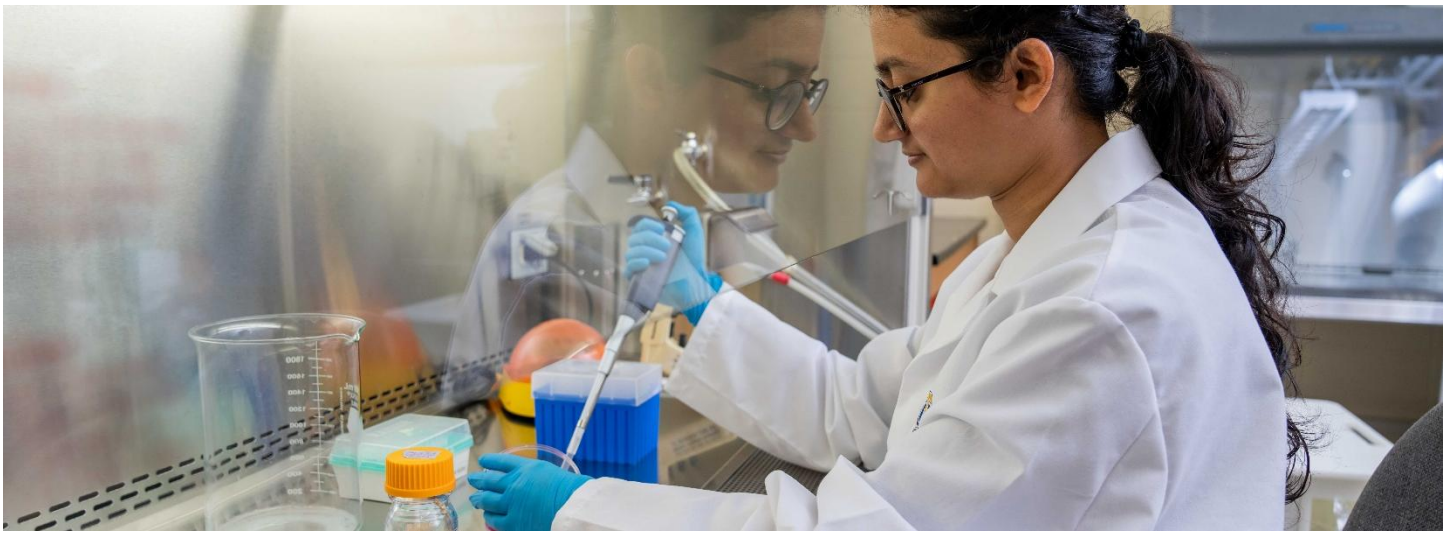
WL 798 - Thesis (COM)
Credits: 1-7
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between and among the candidate and other members of the committee.

WL 898D - Dissertation (COM)
Credits: 1-12
A formal treatise presenting the results of study submitted in partial fulfillment of the requirements for the applicable degree. The process requires extensive and intensive one-on-one interaction between the candidate and professor with more limited interaction between the candidate and other members of the committee.

WMST (Women's Studies)

WMST 519 - Women in Media
Credits: 3
This course examines contributions of women to the mass media from colonial era to present. It also studies the portrayal of women by the news media and by advertising, and it studies the roles currently played by women in the media and in supporting areas of advertising and public relations.
Cross-Listed: MCOM 519.

WMST 592 - Topics (COM)
Credits: 1-3
A course devoted to a particular issue in a specified field. Course content is not wholly included in the regular curriculum. Guest artists or experts may serve as instructors.



University Organization, Administration, and Faculty

Control of the educational institutions of the state is vested in the SD Board of Regents. The Faculty consists of the President, the Vice Presidents, the Deans and other administrative officers, teachers and researchers with rank of instructor or above. The faculty is responsible in general for academic standards and procedures and programs, including recommending to the Regents the candidates for degrees. Faculty business is conducted by the Faculty Senate, an elected body through which faculty express concerns for the welfare of the University and the university community, develop and disseminate communications, contribute to formation of general university policy, and perform those duties and functions allocated to or assumed by the faculty.

South Dakota Board of Regents

The Board of Regents is the constitutional governing board for South Dakota's six state universities: Black Hills State University, Dakota State University, Northern State University, South Dakota School of Mines and Technology, South Dakota State University, and the University of South Dakota; and two special schools: the South Dakota School for the Blind and Visually Impaired and the South Dakota School for the Deaf.

SD Board of Regents
306 East Capitol Ave
Suite 200
Pierre, SD 57501

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Jeff Partridge, President

Randy Frederick, Vice President

Miles Beacom, Secretary

Judy Dittman, Board Member

James Lochner, Board Member

Griffin Petersen, Board Member

Randy Rassmussen, Board Member

Tim Rave, Board Member

Pam Roberts, Board Member

University Leadership

Senior Team

Barry Dunn, President

Dennis Hedge, Provost and Vice President for Academic Affairs

Michael Holbeck, Vice President for Finance and Budget

Daniel Scholl, Vice President for Research and Economic Development

Michaela L. Willis, Vice President for Student Affairs and Enrollment Management

David Overby, Vice President for Technology and Security

Tracy Greene, Vice President and General Counsel

Karyn Weber, Chief of Staff

President's Council (includes Senior Team)

Teresa Seefeldt, Vice Provost for Undergraduate Education

Victor Taylor, Vice Provost for Graduate Education and Extended Studies

Vernon Brown, Associate Vice President for External Affairs

Barry Mielke, Associate Vice President for Facilities and Services

Kristi Tornquist, Chief University Librarian

Justin Sell, Director of Athletics

Mike Lockrem, Director of University Marketing and Communications

Joseph Cassady, South Dakota Corn Utilization Council Endowed Dean of Agriculture, Food and Environmental Sciences

David Earnest, Dean of the College of Arts, Humanities and Social Sciences

Evan Ortlieb, Dean of the College of Education and Human Sciences

Sanjeev Kumar, Jerome J. Lohr Endowed Dean of Jerome J. Lohr College of Engineering

Senthil Subramanian, Dean of the College of Natural Sciences

Mary Anne Krogh, Roberta K. Olson Endowed Dean of the College of Nursing

Daniel Hansen, Laughrey Endowed Dean of the College of Pharmacy and Allied Health Professions

Greg Heiberger, Dean of the Van D. and Barbara B. Fishback Honors College

Nicole Lounsbery, Director of Graduate School

Deans

College of Agriculture, Food and Environmental Sciences

Joseph Cassady, Dean

James Connors, Associate Dean

John Blanton, Associate Dean

Lisa Lunn, Associate Dean

Amanda Marney, Associate Dean

Rosemarie Nold, Assistant Dean

Kristi Cammack, Assistant Dean

College of Arts, Humanities and Social Sciences

David Earnest, Dean

Jason Zimmerman, Associate Dean

College of Education and Human Sciences

Evan Ortlieb, Dean

Matt Vukovich, Associate Dean

College of Natural Sciences

Senthil Subramanian, Dean

Bob Watrel, Interim Associate Dean

Adam Hoppe, Associate Dean

College of Nursing

Mary Anne Krogh, Dean

Heidi Mennenga, Associate Dean

Sarah Mollman, Associate Dean

Robin Arends, Assistant Dean

Karin Emery, Assistant Dean

Christina Plemmons, Assistant Dean

College of Pharmacy and Allied Health Professions

Daniel Hansen, Dean

Brad Laible, Associate Dean

James Clem, Associate Dean

Sanku Mallik, Associate Dean

H. M. Briggs Library

Kristi Tornquist, Dean

Jerome J. Lohr College of Engineering

Sanjeev Kumar, Dean

Rajesh G. Kavasseri, Associate Dean

Suzette Burckhard, Assistant Dean

Student Affairs

Tobias (Toby) Uecker, Dean

Van D. and Barbara B. Fishback Honors College

Greg Heiberger, Dean

School Directors and Department Heads (by College)

College of Agriculture, Food and Environmental Sciences

Kasiviswanathan Muthukumarappan, Department of Agricultural and Biosystems Engineering

Karen Sanguinet, Department of Agronomy, Horticulture and Plant Science

Michael Gonda (Interim), Department of Animal Science

Londa Nwadike, Department of Dairy and Food Science

Alexander Smart (Interim), Department of Natural Resource Management

Angela Pillatzki, Department of Veterinary and Biomedical Sciences

Joseph Santos, Ness School of Management and Economics

College of Arts, Humanities and Social Sciences

Gary Priest, Department of Aerospace Studies

John Peary, Department of Military Science

Joseph Santos, Ness School of Management and Economics

Christine Garst-Santos, School of American and Global Studies

Joshua Westwick, School of Communication and Journalism

Pat Crawford, School of Design

Jason McEntee, School of English and Interdisciplinary Studies

Paul D. Reynolds, School of Performing Arts

Tyler Miller, School of Psychology, Sociology and Rural Studies

College of Education and Human Sciences

Amber Letcher (Interim), School of Counseling, Human Development and Family Science

Anne Karabon, School of Education

Jessica Meendering, School of Health and Human Sciences

College of Natural Sciences

Yajun Wu (Interim), Department of Biology and Microbiology

Brian Logue, Department of Chemistry, Biochemistry and Physics

Bob Watrel, Department of Geography and Geospatial Sciences

College of Nursing

Heidi Mennenga, Department of Graduate Nursing

Heidi Mennenga, Department of Undergraduate Nursing

College of Pharmacy and Allied Health Professions

Deidra Van Gilder (Interim), Department of Allied and Population Health

Shanna O'Connor, Department of Pharmacy Practice

Hemachand Tummala, Department of Pharmaceutical Sciences

Jerome J. Lohr College of Engineering

Kasiviswanathan Muthukumarappan, Department of Agricultural and Biosystems Engineering

Guanghui Hua, Department of Civil and Environmental Engineering

Suzette Burckhard (Interim), Department of Construction and Concrete Industry Management

Department of Mathematics and Statistics

Yucheng Liu, Department of Mechanical Engineering

Rajesh Kavasseri (Interim), McComish Department of Electrical Engineering and Computer Science

Joseph Santos, Ness School of Management and Economics

University Administration and Faculty Listing

Administration

Dunn, Barry, President, Professor of Animal Science, Graduate Faculty; B.S., South Dakota State University, 1975; M.S., 1977; Ph.D., 2000.

Brown, Vernon, Associate Vice President for External Affairs; B.A., South Dakota State University, 1990.

Greene, Tracy A., Vice President and General Counsel; B.S., University of Idaho, 2000; J.D., 2003.

Hedge, Dennis, Provost and Vice President for Academic Affairs, Professor of Pharmacy Practice, Graduate Faculty; Pharm.D., University of Kansas, 1991.

Holbeck, Michael, Vice President for Budget and Finance; B.S., South Dakota State University, 2008; M.S., 2008; Ph.D., 2017.

Lockrem, Mike, Director of University Marketing and Communications; B.A., University of Montana, 1997; M.Ed., University of Minnesota, 2002.

Mielke, Barry A., Associate Vice President for Facilities and Services, Director of Energy Services; B.S., South Dakota State University, 2002; M.S., 2018.

Overby, David, Vice President for Technology and Security; B.B.A., University of North Dakota, 1998; MMgt, University of Mary, 2002.

Scholl, Daniel, Vice President for Research and Economic Development, Professor, Graduate Faculty; B.S., University of California, 1985; DVM, 1987; M.P.V.M., 1988; Ph.D., State University of Utrecht (the Netherlands), 1992.

Seefeldt, Teresa M., Vice Provost for Undergraduate Education, Associate Professor of Pharmaceutical Sciences, Graduate Faculty; B.S., South Dakota State University, 2002; Pharm.D., 2004; Ph.D., 2007.

Sell, Justin, Director of Athletics; B.S., Bowling Green State University, 1991; M.A., The Ohio State University, 1992.

Taylor, Victor, Vice Provost for Graduate Education and Extended Studies, Professor of English, Graduate Faculty; B.A., Le Moyne College, 1986; M.A., Syracuse University, 1989; Ph.D., 1995.

Weber, Karyn L., Chief of Staff; B.S., South Dakota State University, 1990; M.A., 1992.

Willis, Michaela, Vice President for Student Affairs and Enrollment Management; B.A., Doane College, 2000; M.A.M., 2004; Ph.D., University of Nebraska-Lincoln, 2014.

Deans, Associate Deans, and Assistant Deans

Arends, Robin, Assistant Academic Dean for Cooperative Programs/APRN Program Director, Clinical Associate Professor of Nursing, Graduate Faculty; B.S., Briar Cliff, 2001; M.S., South Dakota State University, 2008; DNP, 2014., Post-graduate Certification, 2021.

Blanton Jr., John, Associate Dean of Research in the College of Agriculture, Food, and Environmental Sciences, Director of the South Dakota Agricultural Experiment Station, Professor of Animal Science; B.S., New Mexico State University, 1993; M.S., 1995, Ph.D., Purdue University, 1998.

Burckhard, Suzette R., Assistant Dean for Academic Programs of the Jerome J. Lohr College of Engineering, Professor of Civil and Environmental Engineering, Graduate Faculty; B.S., South Dakota State University, 1986; M.S., Kansas State University, 1992; M.S., 1993; Ph.D., 1997.

Cassady, Joseph, South Dakota Corn Utilization Council Endowed Dean of Agriculture, Food and Environmental Sciences, Professor of Animal Science, Graduate Faculty; B.S., Iowa State University, 1993; M.S., University of Nebraska-Lincoln, 1995; Ph.D., 1999.

Clem, James, Associate Dean of Student Services for the College of Pharmacy and Allied Health Professions, Professor of Pharmacy Practice, Graduate Faculty; B.S., University of Iowa, 1989; Pharm.D., 1991.

Connors, James, Associate Dean and Director of Academic Programs in the College of Agriculture, Food, and Environmental Sciences, Professor of Agricultural Education; B.S., Michigan State University, 1984; M.S., 1990; Ph.D., 1992.

Earnest, David, Dean of the College of Arts, Humanities and Social Sciences, Professor; B.A., Stanford University, 1991; M.A., George Washington University, 1994; Ph.D., 2004.

Emery, Karin, Assistant Dean of Nursing - Brookings and Associate Professor, Graduate Faculty; B.S.N., Medical University of South Carolina, 1997; M.S., Virginia Commonwealth University, 2011; Ph.D., 2019.

Hansen, Daniel, J. Bruce Laughrey Endowed Dean of the College of Pharmacy and Allied Health Professions, Professor of Pharmacy Practice; B.S., South Dakota State University, 2003; Pharm.D., 2005.

Heiberger, Greg, Dean of the Van D. and Barbara B. Fishback Honors College, Associate Professor of Biology and Microbiology, Graduate Faculty; B.S., South Dakota State University, 2004; M.S., 2006; Ph.D., Colorado State University, 2013.

Hoppe, Adam, Associate Dean for Research of the College of Natural Sciences, Professor of Biochemistry, Graduate Faculty; B.A., Concordia College, 1997; M.S., University of Wisconsin-Madison, 1999; Ph.D., University of Michigan, 2003.

Kavasseri, Rajesh G., Associate Dean for Research of the Jerome J. Lohr College of Engineering, Professor of Electrical Engineering; B.S., Visvesvaraya National Institute of Technology, 1995; M.S., Indian Institute of Science, 1998; Ph.D., Washington State University, 2002.

Krogh, Mary Anne, Roberta K. Olson Endowed Dean of the College of Nursing, Professor of Nursing, Graduate Faculty; B.S., South Dakota State University, 1985; M.S., Saint Mary's University of Minnesota, 1995; Ph.D., South Dakota State University, 2011.

Kumar, Sanjeev, Jerome J. Lohr Endowed Dean of the Jerome J. Lohr College of Engineering, Professor of Civil Engineering, Graduate Faculty; Diploma in Civil Engineering, Thapar Polytechnic, India, 1984; Baccalaureate, The Institution of Engineers, India, 1986; M.S., University of Missouri-Rolla, 1993; Ph.D., 1996.

Laible, Brad R., Associate Dean for Academic Programs, College of Pharmacy and Allied Health Professions, Professor of Pharmacy Practice, Graduate Faculty; B.S., South Dakota State University, 1999; Pharm.D., 2001.

Lunn, Lisa, Associate Dean and Director of the Professional Program in Veterinary Medicine, Professor of Veterinary and Biomedical Sciences; A.A.S., State University of New York at Dehli, 1987; B.S., Kansas State University, 1996; DVM, 1999.

Mallik, Sanku, Associate Dean of Research, College of Pharmacy and Allied Health Professions, Professor of Pharmaceutical Sciences; B.S., Indian Institute of Technology (India), 1987; Ph.D., Case Western Reserve University, 1992.

Mennenga, Heidi A., Associate Dean for Academic Programs for the College of Nursing, Professor, Graduate Faculty; B.S., South Dakota State University, 2001; M.S., South Dakota State University; 2006; Ph.D., University of Nevada, 2010.

Mollman, Sarah, Associate Dean for Research of the College of Nursing, Associate Professor; Graduate Faculty; B.S.N., South Dakota State University, 2000; M.S., 2011; Ph.D., University of Nevada, 2018.

Nold, Rosemarie, Assistant Dean of the College of Agriculture, Food, and Environmental Sciences, Director of Global Agricultural Leadership, Professor of Animal Science, Graduate Faculty; B.S., South Dakota State University, 1988; M.S., Kansas State University, 1990; Ph.D., South Dakota State University,1997.

Ortlieb, Evan, Dean of the College of Education and Human Sciences, Professor; B.S., Louisiana State University, 2004; M.Ed., 2005; Ph.D., 2007.

Plemmons, Christina, Assistant Academic Dean for Cooperative Programs for College of Nursing and Clinical Assistant Professor, Rapid City, Graduate Faculty; B.A., Gonzaga University, 1985; B.S., South Dakota State University, 2002; M.S., 2008; Ph.D., University of Nevada, Las Vegas, 2016.

Subramanian, Senthil, Dean of the College of Natural Sciences, Professor of Biology and Microbiology, Graduate Faculty; B.S., Annamali University (India), 1992; M.S., Tamil Nadu Agricultural University (India), 1995; Ph.D., Hong University of Science and Technology, 2002.

Tornquist, Kristi M., Dean of the Library, Professor, Graduate Faculty; B.A. University of Minnesota - Morris, 1980; M.L.S., University of Wisconsin, 1982; Ph.D., University of Minnesota, 1992.

Uecker, Tobias (Toby), Assistant Vice President for Student Success and Dean of Students; B.A., South Dakota State University, 2004; M.S., Miami University, 2010.

Vukovich, Matthew D., Associate Dean for Research of the College of Education and Human Sciences, Professor of Health and Nutritional Sciences, Graduate Faculty; B.S., Iowa State University, 1988; M.A., 1990; Ph.D., Ball State University, 1993.

Watrel, Robert (Bob) H., Interim Associate Dean of Academics and Student Success of the College of Natural Sciences, Professor and Department Head of Geography and Geospatial Sciences, Graduate Faculty; B.S., University of North Dakota, 1989; M.A., University of Nebraska at Omaha, 1993; University of Nebraska-Lincoln, Ph.D., 2001.

Zimmerman, Jason R., Associate Dean of the College of Arts, Humanities and Social Sciences, Professor of Economics, Graduate Faculty; B.A., Wabash College, 1994; M.S., Purdue University, 1996; Ph.D., 1998.

Distinguished Professors

Anand, Sanjeev, Distinguished Professor of Dairy and Food Science, Graduate Faculty; B.S., D.S. College (India), 1978; M.S., National Dairy Research Institute (India), 1981; Ph.D., 1986.

Clay, David E., South Dakota Corn Endowed Chair in Precision Agriculture, Distinguished Professor of Agronomy, Horticulture and Plant Science, Graduate Faculty; B.S., University of Wisconsin, 1976; M.S., University of Idaho, 1984; Ph.D., University of Minnesota, 1988.

Clay, Sharon A., Distinguished Professor Emerita of Agronomy, Graduate Faculty; B.S., University of Wisconsin, 1977; M.S., University of Idaho, 1982; Ph.D., University of Minnesota, 1986.

Cole-Dai, Jihong, Distinguished Professor Emeritus of Chemistry, Biochemistry and Physics; B.S., University of Science and Technology of China, 1982; M.S., University of Maryland, 1984; Ph.D., 1987.

Dwivedi, Chandradhar, Distinguished Professor and Department Head Emeritus of Pharmaceutical Sciences, Graduate Faculty; B.S., Gorakhpur University, 1964; M.S., 1966; Ph.D., Lucknow University, 1972.

Enz, Molly K., Distinguished Professor of French and Global Studies, School of American and Global Studies, Graduate Faculty; B.A., Concordia College, 1996; M.A. 2000; Ph.D., University of Wisconsin-Madison, 2005.

Fennell, Anne, Distinguished Professor of Agronomy, Horticulture and Plant Science, Graduate Faculty; B.S., Iowa State University, 1979; M.S., University of Minnesota, 1982; Ph.D., 1985.

Flake, Lester D., Distinguished Professor Emeritus of Wildlife and Fisheries Sciences, Graduate Faculty; B.S., Brigham Young University, 1965; M.S., 1966; Ph.D., Washington State University, 1971.

Gibbons, William R., Distinguished Professor of Agricultural and Biosystems Engineering Emeritus, Graduate Faculty; B.S., South Dakota State University, 1980; M.S., 1982; Ph.D., 1987.

Granholm, Nels H., Distinguished Professor Emeritus of Biology, Microbiology and Global Studies, Graduate Faculty; B.A., University of Massachusetts, 1964; Ph.D., Iowa State University, 1968.

Gritzner, Charles F., Distinguished Professor Emeritus of Geography, Graduate Faculty; B.A., Arizona State University, 1958; M.A., Louisiana State University, 1960; Ph.D., 1969.

Hegge, Margaret J., Distinguished Professor Emerita of Nursing, Director of Academic Evaluation and Assessment Emerita, Graduate Faculty; B.A. Gustavus Adolphus College, 1969; M.Ed., South Dakota State University, 1972; Ed.D., University of South Dakota, 1983; M.S., University of Minnesota, 1984.

Helder, Dennis L., Distinguished Professor Emeritus of Electrical Engineering, Graduate Faculty; B.S., South Dakota State University, 1979; B.S., 1980; M.S., 1985; Ph.D., North Dakota State University, 1991.

Jenks, Jonathan A., Distinguished Professor Emeritus of Wildlife Science, Graduate Faculty; A.A., Unity College, 1982; B.S., 1984; M.S., University of Maine, 1986; Ph.D., Oklahoma State University, 1991.

Johnson, James L., Distinguished Professor Emeritus of Communication Studies and Theatre, Graduate Faculty; B.S., Kansas State University, 1960; M.A., University of South Dakota, 1961; Ph.D., University of Kansas, 1973.

Johnson, W. Carter, Distinguished Professor Emeritus of Ecology, Graduate Faculty; B.S., Augustana College, 1968; Ph.D., North Dakota State University, 1971.

Kattelmann, Kendra K., Distinguished Professor Emerita of Nutrition and Dietetics, Graduate Faculty; B.S., South Dakota State University, 1977; M.S., University of Arkansas, 1984; Ph.D., University of Missouri, 1993.

Malo, Douglas D., Distinguished Professor Emeritus of Soil Science, Graduate Faculty; B.S., Iowa State University, 1971; M.S., North Dakota State University, 1974; Ph.D., 1975.

Mc Farland, Douglas C., Distinguished Professor Emeritus of Animal Science, Graduate Faculty; B.A., Southern Connecticut State College, 1971; M.S., Washington State University, 1975; Ph.D., 1984.

Muthukumarappan, K., Klingbeil Endowed Department Head of Agricultural and Biosystems Engineering and Distinguished Professor of Agricultural and Biosystems Engineering, Graduate Faculty; B.S., University of Madras (India), 1981; B.E., Tamil Nadu Agricultural University (India), 1986; M.E., Asian Institute of Technology, 1988; Ph.D., University of Wisconsin, 1993.

Nelson, Eric A., Distinguished Professor of Veterinary and Biomedical Sciences and Animal Disease Research and Diagnostic Laboratory, Graduate Faculty; B.A., Mount Marty College, 1979; M.A., University of South Dakota, 1981; Ph.D., South Dakota State University, 1993.

Ryder, Mary R., Distinguished Professor Emerita of English, Graduate Faculty; B.A., Monmouth College, 1972; M.A., Illinois State University, 1981; Ph.D., University of Illinois, 1987.

Schingoethe, David J., Distinguished Professor Emeritus of Dairy Science, Graduate Faculty; B.S., University of Illinois, 1964; M.S., 1965; Ph.D., Michigan State University, 1968.

Thaler, Robert, Farm Credit Services of American Endowed Chair in Swine Production and Distinguished Professor of Animal Science, Graduate Faculty; B.S., South Dakota State University, 1982; M.S., 1984; Ph.D., Kansas State University, 1988.

Woodard, Charles L., Distinguished Professor Emeritus of English, Graduate Faculty; B.S., Dakota State University, 1964; M.A., University of Nebraska, 1966; Ph.D., University of Oklahoma, 1975.

Wrage, Leon J., Distinguished Professor of Plant Science Emeritus, Extension Specialist; B.S., South Dakota State University, 1961; M.S., 1964.

Zhang, Xiaoyang, Distinguished Professor of Geography and Geospatial Sciences, Senior Research Scientist at the Geospatial Sciences Center of Excellence, Graduate Faculty; B.S., Peking University (China), 1984; M.S., Chinese Academy of Sciences (China), 1991; Ph.D., King's College London (United Kingdom), 1999.

Faculty and Advisors

Aamold, Rachel, Instructor of Nursing; B.S., South Dakota State University, 2002; M.S.N., 2024.

Abraham, Ross P., Professor of Mathematics and Statistics, Graduate Faculty; B.S., Augustana College, 1990; M.A., University of Montana, 1993; Ph.D., University of Houston, 1997.

Ackerwold, Laura, Instructor of Academic Career Success, School of Education; B.S., Winona State University, 2013; M.S., South Dakota State University, 2020.

Ahmed, Mohamed, Assistant Professor of Architecture, School of Design; B.S., Ain Shams University, 2006; M.S., 2012; Ph.D., Concordia University, 2020.

Ahmed, Patricia, Assistant Professor in Sociology and Rural Studies, School of Psychology, Sociology and Rural Studies, Graduate Faculty; B.A., University of California-Los Angeles, 1998; M.A., 2000; Ph.D., 2005.

Ahrendsen, Wendy, Lecturer of Mathematics and Statistics; B.A., Wartburg College, 1995; M.S., South Dakota State University, 1999.

Al Shehabi, Abdul, Lecturer of Mechanical Engineering; B.S., University of Aleppo, 1986; M.S., Cairo University, 1995; Ph.D., Old Dominion University, 2001.

Albert, Nicole, Lecturer of Nursing; B.S.N., University of Nevada, 1999; M.S.N., South Dakota State University, 2018.

Albert, Valerie A., Lecturer of Human Development and Family Science, School of Counseling, Human Development and Family Science; B.S., Northwestern College, 2012; M.S., South Dakota State University, 2014; M.S., 2016.

Algood, Samantha, Instructor of English; B.A., South Dakota State University, 2020; M.A., 2023.

Alsaker, William, Lecturer of Mathematics and Statistics; B.S., South Dakota State University, 2008; M.S., 2010.

Álvarez, José J., Associate Professor of Spanish, School of American and Global Studies; B.A., Pontificia Universidad Católica del Perú, 2005; M.A., Pennsylvania State University, 2007; Ph.D., 2013.

Ameen, Gazala, Assistant Professor of Plant Pathology; M.S., North Dakota State University, 2014; Ph.D., 2019.

Amell, James, Julie Stevens and Dale Evenson Faculty Scholar for Rural Health, Associate Professor, Master of Public Health Coordinator; B.S., University of Wisconsin-Madison, 1990; MPH, University of Minnesota, 1997; M.S.W., 1997; Ph.D., University of Wisconsin-Madison, 2006.

Amini, Hamid, Assistant Professor, School of Design; B.A., Art University of Isfahan, 2009; M.A., Tarbiat Modares University of Tehran, 2013; M.A., Texas Tech University, 2023.

An, Wenfeng, Markl Professorship in Oncology Research and Professor of Pharmaceutical Sciences, Graduate Faculty; M.B., Peking University Health Science Center (China), 1993; MPH, Peking University Health Science Center (China), 1996; Ph.D., University of Michigan Medical School, 2003.

Anand, Sanjeev, Distinguished Professor of Dairy and Food Science, Graduate Faculty; B.S., D.S. College (India), 1978; M.S., National Dairy Research Institute (India), 1981; Ph.D., 1986.

Anderson, Carla L., Student Services Coordinator and Professional Academic Advisor, College of Education and Human Sciences; B.S., South Dakota State University, 2002; M.S., 2007; Ed.D., University of South Dakota, 2013.

Anderson, Jenn, Professor of Communication Studies, School of Communication and Journalism, Graduate Faculty; B.A., Truman State University, 2004; M.A., Miami University, 2008; Ph.D., Michigan State University, 2012.

Anderson, Randi, Lecturer of English and Professional Advisor; B.S., Black Hills State University, 2007; M.A., South Dakota State University, 2011.

Andrews, Jodilyn, Instructor of English; B.A., South Dakota State University, 2014; M.A., 2016.

Andrews, Shelby, Professional Academic Advisor, College of Nursing; B.S., South Dakota State University, 2021; M.S., 2025.

Arndt, Ellie, Lecturer of Psychology, School of Psychology, Sociology, and Rural Studies; B.A., Bemidji State University, 2014; M.A., University of South Dakota, 2018; Ph.D., 2021.

Aromona, Shola, Assistant Professor of Communication and Media Studies, School of Communication and Journalism, Graduate Faculty; B.A., The Polytechnic, 2008; M.A., East Tennessee State University, 2016; Ph.D., University of Kansas, 2021.

Asadi Eskandar, Ghazal, Instructor of Architecture, School of Design; B.Arch., Art University of Isfahan, 2009; M.Ur, 2011; Ph.D., Azad University, 2003.

Ayodele, Raimi, Instructor of Architecture, School of Design; M.Ed., University of Nebraska-Lincoln; M.Arch., 1982: Ph.D., 1982.

Baack, Michelle, Adjunct Associate Professor of Biochemistry, Department of Chemistry, Biochemistry and Physics; B.S., South Dakota State University, 1991; M.D., University of South Dakota School of Medicine, 1995.

Badahdah, Abdallah, Professor of Sociology and Rural Studies, School of Psychology, Sociology and Rural Studies, Graduate Faculty; B.A., King Saud University; Ph.D., Iowa State University, 1997.

Badura, Matthew, Assistant Director, First Year Advising Center, Wintrode Student Success and Opportunity Center; B.A., University of Notre Dame 1996; M.A. Illinois State University, 1998; Ph.D., Temple University 2010.

Baggett, Marie-Pierre E., Professor of French, School of American and Global Studies, Graduate Faculty; B.A., Université de Clermont (France), 1986; M.A., University of California, 1989; Ph.D., 1996.

Baggett, Paul B., Professor of English, Graduate Faculty; B.A., University of California-Irvine, 1987; M.A., California State University-Long Beach, 1993; Ph.D., University of Miami, 1998.

Bahr, Jr., Alvin M., Lecturer of Mathematics and Statistics; B.A., South Dakota State University, 1996; M.S., 2000.

Baiao Menezes, Ana Clara, Assistant Professor in Animal Science, Graduate Faculty; B.S., Universidade Federal de Vicosa, 2014; M.S., 2016; Ph.D., 2019.

Baker-Jarvis, Duff, Lecturer of Mathematics and Statistics, B.A., University of Colorado at Boulder, 2013; Ph.D., Michigan State University, 2019.

Bakker, Christina, Assistant Professor State Specialist Meat Science; B.S., South Dakota State University, 2014; M.S., University of Minnesota, 2016; Ph.D., South Dakota State University, 2020.

Ball, John J., Professor of Agronomy, Horticulture and Plant Science; B.S., Michigan Technological University, 1976; M.S., Michigan State University, 1979; Ph.D., 1982.

Banerjee, Aritra, Assistant Professor of Civil and Environmental Engineering, Graduate Faculty; B.E., National Institute of Technology, Calicut (India), 2011; M.S., Indian Institute of Technology, Roorkee (India), 2014; Ph.D., University of Texas at Arlington, 2017.

Barber, Hayden, Assistant Professor of Communication Studies, School of Communication and Journalism, Graduate Faculty; B.A., University of Wisconsin-Stevens Point, 2015; M.S., Purdue University, 2017; Ph.D., 2022.

Barry, Allison, Assistant Professor of Exercise Science, School of Health and Human Sciences, Graduate Faculty; B.S., University of Montana, 2012; M.S., University of North Dakota, 2014; Ph.D., North Dakota State University, 2018.

Bastian, Gemma, Assistant Professor and SDSU Extension Nutrition and Health Specialist, School of Health and Human Sciences, Graduate Faculty; B.S., Cornell University, 2016; Ph.D., Rutgers University, 2022.

Basu, Saikat, Associate Professor of Mechanical Engineering, Graduate Faculty; B.E., Jadavpur University, 2009; Ph.D., Virginia Tech, 2014.

Baye, Jordan F., Associate Professor of Pharmacy Practice; B.A., University of St. Thomas, 2001; M.A., Medical College of Wisconsin, 2006; Pharm.D., University of Iowa, 2011.

Bebensee, Stephanie M., Academic Advisor, College of Pharmacy and Allied Health Professions; B.S., South Dakota State University, 2000; M.S., 2008.

Behl, Diana M., Associate Professor of Studio Art, School of Design; B.F.A., Bowling Green State University, 2001; M.A., University of Iowa, 2004; M.F.A., 2005.

Benson, Carrie, Kindergarten Teacher and Instructor of Teacher Education, School of Education; B.S., South Dakota State University, 2005; M.S., 2009.

Berendse, Joseph, Associate Professor of Pharmacy Practice; B.S., Friends University, 2010; B.S., South Dakota State University, 2013; Pharm.D., 2015.

Bergstrom, Jeremiah, Lecturer of Landscape Architecture, School of Design; BLA, Iowa State University, 1996; MLA, Rutgers University, 2017.

Betz-Hamilton, Axton E., Associate Professor of Financial Planning and Counseling, Ness School of Management and Economics; B.S., Purdue University, 2002; M.S., Kansas State University, 2002; M.S., Purdue University, 2007; Ph.D., Iowa State University, 2012.

Bhusal, Saraswati, Assistant Professor of Geography and Geospatial Sciences, Graduate Faculty; B.S., University of Delhi, 2008; M.S., Guru Gobind Singh Indraprastha University (India), 2011; M.S., Bangor University (UK), 2014; Ph.D., University of Waterloo (Canada), 2019.

Biesecker, Matthew J., Associate Professor of Mathematics and Statistics, Graduate Faculty; B.S., California State University at Chico, 1994; M.S., Utah State University, 1996; Ph.D., 2004.

Biondo, Michael, Assistant Librarian, H.M. Briggs Library; B.A., Fort Hays State University, 2012; M.L.S., Emporia State University, 2019.

Birgen, Tina, Coordinator for Student Success and Opportunity, Wintrode Student Success and Opportunity Center; B.S., Northern State University, 1996; M.Ed., Northern Arizona University, 2006.

Bjornestad, Andrea, Extension Specialist - Mental Health, Professor of Counseling and Human Resource Development, School of Counseling, Human Development and Family Science, Graduate Faculty; B.S., South Dakota State University, 2001; M.A., 2004; Ph.D., University of South Dakota, 2009.

Blaha, Bradley, Coordinator of Recruiting and Academic Services for the College of Agriculture, Food and Environmental Sciences; B.S., South Dakota State University, 2008; M.S., 2018.

Blair, Amanda D., Professor of Animal Science, Graduate Faculty; B.S., Purdue University, 2001; Ph.D., 2007.

Blanton, Kerry, Clinical Assistant Professor of Veterinary and Biomedical Sciences and Professional Program in Veterinary Medicine, Graduate Faculty; B.S., Purdue University, 1997; DVM, 2000.

Bleakley, Bruce H., Professor of Biology and Microbiology, Graduate Faculty; B.S., Michigan State University, 1978; M.S., 1981; Ph.D., University of Florida, 1986.

Boehm, Frederick J., Assistant Professor of Statistics; B.S., University of Wisconsin-Madison, 2001; M.D., 2007; M.S., 2007, Ph.D., 2019.

Bohrer, Monty, Instructor, Ness School of Management and Economics; B.A., Concordia College, 1987; M.B.A., University of Sioux Falls, 1998., D.B.A., Anderson University, 2007.

Bonnemann, Howard H., Lecturer and Undergraduate Program Coordinator of Dairy and Food Science; B.S., South Dakota State University, 1982; B.S., 1987; M.S., 1984.

Bonvallet, Geoffrey A., Senior Lecturer in Physics; B.A., College of Wooster, 2000; M.S., University of Wisconsin, 2002; Ph.D., 2005.

Boughn, Alison, Assistant Director and Associate Professor of Counseling and Human Resource Development, School of Counseling, Human Development and Family Science, Graduate Faculty; B.A., University of South Dakota, 2013; M.A., Emporia State University, 2015; Ph.D., University of South Dakota, 2019.

Bowne, Mary, Professor of Teacher Education, School of Education, Graduate Faculty; B.S., South Dakota State University, 1999; M.S., 2001; Ed.D., University of South Dakota, 2006.

Brandis, Derek, Assistant Professor of Chemistry, Department of Chemistry, Biochemistry and Physics, Graduate Faculty; B.S., South Dakota State University, 2009; M.S., 2013; Ph.D., 2022.

Brennan, Brittany, Assistant Professor of Nursing; B.A.N., Concordia College, 2009; M.S.N., Kaplan University, 2016; Ph.D., South Dakota State University, 2021.

Brennan, Jameson, Associate Professor/Research and Extension Specialist-Livestock Grazing, Graduate Faculty; B.S., Colorado State University, 2007; Ph.D., South Dakota State University, 2019.

Briddick, Hande, Professor of Counseling and Human Resource Development, School of Counseling, Human Development and Family Science, Graduate Faculty; B.S., Middle East Technical University (Turkey), 1991; M.S., Kent State University, 1995; Ph.D., 2004.

Briddick, William C., Associate Professor of Counseling and Human Resource Development, School of Counseling, Human Development and Family Science, Graduate Faculty; B.A., Southern Illinois University, 1987; M.Ed., Vanderbilt University, 1989; Ph.D., Kent State University, 2005.

Brown, Angela, Clinical Assistant Professor of Athletic Training, School of Health and Human Sciences, Graduate Faculty; B.S., South Dakota State University, 2006; M.S., University of Wyoming, 2009.

Brown, Robin J., Associate Professor of Nursing, Graduate Faculty; B.S., South Dakota State University, 1983; M.S., 1999; Ph.D., 2016.

Brözel, Volker, Professor of Biology and Microbiology, Graduate Faculty; B.Sc., University of Stellenbosch (South Africa), 1986; B.Sc. (Hons) University of Pretoria (South Africa) 1988, M.S., 1990; Ph.D., 1993.

Bruinjé, Tony C., Assistant Professor of Dairy and Food Science, Graduate Faculty; DVM, FEPAR-Mackenzie University (Brazil), 2014; M.S., University of Alberta, 2017; Ph.D., University of Guelph, 2023.

Burdick, Karin B., Student Success Advisor, TRIO Department; B.S., South Dakota State University,1999; M.Ed., 2017.

Burger, Donald, Associate Professor of Landscape Architecture, School of Design; B.L.A., Utah State University, 2006; MASLA, University of British Columbia, 2008.

Butzin, Nicholas, Associate Professor of Biology and Microbiology; B.S., University of Wisconsin-Platteville, 2002; M.S., University of Wisconsin-Milwaukee, 2005; Ph.D., 2009.

Bylander, Nathan, Director - TRIO Upward Bound and Student Support Services, TRIO Department; B.S., South Dakota State University, 2009; M.Ed., 2015.

Caffe, Melanie, Professor of Agronomy, Horticulture and Plant Science, Graduate Faculty; B.S., University of Sciences and Technology (France), 2002; M.S., National Institute of Agronomy of Toulouse (France), 2004; Ph.D., South Dakota State University, 2010.

Callies, Dannica, Clinical Associate Professor of Nursing, Graduate Faculty; B.A.N., Augustana University, 2009; DNP, South Dakota State University, 2013.

Callies, Sandra, Lecturer of Architecture, School of Design; B.A., University of Minnesota, 2004; M. Arch., 2015.

Carlile, Andrea, Assistant Professor of Communication Studies, School of Communication and Journalism, Director of Forensics, Graduate Faculty; B.A., Gustavus Adolphus College, 2007; M.S., South Dakota State University, 2009; Ed.D., University of South Dakota, 2023.

Carlson, Nicole, Assistant Professor of Nursing; B.S.N. University of North Dakota, 2009; M.S.N., University of New Mexico, 2016.

Carotta, Christin L., Associate Professor of Human Development and Family Science, School of Counseling, Human Development and Family Science, Graduate Faculty; B.BA., Loyola University, 2003; M.Ed., University of Notre Dame, 2005; Ph.D., The Ohio State University, 2014.

Case, Carly, Athletic Academic Advisor, Intercollegiate Athletics; B.S., Northern Kentucky University, 2010; M.S., Northern Kentucky University, 2014.

Cassady, Beverly, Clinical Assistant Professor of Veterinary and Biomedical Sciences and Professional Program in Veterinary Medicine; B.S., University of Nebraska at Omaha, 1994; DVM, Kansas State University, 1999.

Cempellin, Leda, Professor of Studio Art, School of Design, Graduate Faculty; Dottore in Lettere Moderne (Laurea), University of Padua, Italy, 1999; Dottore di Ricerca in Storia dell'Arte (Ph.D.), University of Parma (Italy), 2004.

Chakravarty, Suvobrata, Professor of Biochemistry, Department of Chemistry, Biochemistry and Physics, Graduate Faculty; B.S., Bidhan Chandra Krishi Vishwavidyalaya (India); M.S., Indian Institute of Science (India), 1998; Ph.D., 2003.

Chandrasekher, Gudiseva, Associate Professor of Pharmaceutical Sciences, Graduate Faculty; B.S., Andhra University (India), 1977; M.S., 1979; Ph.D., University of Mysore (India), 1983.

Chang, Hyesoo, Assistant Professor of Advertising, School of Communication and Journalism, Graduate Faculty; B.A., Gachon University, 2014; M.A., Sogang University, 2016; M.C.M., University of Southern California, 2019; Ph.D., University of Florida, 2023.

Chang, Jiyul, Senior Lecturer of Agronomy, Horticulture and Plant Science; B.S., Yonsein University (Korea), 1988; M.S., South Dakota State University, 1997; Ph.D., 2002.

Cheek, Christopher, Assistant Professor of Natural Resource Management, Graduate Faculty; B.S., Southern Oklahoma State University, 2010, M.S., Texas Tech University, 2012; Ph.D., Purdue University, 2019.

Cheeseman, Amanda, Assistant Professor of Natural Resource Management, Graduate Faculty; B.S., Michigan State University, 2009, M.S., Fort Hays State University, 2013; Ph.D., State University of New York College of Environmental Science and Forestry, 2017.

Chen, Gengjun, Assistant Professor of Food Science, Graduate Faculty; B.S., China Agricultural University (China), 2006; Ph.D., Kansas State University, 2016.

Chen, Yiqun, Senior Lecturer of Music, School of Performing Arts; B.M., California State University – Long Beach, 2009; M.A.T., University of Southern California, 2010; D.M.A., University of Iowa, 2017.

Chipps, Steve, Unit Leader of South Dakota Cooperative Fish and Wildlife Research Unit, Professor, Natural Resource Management; B.S., Davis and Elkins College, 1989; M.S., West Virginia University, 1992; Ph.D., University of Idaho, 1997.

Cho, Whoi, Assistant Professor of Applied Economics, Ness School of Management and Economics, Graduate Faculty; B.S., Oklahoma State University, 2017, M.S., 2019; Ph.D., 2022.

Christensen, Cody, Associate Professor of Aviation, School of Health and Human Sciences, Graduate Faculty; B.S.Ed., South Dakota State University, 2005; M.Ed., 2006; Ed.D., University of South Dakota, 2013.

Christian, Michele A., Librarian, H.M. Briggs Library; B.A., University of Northern Iowa, 1995; M.A., University of Wisconsin-Milwaukee, 1998; M.L.I.S., 1998.

Christopherson, Alison (Ali), Academic Advisor/Coordinator, Sioux Falls, College of Nursing; B.A., Augustana University, 2013; M.A., University of South Dakota, 2015.

Clark, Jason, Associate Professor of Agronomy, Horticulture and Plant Science; B.S., Utah State University, 2011; M.S., 2014; Ph.D., University of Minnesota, 2017.

Comstock, Christopher, Lecturer of Nutritional Sciences, School of Health and Human Sciences; B.A., Concordia College, 2010; B.S., South Dakota State University, 2013; M.S. 2015.

Conlee, Janice, Lecturer of Nursing; A.S., Presentation College, 1990; B.S., Midland University, 1997; M.S., Creighton University, 2007.

Corgard, Alaina, Professional Academic Advisor, Wintrode Student Success and Opportunity Center; B.S., South Dakota State University, 2020; M.Ed., 2022.

Coulter, Alison, Associate Professor of Natural Resource Management, Graduate Faculty; B.S., Michigan State University, 2007; M.S., Central Michigan University, 2010; Ph.D., Purdue University, 2015.

Coulter, David, Assistant Professor of Natural Resource Management, Graduate Faculty; B.S., South Dakota State University, 2007; M.S., Central Michigan University, 2010; Ph.D., Purdue University, 2015.

Craig, Thomas, Assistant Professor of Geography and Geospatial Sciences, Graduate Faculty; B.S., Concordia University, 2006; M.A., University of Akron, 2008; Ph.D., Oklahoma State University, 2018.

Crawford, Pat, Professor and Director of the School of Design; B.S., University of Missouri, 1986; M.L.A., Kansas State University, 1989; Ph.D., Arizona State University, 2001.

Currier, Danielle, Instructor of Nursing; B.S.N., South Dakota State University, 2008; M.S.N., Nebraska Methodist College, 2018.

Cutler, Kay, Professor of Teacher Education, School of Education, Graduate Faculty; B.A., University of Minnesota, 1989; Ph.D., University of Texas, 1995.

Dailey, Rocky, Professor of Journalism, School of Communication and Journalism, Graduate Faculty; B.S., South Dakota State University, 1994; M.A., University of Memphis, 1998; Ed.D., Montana State University, 2012.

Dalton, Robert, Assistant Professor of Landscape Architecture, School of Design; B.L.A., Michigan State University, 2011; M.E.D., 2013; Ph.D., 2016.

Daly, Russell, Professor of Veterinary and Biomedical Sciences and Extension Veterinarian, Graduate Faculty; B.S., South Dakota State University, 1988; M.S., 2013; DVM, Iowa State University, 1990.

Dambiinyam, Enerel, Librarian and Head of Technical Services, H.M. Briggs Library; M.A., Eötvös Loránd University, Budapest, Hungary, 1999; M.L.I.S., Kent State University, 2003.

Danielson, Jacque, Professional Academic Advisor, Wintrode Student Success and Opportunity Center; B.S., South Dakota State University, 2001; M.S., 2003.

Daraboina, Rohini, Assistant Professor of Marketing, Ness School of Management and Economics; B.S., Jawaharlal Nehru Technological University (India), 2006; M.S., University of Texas at Arlington, 2008; M.B.A., University of Memphis, 2015; Ph.D., 2022.

Daughters, Seth, Lecturer of Exercise Science, School of Health and Human Sciences; B.S., South Dakota State University, 2013; M.S., 2015.

Davis, Alex, Architecture Lab Manager, School of Design; B.A., Knox College, 2018; M.F.A., Washington University in St. Louis, 2023.

Davis, David E., Professor of Economics, Ness School of Management and Economics, Graduate Faculty; B.S.B.A., University of South Dakota, 1993; M.A., University of Oregon, 1998; Ph.D., 1998.

DeGraff, Anna, Lecturer of Music, School of Performing Arts; B.M., University of Nebraska-Lincoln; M.M., University of Minnesota, 2009; D.M.A., 2012.

DeHaan, Erin, Assistant Professor of Animal Science, Graduate Faculty; B.S., South Dakota State University 2018; M.S., 2020; Ph.D., 2023.

Derrick, Katie, Professional Academic Advisor, School of Psychology, Sociology and Rural Studies; B.A., University of Minnesota-Twin Cities, 2019; M.S., St. Cloud State University, 2022.

Desutter, Thomas M., Adjunct Associate Professor of Agronomy, Horticulture and Plant Science; B.S., South Dakota State University, 1994; M.S., 1998; Ph.D., Kansas State University, 2004.

Dey, Moul, Professor of Nutritional Sciences, School of Health and Human Sciences, Graduate Faculty; B.S., University of Calcutta, 1994; M.S., 1996; Ph.D., 2002.

Dhakal, Samitinjaya, Assistant Professor of Nutrition Sciences, School of Health and Human Sciences, Graduate Faculty; B.Pharm., Tribhuvan University, 2015; M.S., South Dakota State University, 2019; Ph.D., 2023.

Di Stéfano, Sean, Assistant Professor of Natural Resource Management, Graduate Faculty; B.S., New Mexico State University, 2016; M.S., 2018; Ph.D., University of Idaho, 2022.

Diersen, Matthew A., Griffith Endowed Chair in Agricultural Finance, Professor and SDSU Extension Risk/Business Management Specialist, Ness School of Management and Economics, Graduate Faculty; B.A., University of Minnesota, 1993; M.S., North Dakota State University, 1995; Ph.D., University of Illinois, 1999.

Diischer, Rebecca, Lecturer of Mathematics and Statistics; B.S., South Dakota State University, 2004; M.S., University of Iowa, 2007.

Ding, Xiaozhou, Assistant Professor of Economics, Ness School of Management and Economics, Graduate Faculty; B.S., Chongqing Technology and Business University of China 2013; M.S., Tufts University, 2015; Ph.D., University of Kentucky, 2020.

Djira, Gemechis D., Professor of Statistics, Graduate Faculty; B.S., Addis Ababa University, 1990; M.S., 1994; M.S., Limburgs Universitair Centrum, 2001; M.S., 2002; Ph.D., University of Hannover, 2005.

Dockery, Gene, Assistant Professor of Counseling, School of Counseling, Human Development and Family Science, Graduate Faculty; B.A., University of North Carolina Asheville, 2015; M.A., East Tennessee State University, 2019; Ph.D., Ohio University, 2023.

Donahue, Mark S., Assistant Professor of Aerospace Studies; B.A., Ashford University, 2013; M.B.A., Western Kentucky University, 2021.

Doom, Jeffrey J., Associate Professor of Mechanical Engineering, Graduate Faculty; B.A., Southwest Minnesota State University, 2002; M.S., University of Minnesota – Minneapolis, 2006; Ph.D., 2009.

Droke, Elizabeth, Associate Professor of Nutritional Sciences, School of Health and Human Sciences, Graduate Faculty; B.S., University of Illinois, 1985; M.S., Ohio State University, 1988; Ph.D., North Carolina State University, 1991.

Drum, Jessica Nora, Assistant Professor in Animal Science, Graduate Faculty; DVM, University of Santa Catarina State, 2012; M.S., University of Sao Paulo – Brazil, 2015; Ph.D., 2019.

Dubbelde, Victoria, Lecturer of Accounting, Ness School of Management and Economics; A.A.S., Nassau Community College, 1998; B.B.A., Baruch College, City University of New York, 2004; M.B.A., University of Phoenix, 2008.

Dunn, Donna E., Professional Academic Advisor and Curriculum Manager, School of Design; B.A., Dakota Wesleyan University, 1991; M.A., University of South Dakota, 2010.

Durr, Anthony, Associate Professor of Teacher Education, School of Education, Graduate Faculty; B.A., University of Nebraska-Lincoln, 2000; M.S., The Ohio State University, 2008; Ph.D., 2008.

Easley, Carri, Lecturer of Mathematics and Statistics; B.S., University of South Dakota, 1998; M.A., 1999; M.A., 2004.

Echtenkamp, Kristin, Associate Librarian, H.M. Briggs Library; B.A., Wayne State College, 2006; M.L.S., University of Missouri-Columbia, 2008.

Edmundson, Cheyenne, Recruitment Coordinator - Academics, Dairy and Food Science; B.S., South Dakota State University, 2016; M.S., Oklahoma State University, 2019.

Efthymiou, Eleftheria, Assistant Professor of Civil and Environmental Engineering; M.Eng., Democritus University of Thrace (Greece), 2011; M.S., University of Surrey (United Kingdom), 2012; Ph.D., City, University of London (United Kingdom), 2019.

Ehlert, Krista, Associate Professor of Natural Resource Management, Graduate Faculty; B.A., St. Olaf College, 2011; M.S., Montana State University, 2013; Ph.D., 2017.

Elfarargy, Hamada, Assistant Professor of Educational Leadership, School of Education; B.A., South Valley University, 1996; B.S., Ain Shams University, 2004; M.A., The American University in Cairo, Egypt, 2016; Ph.D., Texas A&M University, 2022.

Elliott, Matthew, Associate Professor and SDSU Extension Agribusiness Specialist, Ness School of Management and Economics; B.S., California Polytechnic State University, 2001; M.S., University of Missouri, 2009; Ph.D., 2013.

Ellis, Andrew R., Lecturer of Biology and Microbiology; B.S., South Dakota State University, 2001; M.S., 2006.

Engeseth, Kirsten, Instructor of Natural Resource Management; B.A., Michigan State University, 2010; B.S., University of Minnesota – Twin Cities, 2021; M.S., Norwegian University of Science and Technology, 2024.

Englin, Jacob P., Assistant Professor of Agricultural Education, School of Education, Graduate Faculty; B.S., South Dakota State University, 2014; M.A., Louisiana State University, 2023; Ph.D., 2025.

Enstad, Jesse, Professional Academic Advisor, Department of Agricultural and Biosystems Engineering; B.S., South Dakota State University, 2006.

Enz, Molly K., Distinguished Professor of French and Global Studies, School of American and Global Studies, Graduate Faculty; B.A., Concordia College, 1996; M.A. 2000; Ph.D., University of Wisconsin-Madison, 2005.

Erickson, Kassandra, Clinical Assistant Professor of Medical Laboratory Science; B.S., South Dakota State University, 2012; M.S., University of North Dakota, 2018; Ed.D., Nebraska Methodist College, 2023.

Ervin, Sean O., Professor of Practice and Program Coordinator of Architecture, School of Design; B.A., Iowa State University, 1985; M.S. and M.Arch., Washington University in St. Louis, 1994.

Escondrillas, Macarena, Lecturer of Spanish, School of American and Global Studies; B.A., University of Murcia, (Spain), 2010; M.A., West Virginia University, 2012.

Esparza, Allison, M., Assistant Professor of Elementary Education, School of Education, Graduate Faculty; B.A., University of North Texas, 2002; M.S., West Texas A&M University, 2006; M.Ed., University of Houston, 2014; Ph.D., Texas A&M University, 2024.

Estebo, Renee, Instructor of Teacher Education, School of Education; B.S., Dakota State University, 1997; M.S., Southwest Minnesota State University, 2012.

Estes, Vaughn, Professor of Practice of Criminology, School of Psychology, Sociology and Rural Studies; B.A., LaGrange College, 1991; J.D., Florida Coastal School of Law, 1999.

Exner, Abby, Professional Academic Advisor, College of Nursing; B.A., University of North Dakota, 2004; M.Ed., University of Alaska, Fairbanks, 2009.

Farley, Mike, Gary and Sharon Van Riper Faculty Scholar in Pharmacy Practice and Associate Professor; B.S., University of Iowa, 2002; Pharm.D., 2007.

Fenderson, Brittany, Lecturer of Nursing; B.A.N., Augustana University, 2014; M.S.N., South Dakota State University, 2020.

Fennell, Anne, Distinguished Professor of Agronomy, Horticulture and Plant Science, Graduate Faculty; B.S., Iowa State University, 1979; M.S., University of Minnesota, 1982; Ph.D., 1985.

Fenster, Charles, Professor of Biology and Microbiology and Director of Oak Lake Field Station, Graduate Faculty; B.A., Amherst College, 1979; Ph.D., The University of Chicago, 1988.

Filteau, Matthew R., Assistant Professor Sociology, School of Psychology, Sociology and Rural Studies; B.A., University of Southern Maine, 2006; M.A., University of Massachusetts Boston, 2008; Ph.D., The Pennsylvania State University, 2012.

Fink, Darci M., Associate Professor of Biochemistry, Department of Chemistry, Biochemistry and Physics, Graduate Faculty; B.S., South Dakota State University, 2010; B.A., 2010; Ph.D., University of Nebraska Medical Center, 2016.

Fischbach, Samantha, Assistant Professor of Nursing; B.S.N., South Dakota State University, 2010; M.S.N., Kaplan University, 2016; Ph.D., South Dakota State University, 2024.

Fleig-Palmer, Michelle, Associate Professor of Management, Ness School of Management and Economics; B.S., State University of New York at Geneseo, 1983; M.B.A., Washington University in St. Louis, 1990; Ph.D., University of Nebraska-Lincoln, 2009.

Foerster, Becka J., Lecturer of Nursing; B.S., South Dakota State University, 2007; M.S., 2011.

Folsland, Gale, Assistant Director of Nursing Student Services, Rapid City; B.S., Black Hills State University, 1979; M.B.A., Wichita State University, 1995.

Folsom, Jamie, Assistant Professor of American Indian and Indigenous Studies, School of American and Global Studies; B.S., Roosevelt University, 1984; M.S., Colorado State University, 2008; Ph.D., 2022.

Forbes-Hurd, Scout, Assistant Professor of Pharmacy Practice/Continuing Education and Experiential Education Coordinator; Pharm.D., South Dakota State University, 2011.

Foster, Anna M., Lecturer of Nursing; B.S., South Dakota State University 2013; M.S., 2018.

Fourney, Robert S., Associate Professor of Electrical Engineering, Graduate Faculty; B.S., Virginia Polytechnic Institute and State University, 1985; M.S., University of Maryland, 1989; Ph.D., 2001.

Fox, Elizabeth, Librarian, H.M. Briggs Library; B.Mus., Lawrence University, 1987, M.L.I.S., University of Texas, 1991; M.Ed., South Dakota State University, 1997.

Frewaldt, Shannon, Lecturer of Studio Arts, School of Design; B.A., Augustana College, 1999; M.F.A., University of Iowa, 2002.

Fryslie, Jamie, Instructor of Academic Career Success, School of Education; B.A., South Dakota State University, 2009; M.A., 2012.

Gamradt, Kenneth A., Lecturer of Computer Science; B.S., South Dakota State University, 1985; B.S., 1992, M.S., 1994.

Garren-Grubbs, Theresa, Assistant Professor of Nursing, Graduate Faculty; B.S.N., Auburn University, 2007; M.S., University of Iowa, 2013; DNP, Loyola University, 2020.

Garry, Byron G., Associate Professor of Manufacturing Automation and Electronic Engineering Technology, Department of Construction and Concrete Industry Management; B.S., South Dakota State University, 1981; M.S., 1988.

Garst-Santos, Christine, Karen D. Stuck Endowed Director of the School of American and Global Studies and Associate Professor of Spanish; B.A., Colorado State University, 1994; M.A., 1997; Ph.D., University of Iowa, 2013.

Ge, Xijin, Professor of Mathematics and Statistics, Graduate Faculty; B.S., Beijing University of Science and Technology, 1994; M.S., 1997; Ph.D., The University of Tokyo, 2000.

Gent, Stephen, Professor of Mechanical Engineering and Director of the North Central Regional Sun Grant Center, Graduate Faculty; B.S., Iowa State University, 2003; M.S., 2006; Ph.D., 2009.

Gertken, Nicole A., Academic Success and Recovery Program Coordinator, Wintrode Student Success Center; B.A., Concordia College, 2008; M.S., South Dakota State University, 2011.

Ghabchi, Rouzbeh, John M. Hanson Associate Professor in Structural and Construction Engineering, Graduate Faculty; B.S., University of Tabriz, Iran, 1999; M.S., 2002; Ph.D., University of Oklahoma, 2014.

Ghosheh, Hani, Senior Lecturer of Agronomy, Horticulture and Plant Science, Graduate Faculty; B.S., University of Jordan, 1986; M.S., 1989; Ph.D., Texas A&M University, 1995.

Gilmore, Katie, Instructor of Teacher Education, School of Education; B.S., University of South Dakota, 2005; M.Ed., University of Sioux Falls, 2012.

Gislason, Traci, Instructor of Undergraduate Nursing; B.S., South Dakota State University, 2010; M.S., Minnesota State University Moorhead, 2023.

Gloege, Laura, Lecturer of Teacher Education, School of Education; B.S., South Dakota State University, 2002; B.S., Dakota State University, 2002; M.S., South Dakota State University, 2007.

Glover, Karl D., Professor of Agronomy, Horticulture and Plant Science, Graduate Faculty; A.A.S., Iowa Lakes Community College, 1991; B.S., South Dakota State University, 1994; M.S., 1996; Ph.D., Kansas State University of Agriculture and Applied Sciences, 2000.

Gnettner, Felix, Assistant Professor of Statistics, Graduate Faculty; B.S., Otto-von-Guericke-University Magdeburg, Germany, 2018; M.S., 2019; Ph.D., 2024.

Goeman, Benjamin, Professional Academic Advisor, College of Nursing; B.S., South Dakota State University, 2022; M.S., 2024.

Gonda, Michael, Interim Department Head and Professor of Animal Science, Graduate Faculty; B.S., North Carolina State University-Raleigh, 1999; M.S., University of Wisconsin-Madison, 2003; Ph.D., 2006.

Gonzalez, Jose L., Professor of Agronomy, Horticulture and Plant Science, Graduate Faculty; B.S., University of Navarra (Spain), 1991; Post Graduate, Mediterranean Agronomic Institute of Zaragoza, 1995; Ph.D., University of North Dakota, 2000.

Gowen, Samantha, Professional Academic Advisor, School of Performing Arts; B.M., B.M.E., University of Georgia, 2015, M.M., Michigan State University, 2017, D.M., Florida State University, 2021.

Graham, Christopher, Professor/Extension Specialist - Agronomist of Agronomy, Horticulture and Plant Science; B.S., Arizona State University, 2005; M.S., Columbia University, 2008; Ph.D., Cornell University, 2012.

Granum, Melissa, Lecturer of Academic Career Success, School of Education; B.S., South Dakota State University, 2006; M.Ed., 2013.

Graves, Nicole A., Associate Professor of Teacher Education, School of Education; B.S., South Dakota State University, 1997; M.S., 2002; Ph.D., North Dakota State University, 2011.

Grayson, Katie, Professional Academic Advisor, Ness School of Management and Economics; B.S., South Dakota State University, 2008; M.S., 2010.

Griffin, Erin, Assistant Professor of Dakota/Lakota/Nakota and American Indian and Indigenous Studies, School of American and Global Studies; B.A., Minnesota State University, Mankato, 2005; M.A., University of Oklahoma, 2009; Ph.D., University of Hawaii, Hilo, 2023.

Griggs, Eric, Instructor of Aviation, School of Health and Human Sciences; B.S., Radford University, 1996; M.Ed., Auburn University, 2017.

Gross, Briana, Instructor of Respiratory Care; B.S., Dakota State University, 2020; MHA, Bellevue University, 2020.

Grubbs, Judson, Associate Professor of Animal Science, Graduate Faculty; B.S., Auburn University, 2006; M.S., Iowa State University, 2010; Ph.D., 2012.

Gu, Xingyou, Professor of Agronomy, Horticulture and Plant Science, Graduate Faculty; B.S., Yangzhou University (China), 1985; Ph.D., South China Agricultural University (China), 1997.

Gunaje, Jayarama, Associate Professor of Pharmaceutical Sciences, Graduate Faculty; B.S., Mysore University (India), 1980; M.S., Mangalore University (India), 1982; Ph.D., Indian Institute of Science, Bangalore (India),1989.

Guo, Zhiguang, Adjunct Associate Professor of Chemistry, Department of Chemistry, Biochemistry and Physics; M.D., Zhongshen Medical University, 1986; Ph.D., University of Heidelberg, 1991.

Gustafson, Kimberly, Lecturer of Leadership and Management of Nonprofit Organizations, School of Health and Human Sciences; B.S., South Dakota State University, 2009; M.B.A., Southwest Minnesota State University, 2011.

Gutzmer, Zachary, Lecturer of Civil and Environmental Engineering; B.S., South Dakota State University, 2006; M.S., 2008.

Hafeez, Bilal, Assistant Professor of Pharmaceutical Sciences, Graduate Faculty; M.S., Hamdard University, New Delhi (India), 1998; Ph.D., 2002.

Hager, Lisa, Associate Professor of Political Science, School of American and Global Studies, Graduate Faculty; B.A., Wartburg College, 2009; M.A. Kent State University, 2013; Ph.D., 2016.

Haggerty, Kayte M., Professional Academic Advisor, Ness School of Management and Economics; B.A., South Dakota State University, 2003; M.S., 2005.

Hajek, Tyler, Assistant Professor of Sport Management, School of Health and Human Sciences, Graduate Faculty; B.S., South Dakota State University, 2016; M.A., Minnesota State University, 2018; Ph.D., University of Northern Colorado, 2025.

Hales, Patrick, Associate Professor of Teacher Education, Assistant Director of K-12 Teacher Education, School of Education, Graduate Faculty; B.S., East Carolina University-Greenville, 2008; M.S., University of North Carolina-Greensboro, 2012; Ph.D., 2015.

Hall, Clifford, Professor of Dairy and Food Science, Graduate Faculty; B.S., University of Wisconsin-Riverfalls,1988; M.S., University of Nebraska, 1991; Ph.D., 1996.

Halvorsen, Darin, Lecturer of English; B.A., South Dakota State University, 2001; M.A., 2006.

Hanson, Ryan, Assistant Professor of Biology and Microbiology and Coordinator of FGCF, Graduate Faculty; B.S., University of South Dakota, 2011; Ph.D., University of Nebraska Medical Center, 2016.

Hanson, Stephanie, Assistant Professor, Department of Allied and Population Health; B.S., University of Nebraska at Omaha, 2014; MPH, George Washington University, 2018; Ph.D., University of Minnesota, 2025.

Hasselquist, Laura, Associate Professor of Teacher Education, School of Education, Graduate Faculty; B.S., University of Wisconsin-River Falls, 2006; M.S., 2010; Ph.D., University of Missouri, 2017.

Haugen, Brittany, Instructor of Nursing; B.S., University of South Dakota, 2015; M.S., South Dakota State University, 2023.

Hauschild-Mork, Melissa, Associate Professor of Theatre, School of Performing Arts, Graduate Faculty; B.S., South Dakota State University, 1987; M.S., Indiana University, 1988; Ed.D., University of South Dakota, 2012.

Hayes, William, Professor of Pharmacy Practice; B.S., South Dakota State University, 2007; Pharm.D., 2009.

Heiberger, Amy, Professor of Pharmacy Practice; B.S., South Dakota State University, 2004; Pharm.D., 2008.

Heins, Jodi R., Professor of Pharmacy Practice and Director of Experiential Education, Residency Program Director, Graduate Faculty; Pharm.D., University of Nebraska, 1993.

Helland, James, Assistant Professor of Practice of Journalism, School of Communication and Journalism; B.A., South Dakota State University, 1986; M.S., 2012.

Heller, Barbara, Associate Professor of Practice of Entrepreneurial Studies and Marketing, Coordinator of Entrepreneurial Studies Program, Ness School of Management and Economics; B.S., South Dakota State University, 2003; M.S., 2004.

Hellwig, Thaddaus, Professor of Pharmacy Practice; B.S., Chadron State, 2002; Pharm.D., Texas Tech University, 2006.

Hendricks, Marina, Associate Professor of Journalism, School of Communication and Journalism, Graduate Faculty; B.A., Marshall University, 1987; M.A., Kent State University, 2011; Ph.D., University of Missouri, 2017.

Hintz, Wayne, Lecturer of Nursing; A.S.N., University of South Dakota, 2009; B.S.N, National American University, 2014; M.S.N., 2018.

Hoffman, Logan, Professional Academic Advisor, College of Natural Sciences; B.S., South Dakota State University, 2021.

Holmquist, Hanna, Instructor of Curricular Innovation, Van D. and Barbara B. Fishback Honors College; B.S., South Dakota State University, 2013; M.S., 2015.

Horsley, Gwen K., Lecturer of English; B.A., University of South Dakota, 1994; M.A., 1997.

Howe, Vicki, Associate Professor of Pharmacy Practice; B.S., South Dakota State University, 2003; Pharm.D., 2005.

Hu, Zhong, Professor of Mechanical Engineering, Graduate Faculty; M.S., Tsinghua University (China), 1983; Ph.D., 1988.

Hua, Guanghui, Department Head and Professor of Civil and Environmental Engineering, Graduate Faculty; B.S., Qingdao Technological University, 1997, M.S., 2000; Ph.D., University of Massachusetts at Amherst, 2006.

Huang, Jun, Assistant Professor of Computer Science, Graduate Faculty; B.E., Hubei University of Automotive Technology (China), 2005; M.S., Chongqing University of Posts and Telecommunications (China), 2009; Ph.D., Beijing University of Posts and Telecommunications (China), 2012.

Huber, Erika A., Lecturer of Nursing; B.S., South Dakota State University, 1997; M.S., University of New Mexico, 2007.

Huh, Yung Moo, Professor of Physics, Department of Chemistry, Biochemistry and Physics, Graduate Faculty; B.S., Myongji University (Korea), 1997; Ph.D., Iowa State University, 2001; M.S., 2002.

Hunter, Karla, Professor of Communication Studies, School of Communication and Journalism, Graduate Faculty; B.A., Augustana College, 1992; M.A., University of Oklahoma, 1995; Ph.D., 2000.

Hybertson, Kendra, Professional Academic Advisor, College of Education and Human Sciences; B.S., South Dakota State University, 2018; M.Ed., 2020.

Imre, Gergely, Assistant Professor of Biology and Microbiology, Graduate Faculty; M.S., Eötvös Lorand University, 2003; M.S., 2004; Ph.D., Semmelweis University, 2008.

Ireland, Caitlyn, Lecturer of Nursing; B.S.N., University of North Dakota – Grand Forks, 2009; M.S.N., 2016.

Irvin, Kyle, Instructor of Political Science, School of American and Global Studies; B.A., Northwestern College, 2002; J.D., University of Iowa, 2005.

Irvine-Miller, Meagan N., Instructor of Teacher Education, School of Education; B.S., Emporia State University, 2008; M.Ed., South Dakota State University, 2018.

Islam, Nurul, Assistant Professor of Chemistry, Department of Chemistry, Biochemistry and Physics, Graduate Faculty; B.S., University of Dhaka (Bangladesh), 1994; M.S., 1996; Ph.D. University of Science and Technology (South Korea), 2008.

Jacobs, Laura, Academic Advisor/Events Coordinator, College of Nursing; B.S., South Dakota State University, 2007; M.Ed., 2010.

Jaeger, John, Professor of Animal Science, Graduate Faculty; B.S., Oregon State University, 1984; M.S., 1986; Ph.D., 2005.

Janaswamy, Srinivas, Associate Professor of Dairy and Food Science, Graduate Faculty; B.S., Nagarajuna University, India, 1989; M.S., Mysore University, India, 1991; Ph.D., Indian Institute of Technology, 1997.

Jawdhari, Akram, Assistant Professor of Civil and Environmental Engineering, Graduate Faculty; B.S., University of Babylon (Iraq), 2005; M.S., 2008; Ph.D., University of Kentucky, 2016.

Jensen Bender, Wendy S., Professor of Pharmacy Practice; B.S., South Dakota State University, 1993; Pharm.D., 1995.

Jensen, Amber, Senior Lecturer of English; B.A., South Dakota State University, 2000; M.A., 2008; M.F.A., University of New Orleans, 2012.

Jewell, Melody E., Senior Lecturer of Chemistry, Department of Chemistry, Biochemistry and Physics, Graduate Faculty; B.A., University of Minnesota, 1997; B.S., 1997; M.S., 1999; Ph.D., 2002.

Ji, Young-Hee, Lecturer of Mathematics and Statistics; B.S, Ewha Womans University, Korea 1991; M.S., 1993; M.S., New York University, 2001.

Jin, Hailong, Associate Professor of Economics, Ness School of Management and Economics; B.A., Jilin University, China 2002; M.S., Tsinghua University, China 2007; Ph.D., Iowa State University, 2013.

Johnson Maier, Kimberly (Kim) K., Assistant Professor of Geography and Geospatial Sciences, Graduate Faculty; B.A., Northern State University, 2011; M.S., South Dakota State University, 2013; Ph.D., Oklahoma State University, 2024.

Johnson, Bruce, Instructor of Management Sciences, Ness School of Management and Economics; A.S., Southeast Technical Institute, 2005; B.A., University of Sioux Falls, 2008; M.B.A., University of Sioux Falls, 2011.

Johnson, Jennifer, Instructor of Teacher Education, School of Education; B.S., University of Wisconsin-La Crosse, 1995; M.Ed., University of Minnesota-Duluth, 2010.

Johnson, Teri, Senior Lecturer of Counseling and Human Development, School Counseling, Human Development and Family Science; B.S., South Dakota State University, 1986; M. Div., Iliff School of Theology, 1990; D. Ministry, S.F. Seminary, 2000.

Jones, Eric, Assistant Professor, Weed Management, Agronomy, Horticulture and Plant Science, Graduate Faculty; B.S., Iowa State University, 2015; M.S., 2018; Ph.D., North Carolina State University, 2022.

Julius, Maria, Instructor of Aviation, School of Health and Human Sciences; B.S., South Dakota State University, 2005; B.A., 2005; M.Ed., 2007.

Junker, Anne-Marie, Instructor of Fashion Studies and Apparel Merchandising, School of Health and Human Sciences; B.S., South Dakota State University, 2011; M.S., 2016.

Kappes, John, Professor of Pharmacy Practice; B.S., South Dakota State University, 2005; Pharm.D., 2007.

Karabon, Anne, Wendell and Marlys Thompson Director of the School of Education and Associate Professor, Graduate Faculty; A.A.S., Milwaukee Area Technical College; B.S., University of Wisconsin-Milwaukee, 2005; M.S., 2008; Ph.D., University of Wisconsin-Madison, 2015.

Karki, Bishnu, Associate Professor of Biology and Microbiology, Graduate Faculty; B.S., Tri-bhuvan University, Nepal, 2001; M.S., Asian Institute of Technology, 2005; Ph.D., Iowa State University, 2009.

Karki, David, Assistant Professor of Crop Production and Extension Specialist, Graduate Faculty; B.S., Institute of Agriculture and Animal Science (Nepal), 2003; M.S., South Dakota State University, 2007; PhD., 2013.

Kaushik, Radhey S., Professor of Biology and Microbiology and Veterinary and Biomedical Sciences, Graduate Faculty; B.S., Haryana Agricultural University (India), 1985; M.S., 1988; Ph.D., University of Saskatchewan (Canada), 1998.

Kessler, Kevin, Assistant Professor of Music, School of Performing Arts; B.M.E., South Dakota State University, 1978; M.M., Southern Oregon University, 2004; D.M.A., University of Iowa, 2015.

Khaliq, Tanvir, Assistant Professor of Pharmaceutical Sciences, Graduate Faculty; B.S., University of Kashmir, 1995; M.S., Aligarh Muslim University, 1997; Ph.D., Central Drug Research Institute, India, 2009.

Kharel, Parashu, Professor of Physics, Department of Chemistry, Biochemistry and Physics, Graduate Faculty; B.S., Tribhuvan University (Nepal), 1989; M.S., 1994; M.A., Wayne State University, 2006; Ph.D., 2008.

Killefer, Carolyn, Student Success Advisor, TRIO Department; B.S., Hastings College, 1985; M.S., Oregon State University, 1990.

Killefer, John, Professor of Animal Science, Graduate Faculty; B.A., Hastings College, 1985; Ph.D., Oregon State University, 1990.

Kilmer, Carey, Registrar/Director Records and Registration; A.A., South Dakota State University, 2007; B.S., 2010; M.S., Kansas State University, 2013.

Kim, Sarah (Heewon), Enrollment and Student Success Coordinator, Center for Online and Professional Education; B.A., South Dakota State University, 2010.

Kimn, Jung-Han, Professor of Mathematics, Graduate Faculty; B.A., Yonsei University, 1992; M.S., Seoul University, 1994; Ph.D., New York University, 2001.

Kirshner, Luz Angélica, Associate Professor of Spanish, School of American and Global Studies; B.A., Universidad de Los Andes (Colombia), 1981; M.A., Bielefeld University (Germany), 2002; Ph. D., Pennsylvania State University, 2008.

Klein, Nicole L., Professor of Agricultural Economics and Associate Director of Academics for the Ness School of Management and Economics, Graduate Faculty; B.A., South Dakota State University, 1990; M.S., Kansas State University, 1994; Ph.D., 1996.

Knudsen, David E. B., Professor of Veterinary and Biomedical Sciences, and Animal Disease Research and Diagnostic Laboratory, Graduate Faculty; B.S., Colorado State University, 1979; M.S., University of Missouri, 1986; DVM, 1982.

Knutson, Lacy, Lucas P. Wintrode Endowed Professor of Autism Studies, Assistant Professor of Special Education, School of Education, Graduate Faculty; B.S., South Dakota State University, 2007; M.S., St. Cloud State University, 2009; Ph.D., The Chicago School of Professional Psychology, 2018.

Koistinen, Keith A., Assistant Professor of Veterinary and Biomedical Sciences and Animal Disease Research and Diagnostic Laboratory, Graduate Faculty; B.S., South Dakota State University, 2000; DVM, Iowa State University, 2004.

Konenkamp, Joslyn, Instructor of Nursing; B.S.N., South Dakota State University, 2008; M.S.N., Western Governors University, 2025.

Koromyslova, Ekaterina A., Professor of Operations Management, Ness School of Management and Economics, Graduate Faculty; B.S., M.S., Saratov State Technical University (Russia), 2004; Ph.D., 2007; M.S., South Dakota State University, 2014.

Kosse, Elijah, Lecturer of Applied Economics, Ness School of Management and Economics; B.A., University of Idaho, 2013; M.S., 2015.

Kott, Linda, Associate Librarian, H. M. Briggs Library; B.S., University of Wisconsin-Madison, 1980; M.S.L.S., University of North Texas, 2005; M.Ed., South Dakota State University, 2010.

Kovács, Péter, Associate Professor of Agronomy, Horticulture and Plant Science, Graduate Faculty; M.S., Cranfield University, 2008; M.S., Szent István University, 2008; Ph.D., Purdue University, 2013.

Kranz, Emily, Instructor of Community and Public Health, School of Health and Human Sciences; B.S., South Dakota State University, 2011; M.S., 2013.

Kruer, Michael, Adjunct Assistant Professor of Biochemistry, Department of Chemistry, Biochemistry and Physics; B.S., Arizona State University, 2001; M.D., University of Arizona College of Medicine, 2004.

Kuehl, Rebecca A., Professor of Communication Studies and Associate Director of the School of Communication and Journalism, Graduate Faculty; B.A., Gustavus Adolphus College, 2005; M.A., University of Georgia, 2007; Ph.D., University of Minnesota, 2011.

Kurtenbach, Paula L., Lecturer of Computer Science; B.S., South Dakota State University, 1985; B.S., 1994; M.S., 2002.

Lamb, LeAnn, Instructor of Nursing; B.S., Gannon University, 1993; M.S., University of Wisconsin, 2002.

Lang, Kristine, Assistant Professor of Agronomy, Horticulture and Plant Science, Graduate Faculty; B.S., University of Minnesota, 2012; Ph.D., Iowa State University, 2019.

Langelett, George L., Professor of Economics, Ness School of Management and Economics, Graduate Faculty; B.S., Northwestern Lutheran Theology Seminary, 1991; Ph.D., University of Nebraska, 2000.

Lansink, Stacie, Program Director and Lecturer of Medical Laboratory Science; B.S., University of Nebraska Medical Center, 1999; M.S., University of North Dakota, 2015.

LaPorte, Kyle, Associate Professor of Pharmacy Practice; Pharm.D., North Dakota State University, 2014.

Larson, Christine L., Kemp Endowed Professor of Honors Mathematics, Professor of Mathematics and Statistics, Graduate Faculty; B.A., Augustana College, 1985; M.S., Montana State University, 1987; Ed.D., 1996.

Laue, Kristy, Associate Professor of Practice of Advertising, School of Communication and Journalism; B.A., South Dakota State University, 2006.

Lavender-Stott, Erin S., Associate Professor of Human Development and Family Science, School of Counseling, Human Development and Family Science, Graduate Faculty; B.A., Hollins University, 2010; M.A., University of North Carolina Wilmington, 2013; Ph.D., Virginia Polytechnic Institute and State University, 2018.

Le, Hoanh, Assistant Professor of Applied Economics and Land Valuation State Extension Specialist, Ness School of Management and Economics; B.A., University of Economics and Law, Ho Chi Minh, Vietnam, 2012; M.S., South Dakota State University, 2017; PhD., University of Houston, 2023.

Leahy, Susie, Professional Academic Advisor/Recruiter, College of Nursing, B.S., South Dakota State University, 2001; M.S., 2003; Ed.D., University of South Dakota, 2021.

Lee, Lance, Adjunct Associate Professor; B.S., Boston College, 1995; M.S., University of Connecticut, 1997; Ph.D., Stony Brook University, 2004.

Lee, MaryJo Benton, Adjunct Assistant of Sociology, School of Psychology, Sociology and Rural Studies, Graduate Faculty; B.S., University of Maryland, 1975; M.A., 1976, Ph.D., South Dakota State University, 1998.

Lefers, Ryan Michael, William Mibra Griffith and Byrne S. Griffith Chair in Water Resources/SD WRI Director and SDSU State Extension Specialist, Professor of Practice, B.S., South Dakota State University, 2004; M.S., 2006; Ph.D., King Abdullah University of Science and Technology, 2017.

Leffler, A. Joshua, Professor and Assistant Department Head of Natural Resource Management, Graduate Faculty; B.S., University of Utah, 1994; Ph.D., University of New Mexico, 1999.

Leibold, Julie, Senior Lecturer of Chemistry, Department of Chemistry, Biochemistry and Physics; B.S., University of Wisconsin – Oshkosh, 2008; Ph.D., Colorado School of Mines, 2013.

Lemon, Michael D., Professor of Pharmacy Practice; A.S., Colby Community College, 1990; Pharm.D., University of Kansas, 1994.

Lenertz, Kristin, Lecturer of Biology and Microbiology; B.S., Jacksonville University, 1996; M.S., Auburn University, 2002.

Leschewski, Andrea, Associate Professor of Agribusiness, Ness School of Management and Economics; B.A., Carthage College, 2001; M.S., Michigan State University, 2014; Ph.D., 2016.

Letcher, Amber, Interim Director of the School of Counseling, Human Development and Family Science, Extension Specialist - Youth Development, Professor of Human Development and Family Science, Graduate Faculty; B.S., South Dakota State University, 2005; M.S., The Ohio State University, 2008; Ph.D., 2012.

Letcher, Todd, Professor of Mechanical Engineering, Graduate Faculty; B.S., South Dakota State University, 2005; M.S., The Ohio State University, 2008; Ph.D., 2012.

Levesque, Crystal, Professor of Animal Science, Graduate Faculty. B.S., University of Saskatchewan, 1999; M.S., 2002; Ph.D., University of Alberta, 2010.

Levia, Sergio, Assistant Professor of Elementary Education, School of Education, Graduate Faculty; B.A., Universidad Pedagógica Francisco Morazán, 2006; M.A., Southern Illinois University Carbondale, 2013; M.A., University of Iowa, 2015; Ph.D., University of Nebraska-Lincoln, 2022.

Lewis, Jessica A., Advising and Recruitment Coordinator, College of Arts, Humanities and Social Sciences; B.A, South Dakota State University, 2004; M.S., 2011.

Lewno, Kenneth R., Architecture Lab Manager, School of Design; B.S., South Dakota State University, 2012, M.S., 2016.

Li, Wanlong, Professor of Biology and Microbiology, Graduate Faculty; B.S., Northwestern A&F University (China), 1984; M.S., 1987; Ph.D., Nanjing Agricultural University (China), 1993.

Li, Xu, Associate Professor of Hospitality, Tourism and Event Management, School of Health and Human Sciences, Graduate Faculty; B.A., Xi'an International Studies University (China), 1998; M.S., Shaanxi Normal University (China), 2001; Ph.D., University of Central Florida, 2013.

Lian, Ruyi, Assistant Professor of Computer Science, Graduate Faculty; B.S., University of Science and Technology of China, 2019; Ph.D., Stony Brook University, 2025.

Lichtenberg, Michelle A., Assistant Professor of Nursing; Graduate Faculty; B.S., Mount Marty College, 1998; M.S., South Dakota State University, 2012; Ph.D., University of South Dakota, 2021.

Lindell, Lisa R., Professor, H.M. Briggs Library; B.A., Augustana University, 1987; M.A.L.I.S, University of Wisconsin-Madison, 1988; M.A., South Dakota State University, 1993.

Linton, Alexa, Instructor of Nursing; B.A., Augustana University, 2006; B.A.N., 2015; M.S.N., South Dakota State University, 2024.

Liu, Shirley, Assistant Professor of Accounting, Ness School of Management and Economics, Graduate Faculty; B.C.M., Beijing University of Chinese Medicine, 1995; M.S., University of Illinois-Chicago, 2003; Ph.D., Florida Atlantic University, 2016.

Liu, Yucheng, Duane Sander Endowed Professorship in Engineering Innovation and Entrepreneurship and Department Head of Mechanical Engineering, Graduate Faculty; B.S., Hefei University of Technology, 1997; M.S., University of Louisville, 2003; Ph.D., 2005.

Logue, Brian A., Professor and Department Head of Chemistry, Biochemistry and Physics, Graduate Faculty; B.S., South Dakota State University, 1995; Ph.D., Oregon State University, 2001.

Lohsandt, Marie A., Director of Nursing Student Services; B.B.A., Dakota State University, 1988; M.S., University of South Dakota, 1994; Ed.D., 2005.

Loof, Allerie, High School Dual Enrollment Coordinator, Center for Online and Professional Education; B.S., Northern State University, 2018; M.S., Emporia State University, 2022.

Lounsbery, Nicole B., Director of the Graduate School; B.A., University of South Dakota, 1995; M.A., University of South Dakota, 1998; Ph.D., South Dakota State University, 2014.

Lowe, Jessica, Assistant Professor of Psychology, School of Psychology, Sociology and Rural Studies, Graduate Faculty; B.S., Jacksonville State University, 2017; M.A., Stephen F. Austin State University, 2020; Ph.D., Texas A&M University, 2025.

Lu, Huitian, Professor of Operations Management, Ness School of Management and Economics, Graduate Faculty; M.S., Texas Technical University, 1992; Ph.D., 1998.

Madsen, Lisa J., Lecturer of English; B.A., South Dakota State University, 1995; M.A., 1998.

Madsen, Sara K., Senior Lecturer of Chemistry, Department of Chemistry, Biochemistry and Physics; B.A., Central Washington University, 1988; Ph.D., University of Wyoming, 1998.

Maimaitijiang, Maitiniyazi, Assistant Professor of Geography and Geospatial Sciences, Graduate Faculty; B.S., Peking University, 2005; M.S., Sun Yat-sen University, 2007; Ph.D., Saint Louis University, 2020.

Malone, Katherine, Associate Professor of English, Graduate Faculty; B.A., Cabrini College, 1997; Ph.D., Temple University, 2009.

Mandyam, Keerthi, Associate Professor of Soil Health, Department of Agronomy, Horticulture and Plant Science, Graduate Faculty; B.S., Bangalore University (India), 1997; M.S., Kansas State University, 2004; Ph.D., 2008.

Mangubat, Diana, Instructor of Nursing; B.S., University of Nevada, Las Vegas, 2006; M.S., 2022.

Markel, Paul D., Professor of Psychology, School of Psychology, Sociology and Rural Studies, Graduate Faculty; B.A., University of Mary, 1990; M.A., University of Colorado, 1993; Ph.D., 1995.

Marler, Bailey, Instructor of Nursing; B.S.N., South Dakota State University, 2019; M.S.N., Capella University, 2023.

Marshall, Nancy J., Librarian, H.M. Briggs Library; B.A., University of Wisconsin-Eau Claire, 1991; M.L.I.S., University of Wisconsin-Milwaukee, 1993; M.S., South Dakota State University, 1998.

Martens, Abigail, Assistant Professor of Entomology, Department of Agronomy, Horticulture and Plant Science, Graduate Faculty; B.S., South Dakota State University, 2017; M.S., 2019; Ph.D., 2023.

Martin, Jeff, Assistant Professor of Natural Resource Management, Graduate Faculty; B.S., East Tennessee State University, 2012; M.S., 2014; Ph.D., Texas A&M University, 2020.

Martin, Rebecca, Professor of Psychology, School of Psychology, Sociology and Rural Studies; B.S., Michigan State University, 1996; M.A., University of Connecticut, 2002; Ph.D., 2004.

May, Mikayla, Professional Academic Advisor, Wintrode Student Success and Opportunity Center; B.S., University of North Dakota, 2022; M.S., 2024.

McClanahan, Nathan, Senior Lecturer of Mathematics; B.S., South Dakota State University, 2006; M.S., 2008; Ph.D., Montana State University, 2016.

McConnell, Ashley, Coordinator of Student Services, College of Natural Sciences; B.S., South Dakota State University, 2014, M.S., 2016.

McEntee, Jason T., Professor and Director of the School of English and Interdisciplinary Studies, Graduate Faculty; B.A., South Dakota State University, 1994; M.A., 1998; Ph.D., University of Kentucky, 2004.

McKnight, Brittany, Assistant Professor of Business Law, Ness School of Management and Economics; B.A., South Dakota State University, 2011; J.D., University of South Dakota, 2015.

McKnight, Ryan, Lecturer of Management, Law and Real Estate, Ness School of Management and Economics; B.S., South Dakota State University, 2012; J.D., University of South Dakota, 2015.

McManigal, Mindy, Instructor of Respiratory Care; A.S., Dakota State University, 2009; B.S., South Dakota State University, 2011.

McTaggart, Robert, Professor of Physics and Assistant Department Head of Department of Chemistry, Biochemistry and Physics, Graduate Faculty; B.A., West Virginia University, 1991; B.S., 1991; Ph.D., Pennsylvania State University, 1999.

Mediger, Jessica, Lecturer of Biology and Microbiology, M.S., South Dakota State University, 2013.

Meendering, Jessica, Director of the School of Health and Human Sciences and Professor of Exercise Science, Graduate Faculty; B.S., South Dakota State University, 2002; M.S., University of Oregon, 2004; Ph.D., 2007.

Mehan, Sushant, Assistant Professor of Water Resources Engineering, Department of Agricultural and Biosystems Engineering, Graduate Faculty; B.S., Punjab Agricultural University (India), 2011; M.S., 2014; Ph.D., Purdue University, 2018.

Mehlhaff, Amanda, Lecturer of Nursing; B.S.N., South Dakota State University, 2003; M.S.N., Western Governors, 2017.

Menendez, Hector, Assistant Professor/Research and Extension Specialist-Livestock Grazing, Graduate Faculty; B.S., Sam Houston State University, 2010; M.S., 2012; Ph.D., South Dakota State University, 2018.

Merriman, Janet, E., Lecturer of Construction Management, Department of Construction and Concrete Industry Management; B.S., United States Naval Academy, 1992; M.Eng., The Pennsylvania State University, 2000.

Messerli, Mark, Associate Professor of Biology and Microbiology, Graduate Faculty; B.S., Purdue University, 1992; Ph.D., 1999.

Meyer, Brittney, Professor of Pharmacy Practice; B.S., South Dakota State University, 2007; Pharm.D., 2009.

Michael, Semhar, Professor of Statistics, Graduate Faculty; B.S., University of Asmara, 2006; M.S., University of North Dakota, 2011; Ph.D., The University of Alabama, 2015.

Michna, Gregory, Associate Professor of Mechanical Engineering, Graduate Faculty; B.S., University of Wisconsin, 2001; Ph.D., University of Illinois, 2006.

Michna, Sarah M., Lecturer of Mechanical Engineering; B.S., University of Wisconsin, 2001; M.S., University of Illinois, 2004.

Middendorf, Alex W., Associate Professor of Pharmacy Practice; Pharm.D., M.B.A, Drake University, 2013.

Miller, Erin E., Gail M. Gullickson Professor of Public and Population Health, Interim Center Director, Community Practice Innovation Center (CPIC), Associate Professor of Allied and Population Health; B.S., North Dakota State University, 2008; Pharm.D., 2010; M.B.A., 2011.

Miller, Matthew J., Professor of Practice, School of Psychology, Sociology and Rural Studies; B.A., DePauw University, 1988; J.D., Indiana University, 1992.

Miller, Matthew L., Professor of Chemistry, Department of Chemistry, Biochemistry and Physics, Graduate Faculty; B.S., University of South Dakota, 1985; M.S., Purdue University, 1998; Ph.D., 2001.

Miller, Robert A., Lecturer of Manufacturing Automation and Electronic Engineering Technology, Department of Construction and Concrete Industry Management; B.S., Purdue University, 1979; M.S, 1985, Ph.D., Colorado State University, 1992.

Miller, Tyler M., Professor of Psychology and Director for the School of Psychology, Sociology and Rural Studies, Graduate Faculty; B.A., Buena Vista University, 2004; M.S., Emporia State University, 2008; Ph.D., Texas A&M University, 2012.

Millett, Bruce, Associate Professor of Geography and Geospatial Sciences, Graduate Faculty; B.S., Plymouth State University, 1995; M.S., 1999; Ph.D., South Dakota State University, 2004.

Min, Kyungnan, Senior Lecturer of Civil and Environmental Engineering; B.S., Ajou University, Suwon South Korea, 1995; M.S., 1997; Ph.D., University of Massachusetts, 2006.

Miskimins, W. Keith, Adjunct Professor of Chemistry, Department of Chemistry, Biochemistry and Physics; B.S., University of Wyoming; M.S., Ph.D., University of Arizona, 1982.

Moazzeni Khorasgani, Ali, Assistant Professor of Architecture, School of Design; B.A., Art University of Esfahan, 2007; M.Arch., Yazd University, 2009; Ph.D.,Tarbiat Modares University of Tehran, 2022.

Mohan, Maneesha, Alfred Endowed Chair in Dairy Education, Associate Professor of Dairy and Food Science, Graduate Faculty; B.Tech., Kerala Agricultural University, India, 2007; M.S., South Dakota State University, 2010; Ph.D., University of Tennessee, 2014.

Moisan, Peter, Associate Professor of Veterinary and Biomedical Sciences and Animal Disease Research and Diagnostic Laboratory; Graduate Faculty; B.S., East Tennessee State University, 1975; M.S., University of Tennessee, 1978; DVM, 1981.

Mor, Sunil, Assistant Professor of Veterinary and Biomedical Sciences and Animal Disease Research and Diagnostic Laboratory; Graduate Faculty; B.V.Sc., Chaudhary Charan Singh Haryana Agricultural University, India, 2006; M.V.Sc., 2009; Ph.D., University of Minnesota, 2014.

Moser, Heather, Instructor of Medical Laboratory Science; B.S., South Dakota State University, 2019; M.S., University of North Dakota, 2023.

Mounsdon, Riley, Instructor of Natural Resource Management; B.S., South Dakota State University, 2022; M.S., 2024.

Mudgett, Emma, Professional Academic Advisor, Ness School of Management and Economics; B.S., South Dakota State University, 2018; M.Ed., 2025.

Mural, Ravi, Assistant Professor of Quantitative Genetics and Genomics, Graduate Faculty; B.S., University of Agricultural Sciences (India), 2007; M.S. University of Arkansas, 2014; PhD., University of Nebraska-Lincoln, 2019.

Murphy, Arthur James, Associate Professor of Religion, School of American and Global Studies; B.A., Evangel University, 1998; M.A., Missouri State University, 2001; Ph.D., University of Denver, 2011.

Murphy, Chaise, Assistant Professor of Exercise Science, School of Health and Human Sciences, Graduate Faculty; B.S., University of Nebraska-Lincoln, 2015; M.S., 2017; Ph.D., Technical University of Munich, 2021.

Murray, Linde, Tutoring and TRIO Programs Director; Wintrode Student Success Center; B.A., University of Northern Colorado, 2002; M.S., South Dakota State University, 2009; Ed.D., University of South Dakota, 2013.

Muthukumarappan, K., Klingbeil Endowed Department Head of Agricultural and Biosystems Engineering and Distinguished Professor of Agricultural and Biosystems Engineering, Graduate Faculty; B.S., University of Madras (India), 1981; B.E., Tamil Nadu Agricultural University (India), 1986; M.E., Asian Institute of Technology, 1988; Ph.D., University of Wisconsin, 1993.

Myrick, April M., Lecturer of English; B.A., South Dakota State University, 2001; M.A., 2003.

Nafchi, Ali M., Assistant Professor of Precision Agriculture, Extension, Graduate Faculty; B.S., ShahreKord University (Iran), 2001; M.S., Tehran Science, and Research University (Iran), 2004; PhD., Tamil Nadu Agricultural University (India), 2010.

Nanjundaswamy, Ananda, Richard and Janice Vetter Professorship in Biology and Microbiology and Associate Professor of Biotechnology and Bioprocessing, Graduate Faculty; B.S., University of Agricultural Sciences (India), 1995; M.S., 1998; Ph.D., Kansas State University, 2010.

Nelsen, April, Clinical Assistant Professor of Medical Laboratory Science; B.S., South Dakota State University, 2009; M.S., 2015; Ph.D., 2022.

Nelson, Brietta, Instructor of Biology, Department of Biology and Microbiology; B.S., South Dakota State University, 2005; M.S., 2008.

Nelson, Eric A., Distinguished Professor of Veterinary and Biomedical Sciences and Animal Disease Research and Diagnostic Laboratory, Graduate Faculty; B.A., Mount Marty College, 1979; M.A., University of South Dakota, 1981; Ph.D., South Dakota State University, 1993.

Nelson, Tracy L., Senior Lecturer of Physical Education Teacher Education, School of Health and Human Sciences; B.S., South Dakota State University, 1998; M.S., 2007; Ed.D., University of South Dakota, 2012.

Nepal, Madhav, Professor of Biology and Microbiology, Graduate Faculty; M.S., Tribhuvan University (Nepal), 1997; M.S., University of Northern Iowa, 2003; Ph.D., University of Kansas State-Manhattan, 2008.

Nesmith, Mary Jo, Senior Lecturer of Communication Studies, School of Communication and Journalism; B.S., South Dakota State University, 1996; M.S., 1999; Ed.D., University of South Dakota, 2003.

Ness, Jody, Lecturer of Nursing; B.S., South Dakota State University, 1997; M.S., 2005.

Newstrom, Amy, Clinical Assistant Professor; B.A., University of Montana, 2002; B.S., South Dakota State University, 2003; M.S., 2010; M.S., 2015; Post-Master's Certificate, 2021; DNP, 2021.

Nguyen, Phuong, Assistant Professor of Construction Management, Department of Construction and Concrete Industry Management, Graduate Faculty; B.E., Vietnam National University, Ho Chi Minh City University of Technology (Vietnam), 2014; M.S., California State University, East Bay, 2016; Ph.D., University of Kansas, 2020.

Nguyen, Trang, Assistant Professor of Mathematics and Statistics, Graduate Faculty; B.S., Quy Nhon University in Vietnam, 2018; M.A., Wayne State University, 2022; Ph.D., 2025.

Niederbaumer, Lea R., Clinical Assistant Professor of Nursing; B.S., Presentation College, 2008; B.S., South Dakota State University, 2015; DNP, 2021.

Niemann, Tiffany, Lecturer of Medical Laboratory Science; B.S., South Dakota State University, 2015; M.S., University of Florida, 2020.

Nleya, Thandiwe M., Professor of Agronomy, Horticulture and Plant Science, Graduate Faculty; B.S., University of Zimbabwe (Zimbabwe), 1984; M.S., Southampton University (England), 1989; Ph.D., University of Saskatchewan (Canada), 1997.

Norenberg, Adam, Clinical Assistant Professor; B.A.N., Augustana University, 2008; DNP, South Dakota State University, 2016.

Norman, Tommy, Lecturer of Animal Science, Livestock Judging Coach; B.S., South Dakota State University, 2021; M.S, 2023.

Northrup, Megan, Distinguished Professor Kendra Kattelmann Educator of Excellence in Nutrition and Dietetics and Director for Accelerated Graduate Program in Nutrition and Dietetics (M.S.), School of Health and Human Sciences; B.S., South Dakota State University, 2013; M.S., 2016.

Northrup, Riley, Instructor of Sport Management, School of Health and Human Sciences; B.S., Chadron State College, 2010; M.A., Augustana University, 2014.

Numata, Izaya, Assistant Research Professor, Geospatial Sciences Center of Excellence; B.S., University of Sao Paulo, 1996; M.S., Instituto Nacional de Pesquisas Espaciais, 1999; Ph.D., University of California, Santa Barbara, 2006; D.M., Colorado Technical Institute, 2014.

Nunes, Vander, Assistant Professor of Sustainable Agriculture, Graduate Faculty; B.S., Federal University of Vicosa (Brazil), 2013; M.S., 2015; Ph.D., 2019.

Nwadike, Londa, David A. Thompson Endowed Department Head and Professor for Dairy and Food Science, Graduate Faculty; B.S., South Dakota State University, 2000; M.S., Kansas State University, 2002; Ph.D., University of Iowa, 2009.

O'Connor, Shanna, Associate Professor and Department Head of Pharmacy Practice; B.A., Saint Mary's College Notre Dame, 2004; Pharm.D., University of Wyoming, 2009.

Odland, Carissa, Clinical Assistant Professor of Veterinary and Biomedical Sciences, Professional Program in Veterinary Medicine; B.S., University of Minnesota, 2006; M.S., 2022; DVM, 2009.

Olson, Kenneth A., Assistant Professor of Aerospace Studies; B.S., Excelsior University, 2012; M.S., John Brown University, 2016.

Orth, Mandy, Senior Lecturer of Biology and Microbiology; B.S., South Dakota State University, 2008; M.S., 2012; Ph.D., 2018.

Osborne, Lawrence, Adjunct Assistant Professor of Agronomy, Horticulture and Plant Science; B.S., University of Nebraska, 1996; M.S., 1999; Ph.D., South Dakota State University, 2006.

Osborne, Shannon L., Adjunct Professor of Agronomy, Horticulture and Plant Science; B.S., Oklahoma State University, 1994; M.S., 1996; Ph.D., University of Nebraska, 1999.

Osterloh, Kristopher, Associate Professor of Agronomy, Horticulture and Plant Science, Graduate Faculty; B.S., California Polytechnic State University, 2011; M.S., Northern Illinois University, 2013; Ph.D., Oregon State University, 2018.

Owen, Jody L., Senior Director, Student Success Center and Coordinator for Undergraduate Academic Advising, Wintrode Student Success and Opportunity Center; B.S., South Dakota State University, 1996; M.S., 2002; Ed.D., University of South Dakota, 2012.

Pack, Chulwoo, Assistant Professor of Computer Science; B.S., South Dakota State University, 2014; M.S., 2017; Ph.D., University of Nebraska-Lincoln, 2023.

Packer, Kiera, Assistant Coordinator - Recruitment and Academic Services for the College of Agriculture, Food and Environmental Sciences; B.S., University of Idaho, 2023; M.S., University of Florida, 2025.

Pallares, Ismael, Professional Academic Advisor, Department of Biology and Microbiology; B.A., University of Montana, 2014; M.Ed., South Dakota State University, 2024.

Palmer, David, Professor of Management, Ness School of Management and Economics; B.S., State University of New York at Binghamton, 1982; M.B.A., Bowling Green State University, 1987; Ph.D., Purdue University, 1997.

Paradies, Casey, Instructor of Theatre, School of Performing Arts; B.A., University of North Dakota, 2008, M.A., 2012, M.F.A., University of South Dakota, 2022.

Park, Kunsoon, Associate Professor of Hospitality, Tourism, and Event Management, School of Health and Human Sciences, Graduate Faculty; B.S., University of Nebraska at Omaha, 1995; M.B.A, 1995; M.S., Virginia Polytechnic Institute and State University, 2001; Ph.D., 2006.

Parsons, Ira, Assistant Professor of Data Systems and Refining, Department of Animal Science, Graduate Faculty; B.S., Kansas State University, 2015; M.S., Texas A&M University, 2018; Ph.D., Mississippi State University, 2022.

Paulson, Carmen, Senior Lecturer in Animal Science; B.S., North Dakota State University, 1992; DVM, Colorado State University, 1996.

Pearce, David, Adjunct Professor of Biochemistry, Department of Chemistry, Biochemistry and Physics; B.S., University of Wolverhampton, 1986; Ph.D., University of Bath, 1989.

Peary, John G., Professor and Department Head of Military Science, B.S., Texas State University, 2003; M.S., Black Hills State University, 2021; M.S., National Defense University, 2026.

Perkins, Lora, Professor of Natural Resource Management, Graduate Faculty; B.S., New Mexico State University, 2004; M.S., Oregon State University, 2006; Ph.D., University of Nevada, 2010.

Perry, George, Adjunct Professor of Animal Science, Extension Beef Specialist, Graduate Faculty; B.S., Texas A&M University, 1998; M.S., University of Missouri, 2000; Ph.D., 2003.

Peters, Douglas J., Instructor of Mechanical Engineering; B.A., Southwest State University, 1984; B.S., South Dakota State University, 2001; M.S., University of North Dakota, 1991.

Peters, Stacy, Professor of Pharmacy Practice; B.S., South Dakota State University, 2002; Pharm.D., 2004.

Peterson, Gregory R., Professor of Philosophy and Religion and Associate Director of the School of American and Global Studies, Graduate Faculty; B.A., University of Minnesota, 1988; M.A., Luther Seminary, 1990; Ph.D., University of Denver, 1996.

Peterson, Meghan, Assistant Director, First Year Advising Center, Wintrode Student Success and Opportunity Center; B.S., South Dakota State University, 2002; M.S., 2005.

Phinney, Ranae, Instructor of Respiratory Care, Department of Allied and Population Health; A.S., Dakota State University, 1993; B.S., 1995.

Pillatzki, Angela E., Associate Professor and Department Head of Veterinary and Biomedical Sciences and Director of the Animal Disease Research and Diagnostic Laboratory, Graduate Faculty; B.S., University of Wyoming, 1991; DVM, Kansas State University, 1995; M.S., South Dakota State University, 2007.

Plowman, Laura, Professional Academic Advisor, School of American and Global Studies; B.A., Augustana College, 2007; MLIS, 2011.

Potts, Dale, Associate Professor of History, School of American and Global Studies, Graduate Faculty; B.A., Kutztown University of PA, 1992; M.A., Penn State Harrisburg, 1997; Ph.D., University of Maine, Orono, 2007.

Prairie, Douglas S., Lecturer of Agricultural and Biosystems Engineering; B.S., South Dakota State University, 1997; M.S., Boise State University, 2004

Priest, Gary W., Department Head and Professor of Aerospace Studies; B.A., University of Michigan, 2007; M.S., Air University, 2020.

Prigge, William D., Professor of History, School of American and Global Studies; B.A., University of Minnesota-Duluth, 1994; M.A., University of Wisconsin-Eau Claire, 1997; Ph.D., Marquette University, 2005.

Puthawala, Michael, Assistant Professor of Mathematics and Statistics, Graduate Faculty; B.S., Rensselaer Polytechnic Institute, 2014; M.S., University of California at Los Angeles, 2016; Ph.D., 2019.

Qi, Junjian, Harold C. Hohbach Endowed Professor in Electrical Engineering, Associate Professor of Electrical Engineering, B.E., Shandong University (China), 2008; Ph.D., Tsinghua University, 2013.

Quam, Erica, Professional Academic Advisor, School of Communication and Journalism; B.S. South Dakota State University, 2010; M.S., 2013.

Racanelli, Carol, Professional Academic Advisor, College of Nursing; B.S., Brigham Young University, 1995; M.S., Utah State University, 2001.

Raetz, Lisa, Instructor of Biology, Department of Biology and Microbiology; B.A., Gustavus Adolphus College, 2007; M.S., University Of Illinois Urbana-Champaign, 2009.

Ragsdale, Chalon A., Professor of Music, School of Performing Arts; B.M.E., University of Oklahoma, 2001; M.M., University of Arkansas, 2003; D.M.A., Rutgers University, 2007.

Rahman, Shafiqur, Professor of Pharmaceutical Sciences, Graduate Faculty; B.S., Dhaka University, 1985; M.S., 1987; Ph.D., Memorial University of Newfoundland, 1995.

Raina, Komal, Kevin and Lorie Haarberg Endowed Chair in Oncology Research and Associate Professor of Pharmaceutical Sciences, Graduate Faculty; B.Pharm., Hamdard University, 1995; M. Pharm., Panjab University, 1997; Ph.D., Hamdard University, 2004.

Ramos-García, María, Professor of Spanish, School of American and Global Studies, Graduate Faculty; B.A., Universidad de Santiago de Compostela (Spain), 1991; M.A., Washington University, 1993; Ph.D., 1997.

Rauen, Jaclyn, Instructor of Nursing; B.S.N, South Dakota State University, 2010; M.S.N., Nebraska Methodist College, 2018.

Ray, Annette, Lecturer of Nursing; B.S.N., South Dakota State University, 1995; M.S.N., University of Phoenix, 2006.

Reese, Cheryl L., Klingbeil Endowed Educator in Precision Agriculture, Senior Lecturer of Agronomy, Horticulture and Plant Science, Graduate Faculty; B.A, University of Minnesota; M.S., 1995; Ph.D., South Dakota State University, 2009.

Reichardt, Peter, Senior Lecturer of Studio Art, School of Design; B.F.A., Cleveland Institute of Art, 2005; M.F.A., Washington State University, 2007.

Reineke, Joshua, Haarberg Drug, Disease and Delivery Research Center Director and Associate Professor of Pharmaceutical Sciences, Graduate Faculty; B.A. and B.S., Brown University, 2003; Ph.D., 2008.

Renli, Cassondra L, Instructor of Respiratory Care; B.S., Dakota State University, 2020.

Reynolds, Paul D., Professor and Director of School of Performing Arts, Graduate Faculty; B.M.E., University of Kansas, 1985; M.M., Florida State University, 1986; D.M.A., University of Maryland, 1994.

Ritter, Erik, Instructor of Studio Art, School of Design; B.A., South Dakota State University, 1991; M.F.A., San Francisco Art Institute, 1994.

Robbins, Christopher, Assistant Professor of Population Health, Graduate Faculty; B.S., University of Michigan, 1995; M.S., 2003; Ph.D., Indiana University, 2015.

Robertson, Franklin, Assistant Professor of Practice of Journalism, School of Communication and Journalism; B.A., South Dakota State University, 1995; M.M.C., 2012.

Robinette, Andrew, Professor of Music, School of Performing Arts; B.M., University of North Carolina at Greensboro, 1997; M.M., Temple University, 2005; D.M.A., University of South Carolina, 2013.

Robinson, Elizabeth, Assistant Professor of Music, School of Performing Arts; B.M., Drake University, 2006; M.M., San Francisco State University, 2006; D.A., Ball State University, 2012.

Roerig, Noah, Honors Advisor, Van D. and Barbara B. Fishback Honors College; B.S., South Dakota State University, 2022; M.Ed., 2024.

Roiger, Trevor C., Clinical Associate Professor of Athletic Training, School of Health and Human Sciences, Graduate Faculty; B.S., South Dakota State University, 1997; M.A., University of Minnesota, 1999; Ed.D., University of South Dakota, 2009.

Rölz, Eckhard, Professor of German, School of American and Global Studies, Graduate Faculty; B.A., Utah State University, 1994; M.A., University of North Carolina, 1996; Ph.D., 2000.

Romsa, Bryan, Associate Professor of Sport Management, School of Health and Human Sciences, Graduate Faculty; B.A., Concordia College, 2005; M.S., Minnesota State University, 2008; Ed.D., 2013.

Romsa, Katelyn, Associate Professor of Counseling and Human Resource Development, School of Counseling, Human Development and Family Science, Graduate Faculty; B.A., Concordia College, 2005; M.S., Minnesota State University, 2008; Ed.D., 2011.

Rossow, Jeannie, Instructor of Nursing; B.S.N., South Dakota State University, 2012; M.S., 2016.

Roux, Kyle, Adjunct Associate Professor of Biochemistry, Department of Chemistry, Biochemistry and Physics; B.S., Emory University, 1998; Ph.D., University of Florida, 2004.

Rovai, Maristela, Associate Professor of Dairy and Food Science, Extension Dairy Specialist, Graduate Faculty; DVM, Veterinary Medicine School of Fundacao de Ensino Octavio Bastos, Brazil, 1994; M.S., Universitat Autonoma de Barcelona, Spain, 1997; Ph.D., 2001.

Roy, David P., Adjunct Professor of Geography, Graduate Faculty; B.S., University of Lancaster (United Kingdom), 1987; M.S., University of Edinburgh (United Kingdom), 1988; Ph.D., University of Cambridge (United Kingdom), 1993.

Royall, Rafe, Associate Professor of Animal Science, Graduate Faculty; B.S., Texas Tech University, 2020; M.S., Kansas State University 2022; Ph.D., 2023.

Rubendall-LaVoy, Brenna, Professional Academic Advisor, Wintrode Student Success and Opportunity Center; B.A., University of Minnesota, Morris, 2020; M.Ed., South Dakota State University, 2022.

Rudnik, Joshua, Assistant Professor of American Indian and Indigenous Studies, School of American and Global Studies; B.A., University of Denver, 2014; M.A., University of South Dakota, 2016; Ph.D., 2021.

Ruff, Jonathan W.A., Assistant Professor of Political Science, School of American and Global Studies, Coordinator, Mike Huether Public Service Academy; B.S., Colorado State University, 2013; MPA, Montana State University, 2017; Ph.D., Oregon State University, 2023.

Ruff, Tiara, Coordinator of Native American Advising and Outreach, Rapid City; M.B.A., American InterContinental University, 2005; DNP, University of Minnesota-Twin Cities, 2015.

Rusche, Warren, Assistant Professor in Animal Science, Graduate Faculty; B.S., South Dakota State University, 1990; M.S., Kansas State University, 1992; Ph.D., South Dakota State University, 2021.

Sackreiter, Heidi, A., Lecturer of Teacher Education, School of Education, Graduate Faculty; B.S., Northern State University, 1998; M.S., 2001; Ed.D., University of South Dakota, 2007.

Salonen, Kayla, Clinical Instructor of Respiratory Care; B.A., Morningside University, 2014; A.S., Dakota State University, 2015.

Salunke, Prafulla, Assistant Professor of Dairy and Food Science, Graduate Faculty; B.S., Gujarat Agricultural University, 1993; M.S., 1996; Ph.D., South Dakota State University, 2013.

Sandager, Amanda, Lecturer of Nursing; B.S.N., South Dakota State University, 2013; M.S.N., 2018.

Sanguinet, Karen A., Professor and Klingbeil Endowed Department Head of Agronomy, Horticulture, and Plant Science, Graduate Faculty; B.S., University of Wisconsin, 1998; Ph.D., University of California, 2003.

Santos, Joseph M., Ness Endowed Director of the Ness School of Management and Economics, Professor of Economics, Graduate Coordinator, Graduate Faculty; B.S., The College of New Jersey, 1990; M.A., Rutgers University, 1992; Ph.D., 1996.

Sarasty, Oscar, Assistant Professor of Agribusiness, Ness School of Management and Economics, Graduate Faculty; B.S., Universidad de las Americas (Ecuador), 2017; M.S., Texas Tech University, 2020; Ph.D., 2024.

Saunders, Christopher, Professor of Mathematics and Statistics, Graduate Faculty; B.S., California State University at Chico, 2000; M.S., University of Kentucky, 2002; Ph.D., 2006.

Schievelbein, Danielle M., Assistant Professor of Nursing, Graduate Faculty; B.S., South Dakota State University, 2008; M.S., 2013; Ph.D., 2020.

Schievelbein, Mercedes, Interim Director for the Center for Online and Professional Educationn; B.S., South Dakota State University, 2014; M.S., 2017.

Schmidt, Karl J., Lecturer in History and Geography; B.A., University of South Florida, 1985; M.A., Florida State University, 1987; Ph.D., 1994.

Schmitz-Esser, Stephan, Professor of Veterinary and Biomedical Sciences and Animal Disease Research and Diagnostic Laboratory, Graduate Faculty; Diploma, Technische Universität München, (Germany), 2001; Ph.D., University of Vienna (Austria), 2004.

Schomberg, Takara, Lecturer of Nursing; B.S.N., South Dakota State University, 2009; M.S.N., 2016.

See, Pirita, Senior Lecturer of Psychology, School of Psychology, Sociology and Rural Studies; B.A., Purdue University, 2009; M.A., Miami University, 2011; Ph.D., 2014.

Seeling, Patrick M., Assistant Professor of Military Science; B.A., University of Missouri-Columbia, 2020.

Sehgal, Sunish K., Professor of Agronomy, Horticulture and Plant Science, Graduate Faculty; B.S., Haryana Agricultural University, India, 1999; M.S., Punjab Agricultural University, India, 2001; Ph.D., 2005.

Sellars, Sarah, Assistant Professor and Extension Specialist - Sustainable Farm and Food Systems, Ness School of Management and Economics; B.S., University of Illinois Urbana-Champaign, 2017; M.S., Purdue University, 2019; Ph.D., University of Illinois Urbana-Champaign, 2023.

Serfling, Nathan, Assistant Professor of English; B.A., South Dakota State University, 2001; M.A., 2006; Ph.D., Old Dominion University, 2019.

Severud, William, Assistant Professor of Natural Resource Management, Graduate Faculty; B.A., Carleton College, 2002; M.S., Northern Michigan University, 2011; Ph.D., University of Minnesota, 2017.

Sexton, Peter, Associate Professor of Agronomy, Horticulture and Plant Science, Manager - SE Research Farm, Graduate Faculty; B.S., South Dakota State University, 1985; M.S., University of Florida, 1990; Ph.D., 1993.

Seydel, Abby, Assistant Professor of Nursing; B.A.N., Augustana University, 2018; Ph.D., South Dakota State University, 2025.

Sharafeldin, Tamer A., Associate Professor of Veterinary and Biomedical Sciences and Animal Disease Research and Diagnostic Laboratory, Graduate Faculty; B.V.Sc., Zagazig University (Egypt), 2004; M.V.Sc., 2008; Ph.D., University of Minnesota, 2015.

Shelsta, Corey, Professor of Theatre, School of Performing Arts, Graduate Faculty; B.S., South Dakota State University, 1993, M.F.A., Wayne State University, 1996.

Sher, Mazhar, Assistant Professor of Agricultural and Biosystems Engineering, Graduate Faculty; B.S., University of Engineering and Technology Peshawar (Pakistan), 2009; M.S., 2013; Ph.D., Florida Atlantic University, 2020.

Shinn, Bonnie, Lecturer of Counseling and Human Development, School of Education; B.S., South Dakota State University, 1998; M.S., Shippensburg, 2003.

Shires, Madalyn, Assistant Professor of Plant Pathology, Department of Agronomy, Horticulture and Plant Science; B.S., Oklahoma State University, 2015; Ph.D., Texas A&M University, 2020.

Shore, Jay, Associate Professor of Chemistry, Department of Chemistry, Biochemistry and Physics, Graduate Faculty; B.S., Oregon State University, 1986; Ph.D., University of Illinois, 1992.

Short, Rachel, Assistant Professor of Natural Resource Management, Graduate Faculty; B.A., Illinois Wesleyan University, 2009; M.S., East Tennessee State University, 2013; M.S.T., University of Maine, 2016; Ph.D., Texas A&M University, 2020.

Shrestha, Denusha, Assistant Professor of Veterinary and Biomedical Sciences and Professional Program in Veterinary Medicine, Graduate Faculty; B.V.Sc., Tribhuwan University (Nepal), 2014; Ph.D., Iowa State University, 2022.

Siddiqui, Aziz, Clinical Assistant Professor of Veterinary and Biomedical Sciences and Professional Program in Veterinary Medicine; DVM, Bangladesh Agricultural University, 1998; M.S., 2000; PhD., 2008.

Silvernagel, Craig, Milton Nies Endowed Faculty Scholar, Associate Professor of Entrepreneurship, Ness School of Management and Economics; B.B.A., University of North Dakota, 1992; M.B.A., 1995; Ph.D., 2014.

Smart, Alexander, Professor and Interim Department Head of Natural Resource Management, Graduate Faculty; B.S., University of Wisconsin, 1989; M.S., 1992; Ph.D., University of Nebraska, 2001.

Smith, Sharon, Professor of English, Graduate Faculty; B.A., Augsburg College, 1991; M.A., University of Georgia, 1996; Ph.D., University of Illinois-Chicago, 2007.

Smith, Zachary, Associate Professor of Animal Science; B.S., Texas Tech University, 2012; M.S., South Dakota State University, 2015; Ph.D., Texas Tech University, 2018.

Smith-Ricketts, Jessica, Assistant Professor of Exercise Science, School of Health and Human Sciences, Graduate Faculty; B.S., Longwood University, 2019; M.S., University of Tennessee, 2021; Ph.D., Kent State University, 2025.

Snow, Ethan, Associate Professor of Biology and Microbiology, Department of Biology and Microbiology, Graduate Faculty; B.S., South Dakota State University, 2014; Ph.D., University of North Dakota, 2019.

Snyder, Bradley, Instructor of Music, School of Performing Arts; B.M., Pennsylvania State University, 2016, M.M., Rice University, 2018, D.M., Florida State University, 2021.

Snyder, Stephen, Lecturer of English; B.A., South Dakota State University, 2008; M.A., 2014.

Solberg, Heather, Associate Professor of Practice of Advertising, School of Communication and Journalism; B.S., Florida Atlantic University, 2000; M.B.A., University of South Dakota, 2002.

Sommerfeld, Jessica, Professional Academic Advisor, Wintrode Student Success and Opportunity Center; B.A., Rice University, 2001; M.S., University of Arkansas, 2002.

Spangler, Daniel, Instructor of English; B.A., South Dakota State University, 2020; M.A., 2023.

Sparkman, Alan, Director Concrete Industry Management, Professor of Practice of the Construction and Concrete Industry Management Department; B.S., Mount Vernon Nazarene University, 1980; M.B.A., Jones International University, 2004.

Spitz, Maria C., Associate Professor of Modern Languages, School of American and Global Studies; B.A., Monmouth College, 1987; M.A., Washington University, 1992; Ph.D., 2001.

Stafford, Joshua, Assistant Unit Leader of South Dakota Cooperative Fish and Wildlife Research Unit, Associate Professor, Natural Resource Management; B.S., Oregon State University, 1997; M.S., South Dakota State University, 2000; Ph.D., Mississippi State University, 2004.

Steckelberg, Alayna, Instructor of English; B.A., South Dakota State University, 2019; M.A., 2022.

Steinlicht, Carrie, Senior Lecturer, Department of Construction and Concrete Industry Management, Graduate Faculty; B.S., Michigan Technological University, 1990; M.A., Central Michigan University, 1993; Ph.D., Cappella University, 2010.

Stemwedel, Mark, Senior Lecturer of Studio Art, School of Design; B.S., South Dakota State University, 1997; M.F.A., University of South Dakota, 2008.

Stephens, Moneik, Program Coordinator, Center for Online and Professional Education; B.S., South Dakota State University, 2002; M.M., National American University, 2014.

Stevens, Mark, Associate Professor of Music, School of Performing Arts; B.A., Whitworth University, 2006; M.M., University of Nebraska-Lincoln, 2008; M.A., University of Oregon, 2017; D.M.A., University of Oregon, 2017.

St-Pierre, Benoit, Associate Professor of Animal Science, Graduate Faculty; B.S., Universite Laval, 1992; M.S., 1994; Ph.D., University of Toronto, 2002.

Strain, Joey D., Professor of Pharmacy Practice; B.S., South Dakota State University, 2000; Pharm.D., 2002.

Stromer, Allyson, Lecturer of Nursing; B.S.N., South Dakota State University, 2008; M.S.N., 2017.

Stuckey, Kristen, Professional Academic Advisor, School of Psychology, Sociology and Rural Studies; A.A.S., Lake Area Technical College, 2012; B.S., South Dakota State University, 2020; M.Ed., 2022.

Summerfield, Erica, Karen D. Stuck Assistant Professor of Agricultural Communication, School of Communication and Journalism, Graduate Faculty; B.S., Oklahoma State University, 2016; M.S., 2019; Ph.D., The Ohio State University, 2024.

Swanson, Rebecca, Assistant Professor of Animal Science, Graduate Faculty; B.S., California State University, 2017; M.S., University of Nebraska-Lincoln, 2020; Ph.D., Mississippi State University, 2023.

Swartz, Turner, Assistant Professor of Dairy and Food Science, Graduate Faculty; B.S., Pennsylvania State University, 2009; Ph.D., Virginia Polytechnic Institute and State University, 2018.

Tan, Songxin, Associate Professor of Electrical Engineering, Graduate Faculty; B.S., Sichnan University, 1994; M.S., 1997; Ph.D., University of Nebraska, 2003.

Tarafder, Solaiman, Assistant Professor of Mechanical Engineering; Graduate Faculty; B.S., Shahjalal University of Science and Technology, 2004; M.S., 2005; Ph.D., Washington State University, 2013.

TenBrink, Marisa, Assistant Professor of Graphic Design, School of Design; B.S., South Dakota State University, 2012; M.F.A. Vermont College of Fine Arts, 2017.

Tetzlaff, Mariah, Instructor of Nursing; B.S.N., South Dakota State University, 2019; M.S.N., Nebraska Methodist College, 2024.

Thaler, Robert, Farm Credit Services of American Endowed Chair in Swine Production and Distinguished Professor of Animal Science, Graduate Faculty; B.S., South Dakota State University, 1982; M.S., 1984; Ph.D., Kansas State University, 1988.

Theroux, Shari, Assistant Librarian, H.M. Briggs Library; B.A., Northern State University, 2005; M.L.S., University of North Texas, 2012.

Thomas, Raynimol, Assistant Professor of Human Development and Family Science, School of Counseling, Human Development and Family Science, Graduate Faculty; B.A., University of Texas at Arlington, 2015; M.S., Texas State University, 2018; Ph.D., University of Arizona, 2023.

Tian, Debin, Assistant Professor of Veterinary and Biomedical Sciences and Animal Disease Research and Diagnostic Laboratory, Graduate Faculty; DVM equivalent, Southwest Agricultural University (China), 2004; M.S., Yangzhou University (China), 2008; Ph.D., Chinese Academy of Agricultural Sciences (China), 2011.

Thiex, Natalie W., Associate Professor of Biology and Microbiology, Graduate Faculty; B.A., Concordia College, 1999; MPH, University of Michigan Ann Arbor, 2002; Ph.D., 2008.

Thorne, True, Academic Coordinator, TRIO Department; B.S., South Dakota State University, 2023.

Ting, Francis, Professor of Civil and Environmental Engineering, Graduate Faculty; B.S., University of Manchester (Great Britain), 1982; M.S., California Institute of Technology, 1983; Ph.D., 1989.

Tobias-Lauerman, Abigail, Assistant Professor of Sociology, School of Psychology, Sociology and Rural Studies, Graduate Faculty; B.A., University of Wisconsin-Green Bay, 2015; M.S., University of Tennessee, 2017; Ph.D., 2023.

Tofte, Elizabeth, Associate Professor of Landscape Architecture, School of Design; BSLA, Washington State University, 1979; B. Arch, University of Idaho, 1987; MRP, Washington State University, 1986; Ph.D., University of Edinburgh, 2015.

Toronto, Emily, Professor of Music, School of Performing Arts; B.M., Brigham Young University, 1997; M.M., University of Michigan, 1999; D.M.A., 2003.

Trooien, Todd P., Professor of Agricultural and Biosystems Engineering, Graduate Faculty; B.S., South Dakota State University, 1983; M.S., 1985; Ph.D., Colorado State University, 1988.

Trosen, Marissa, Program Director and Instructor of Respiratory Care; A.S., Dakota State University, 2013; B.S., 2014; M.P.H, South Dakota State University, 2021; DMSc, Northeastern University, 2025.

Tsakiridis, George, Lecturer of Philosophy and Religion, School of American and Global Studies; B.S., Iowa State University, 1998; Th.M., Dallas Theological Seminary, 2002; Th.M., Lutheran School of Theology at Chicago, 2005; Ph.D., 2009.

Tummala, Hemachand, Department Head and Professor of Pharmaceutical Sciences, Graduate Faculty; B.Pharm., Kakatiya University (India), 1994; M.S., Punjab University (India), 1997; Ph.D., National Institute of Immunology (India), 2002.

Twedt, Michael P., Senior Lecturer in Mechanical Engineering and Program Engineer; B.S., South Dakota State University, 1992; M.S. 1994.

Uilk, Nicholas, Klingbeil Endowed Educator in Precision Agriculture, Lecturer of Agricultural and Biosystems Engineering; B.S., South Dakota State University, 2008; M.S., 2011.

Ujah, Nacasius, Associate Professor of Corporate Finance, Ness School of Management and Economics; B.B.A., University of Central Arkansas, 2003; M.B.A., 2006; Ph.D., Texas A&M Intl. University, 2013.

Ulvestad, Erin L., Lecturer of Mathematics and Statistics; B.S., South Dakota State University, 2004; M.S., 2006.

Underwood, Keith, Associate Professor of Animal Science, Graduate Faculty; B.S., Texas Tech University, 2002; M.S., University of Wyoming, 2007; Ph.D., 2008.

Urso, Philip, Associate Professor of Animal Science, Graduate Faculty; B.S., Sam Houston State University, 2015; M.S., 2017; Ph.D., Texas Tech University, 2020.

VahnDijk, Amy, Clinical Assistant Professor of Nursing; B.S.N., Washington State University, 2013; DNP, 2017.

Van der Sluis, Evert, Professor of Agricultural Economics, Ness School of Management and Economics, Graduate Faculty; B.S., Hogere Landbouwschool (Leeuwarden, The Netherlands), 1982; M.S., Iowa State University, 1988; Ph.D., University of Minnesota, 1993.

Van Gilder, Deidra J., Interim Department Head of Allied and Population Health and Professor of Pharmacy Practice; B.S., South Dakota State University, 2000; Pharm.D., 2002.

Van Klompenburg, Emily, Associate Professor of Pharmacy Practice; B.S., South Dakota State University, 2013; Pharm.D., 2015.

Van Patten-Freeman, Abigail, Assistant Professor of Counseling, School of Counseling, Human Development and Family Science, Graduate Faculty; B.A., University of Northern Iowa, 2018; M.A., 2021; Ph.D., University of Iowa, 2025.

Vant Hul, Brianna Jansma, Assistant Professor of Pharmacy Practice; B.S., South Dakota State University, 2015; Pharm.D., 2017.

Varenhorst, Adam J., Associate Professor of Agronomy, Horticulture and Plant Science, Graduate Faculty; B.S., Briar Cliff University, 2009; M.S., Iowa State University, 2011; Ph.D., 2015.

Vasquez-Hidalgo, Manuel (Alex), Assistant Professor of Veterinary and Biomedical Sciences, Graduate Faculty; B.V.Sc., Central University of Ecuador, 2011; M.S., North Dakota State University, 2016; Ph.D., 2019.

Veire, Camilla, Professional Academic Advisor/Graduate Program Specialist, College of Nursing; B.S., University of Wisconsin, 1985; M.S., South Dakota State University, 1992; M.B.A., University of Sioux Falls, 2004.

Veldkamp, Megan, Instructor of Nursing; B.S.N., South Dakota State University, 2013; M.S.N., 2022.

Venable, Deborah J., Instructor of Nursing; B.S., Capella University, 2020, M.S., 2021.

Venhuizen, Lynda, Lecturer of Teacher Education, School of Education; B.S., University of South Dakota, 1991; M.S., South Dakota State University, 1998.

Verley, Patrick, Instructor of Nursing; B.S.N., Dakota Wesleyan University, 2016; M.S.N., University of Phoenix, 2019.

Vermeer, Paola, Adjunct Assistant Professor of Biochemistry, Department of Chemistry, Biochemistry and Physics; B.A., Brandeis University, 1991; M.A., Columbia University, 1994; M.Phil., 1996; Ph.D., 1998.

Versteeg, John, Lecturer of Mechanical Engineering; B.S., South Dakota State University, 2011; M.S., 2013.

Vestal, Donald, Associate Professor of Mathematics and Statistics, Graduate Faculty; B.S., Colorado State University, 1990; M.S., 1992; Ph.D., University of Colorado-Boulder, 1998.

Vestal, Sharon, Professor of Mathematics and Statistics, Graduate Faculty; B.A., University of South Dakota, 1992; M.A., 1994; Ph.D., University of Colorado, 2000.

Vivas, Jimena, Assistant Professor of Practice for Interior Design, School of Design; B.A., Mendoza University, 2011; M.A., Valencia International University, 2019.

Vollan, Charles A., Associate Professor of History, School of American and Global Studies, Graduate Faculty; B.A., Hiram College, 1991; M.A., University of Tulsa, 1994; Ph.D., University of Nebraska-Lincoln, 2004.

Vondruska, Judy, Senior Lecturer in Physics, Department of Chemistry, Biochemistry and Physics; B.S., University of Nebraska, 1986; M.S., University of Arizona, 1992; Ph.D., University of Nebraska-Lincoln, 2017.

Wails, Christy, Assistant Professor of Department of Natural Resource Management, Graduate Faculty; B.S., Pennsylvania State University, 2013; M.S., University of New Brunswick, 2016; Ph.D., Northern Illinois University, 2021.

Walker, Julie A., Extension Beef Specialist and Professor of Animal Science, Graduate Faculty; B.S., North Dakota State University, 1983; M.S., Purdue University, 1990; Ph.D., University of Kentucky, 1995.

Wallace, Jacob E., Professor of Music, School of Performing Arts; B.A., University of Nebraska-Lincoln, 2004; M.M., Baylor University, 2006; D.M.A., University of Georgia, 2009.

Walsh, Michael, Professor of Music, School of Performing Arts; B.M., University of Miami, 1998; M.M., 2000; D.M.A., University of Kansas, 2008.

Walter, Chanda L., Professional Academic Advisor, College of Education and Human Sciences; B.S., South Dakota State University, 2007; M.S., 2010.

Wang, Tong, Professor and SDSU Extension Advanced Production Specialist, Ness School of Management and Economics; B.S., Shandong Institute of Light Industry (China), 2000; M.S., Tsinghua University (China), 2006; Ph.D., Iowa State University, 2012.

Wang, Xiuqing, Professor of Biology and Microbiology, Graduate Faculty; DVM, Inner Mongolia College of Agriculture and Animal Husbandry (China), 1988; M.S., 1991; Ph.D., University of Connecticut, 2000.

Wang, Zhiguang, Everett and Bernetta DuBois Endowed Professorship in Business Finance and Investments Analysis, Ness School of Management and Economics, Graduate Faculty; B.S., Jilin University (China), 2000; M.A., Shanghai University of Finance and Economics (China), 2004; M.A., Florida International University, 2008; Ph.D., 2009.

Ward, Hilary, Assistant Professor of Veterinary and Biomedical Sciences and Animal Disease Research and Diagnostic Laboratory, Graduate Faculty; B.S., Metropolitan State University of Denver, 2014; MPH, University of Minnesota, 2020; DVM, 2020.

Warner-Welbon, Stacey, Compliance and Professional Education Coordinator, Center for Online and Professional Education; B.S., South Dakota State University, 1995.

Watson, Megan, Lecturer of Nursing; B.S.N., South Dakota State University, 2012; M.S.N., 2018.

Weaver, Eric, Assistant Professor of Animal Science, Graduate Faculty; B.A., University of Northern Iowa, 1986; M.S., South Dakota State University, 1990; Ph.D., 1992.

Weaver, Kristyn B., Instructor of Studio Art, School of Design; B.F.A., University of Texas at Austin, 2004; M.F.A., Washington State University, 2008.

Wei, Lin, Professor and Graduate Coordinator of Agricultural and Biosystems Engineering, Graduate Faculty; B.S., China Agriculture University, 1986; M.S., Mississippi State University, 2005; Ph.D., 2009.

Weidauer, Lee, Associate Professor of Exercise Science, School of Health and Human Sciences, Coordinator M.S. and Ph.D. in Nutrition and Exercise Sciences; B.S., South Dakota State University, 2007; M.S., 2009; Ph.D., 2012.

Wenzel, Katie, Assistant Professor of Natural Resource Management, Graduate Faculty; B.S., University of Oklahoma, 2013; Ph.D., Northwestern University, 2021.

Westhoff, Shaina, Lecturer of Crops and Soils, Department of Agronomy, Horticulture and Plant Science; B.S., South Dakota State University, 2012; M.S., 2018; Ph.D., 2022.

Westwick, Joshua, Professor of Communication Studies and Director of the School of Communication and Journalism, Graduate Faculty; B.S., South Dakota State University, 2001; M.S., 2003; Ed.D., University of South Dakota, 2012.

White, George, Professor of Geography and Geospatial Sciences, Graduate Faculty; B.A., California State University, 1987; M.A., University of Oregon, 1990; Ph.D., 1994.

Whitney, Sheila, Instructor of Nursing; B.S.N., South Dakota State University, 2006; M.S.N., Western Governor's University, 2019.

Wilburn, Lonnie, Associate Professor of Theatre, School of Performing Arts, Graduate Faculty; B.A., Morehead State University (KY), 2002; M.F.A., Michigan State University, 2007.

Willand-Charnley, Rachel, Bill and Nancy Wadsworth Endowed Research Faculty Scholar in Chemistry, Associate Professor of Chemistry and Biochemistry, Department of Chemistry, Biochemistry and Physics, Graduate Faculty; B.S., Creighton University, 2009; Ph.D., University of Nebraska-Lincoln, 2014.

Wilson, Zach, Clinical Instructor of Respiratory Care; A.S., Dakota State University, 2015.

Wiltse, David, Professor of Political Science, School of American and Global Studies, Graduate Faculty; B.A., Montana State University, 1993; M.A., California State University, 1996; Ph.D., University of Massachusetts, 2006.

Wiltse, Evren Çelik, Professor of Political Science, School of American and Global Studies, Graduate Faculty; B.A., Boğaziçi University (Turkey), 1997; M.S., 2000; Ph.D., University of Massachusetts, 2010.

Winterboer, Jessica, Instructor of Respiratory Care, Department of Allied and Population Health; A.S., Dakota State University, 2010; B.S., 2014.

Witzel, Dakota, D., Assistant Professor of Human Development and Family Science, School of Counseling, Human Development and Family Science, Graduate Faculty; A.S., Utah Tech University, 2015; B.S., 2017; M.S., Oregon State University, 2020; Ph.D., 2022.

Won, Kwanghee, Associate Professor of Computer Science, Graduate Faculty; B.S., Kyungpook National University (South Korea), 2005; M.S., 2007; Ph.D., 2013.

Wood, W. James, Professor of Theatre and Associate Director of the School of Performing Arts, Graduate Faculty; B.F.A., University of South Dakota, 1999; M.F.A., Minnesota State University, 2003.

Wortman, Abby, Director of Clinical Education and Clinical Instructor of Respiratory Care; A.S., Dakota State University, 2009; B.S., 2012.

Wright, Cody L., Professor of Animal Science, Graduate Faculty; B.S., South Dakota State University, 1994; M.S., Kansas State University, 1996; Ph.D., North Carolina State University, 2000.

Wrightson, Graham, Professor of History, School of American and Global Studies; M.A., Cambridge University - Fitzwilliam College, 2004; M.A., University of Calgary, 2006; Ph.D., 2012.

Wu, Yajun, Interim Department Head and Professor of Biology and Microbiology, Graduate Faculty; B.S., Nanjing Normal University (China), 1983; M.S., Southern Illinois University-Edwardsville, 1991; Ph.D., University of Missouri-Columbia, 1996.

Xian, Xiaojun, Assistant Professor of Electrical Engineering; B.S., Peking University (China), 2004; Ph.D., 2009.

Xu, Lan, Professor of Natural Resource Management, Graduate Faculty; B.S., Shanxi University, 1985; M.S., Institute of Applied Ecology of Chinese Academy of Sciences, 1988; Ph.D., North Dakota State University, 1998.

Yadav, Pappu, Assistant Professor of Precision Ag and AI Engineering, Department of Agricultural and Biosystems Engineering, Graduate Faculty; B.Tech., Electronics and Computer Engineering (India), 2011; M.S., California State University, 2014; Ph.D., Texas A&M University, 2022.

Yan, Lin, Assistant Research Professor, Geospatial Sciences Center of Excellence; B.S., Tongji University, 2002; M.S., 2005; Ph.D., Ohio State University, 2011.

Yang, Biying, Nies Early Career Faculty Scholar of Management, Assistant Professor of Management, Ness School of Management and Economics, Graduate Faculty; B.A., Binghamton University, 2017; M.S., 2019; Ph.D., 2024.

Yang, Ren, Assistant Professor of Agricultural and Biosystems Engineering, Graduate Faculty; B.S., Northwest University (China), 2012; M.S., Illinois Institute of Technology, 2014; Ph.D., Washington State University, 2020.

Yang, Teng, Assistant Professor of Controlled Environment Agriculture, Graduate Faculty; B.S., Central South University of Forestry & Technology (China), 2011; M.S., Beijing Forestry University (China); Ph.D., Purdue University, 2019.

Yordanova, Albena Y., Senior Lecturer of Construction Management, Department of Construction and Concrete Industry Management; B.S., Institute of Architecture and Civil Engineering (Bulgaria), 1984; M.Arch, 1991; M.A., University of Missouri-Columbia, 1998; D.T., University of Northern Iowa, 2016.

Zacher, Renee, Lecturer of Nursing; B.S.N., South Dakota State University, 1994; M.S.N., Chamberlain College of Nursing, 2016.

Zaidi, Uzma, Professor of Nursing; M.S., Bahauddin Zakariya University, 1997; Ph.D., University of Karachi, 2007.

Zavaleta Cheek, Jennifer, Assistant Professor of Natural Resource Management, Graduate Faculty; B.A., Claremont McKenna College, 2010; M.S., Texas Tech University, 2012; Ph.D., University of Michigan, 2019.

Zhang, Cheng, Associate Professor of Chemistry, Department of Chemistry, Biochemistry and Physics, Graduate Faculty; B.S., Wu Han University, China, 1987; Ph.D., University of Southern California, 1999.

Zhang, Hankui, Associate Professor of Geography and Geospatial Sciences and Research Scientist at the Geospatial Sciences Center of Excellence, Graduate Faculty; B.S., Zhejiang University, 2007; M.S., 2010; Ph.D., The Chinese University of Hong Kong, 2013.

Zhang, Weiwei, Associate Professor of Sociology and Rural Studies, State Demographer, School of Psychology, Sociology and Rural Studies, Graduate Faculty; B.A., Suzhou University, China, 2001; M.A., Bowling Green State University, 2006; Ph.D., Brown University, 2014.

Zhang, Xiaoyang, Distinguished Professor of Geography and Geospatial Sciences, Senior Research Scientist at the Geospatial Sciences Center of Excellence, Graduate Faculty; B.S., Peking University (China), 1984; M.S., Chinese Academy of Sciences (China), 1991; Ph.D., King's College London (United Kingdom), 1999.

Zhou, Ruanbao, Professor of Biology and Microbiology, Graduate Faculty; B.S., Anhui Normal University (China), 1985; M.S., 1988; Ph.D., Peking University (China), 1997.

Zwart, Mary Beth, Clinical Associate Professor of Athletic Training, School of Health and Human Sciences, Graduate Faculty; B.S., University of Wisconsin-La Crosse, 1999; M.S., South Dakota State University, 2001; Ed.D., University of South Dakota, 2009.

Zweifel, Alyssa, Health Care Simulation Center Director, Assistant Professor of Nursing, Graduate Faculty; A.A., Dakota Wesleyan University, 2003; B.S., South Dakota State University, 2008; M.S., 2013; Ph.D., 2021.

Emeriti Faculty

Aamot, Mary E., Professor Emerita of Cooperative Extension Service; B.A., Mount Marty College, 1965; M.A., South Dakota State University, 1976; Ed.D., University of South Dakota, 1985.

Ackman, John D., Professor Emeritus of Theatre, School of Performing Arts; B.S., South Dakota State University, 1978; M.F.A., University of Montana, 1984.

Adelaine, Michael F., Vice President for Technology and Safety and Professor Emeritus, Agricultural Engineering; B.S., Michigan State University, 1974; M.S., University of Nebraska, 1985; Ph.D., 1989.

Ali, Shaukat, Professor Emeritus of Plant Pathology, Graduate Faculty; M.Sc., University of Agriculture, Faisalabad (Pakistan), 1978; M.S., South Dakota State University, 1993; Ph.D., North Dakota State University, 2001.

Amiotte, Lowell, Associate Professor Emeritus of Education and Counseling; B.S., Black Hills State University, 1964; M.A., University of South Dakota, 1971.

Anderson, Gary A., Professor Emeritus of Agricultural and Biosystems Engineering; B.S., South Dakota State University, 1975; M.S., Iowa State University, 1985; Ph.D., 1987.

Andrawis, Madeleine Y., Professor of Emerita of Electrical Engineering; B.S., Cairo University (Egypt), 1977; M.S., South Dakota State University, 1983; Ph.D., Virginia Polytechnic Institute and State University, 1991.

Arnold, Mary P., Professor Emerita of Journalism and Mass Communication; B.A., Dakota Wesleyan University, 1969; M.A., University of South Dakota, 1973; Ph.D., University of Iowa, 1994.

Ayers, Clara J., Professor Emerita of Mathematics; B.S., Minot State College, 1958; M.A., University of Minnesota, 1962.

Baer, Robert J., Professor Emeritus of Dairy Science; B.S., University of Georgia, 1977; M.S., 1979; Ph.D., 1983.

Bahr, AnnMarie B., Professor Emerita of Religion; B.A., Lawrence University, 1972; M.A., Stanford University, 1975; Ph.D., Temple University, 1989.

Baker, Philip R., Professor Emeritus of Spanish; B.A., University of Connecticut, 1959; M.A., Middlebury College, 1965; M.A.T., University of Hartford, 1968; Ph.D., Florida State University, 1973.

Bassett, Kurt D., Professor and Department Head Emeritus of Mechanical Engineering; B.S., South Dakota State University, 1981; M.S., 1983; Ph.D., North Dakota State University, 1996.

Beattie, Patricia K., Professor Emerita of Modern Languages; B.S., South Dakota State University, 1963; M.A., Middlebury College, 1964; Ph.D., University of Minnesota, 1983.

Beck, Dwayne L., Professor Emeritus of Agronomy; B.S., Northern State University, 1975; Ph.D., South Dakota State University, 1983.

Bell, Julie A., Assistant Professor Emerita of Consumer Sciences; B.S., South Dakota State University, 1970; M.S., 1976.

Bell, Rodney E., Professor Emeritus of History; B.S., Jamestown College, 1955; M.A., University of Michigan, 1956; Ph.D., 1975.

Berg, Donald J., Professor Emeritus of Geography; B.A., North Dakota State University, 1964; M.A., 1966; M.A., University of California, 1971; Ph.D., 1976.

Berry, Jr., Charles R., Professor Emeritus of Wildlife and Fisheries Sciences; B.S., Randolph-Macon College, 1967; M.S., 1970; Ph.D., Virginia Polytechnic Institute and State University, 1976.

Bielfeldt, Dennis D., Professor Emeritus of Philosophy and Religion; B.S., South Dakota State University, 1977; M.A., University of Iowa, 1984; Ph.D., 1987.

Boe, Arvid A., Professor Emeritus of Agronomy; B.A., Pacific Lutheran University, 1972; M.A., University of South Dakota, 1976; Ph.D., South Dakota State University, 1979.

Booher, James M., Professor Emeritus of Health, Physical Education, and Recreation; B.A., Nebraska Wesleyan University, 1965; M.S., South Dakota State University, 1969; Ph.D., University of Utah, 1976.

Brandt, Bruce E., Professor Emeritus of English; B.A., University of Denver, 1969; M.A., 1971; Ph.D., Harvard University, 1977.

Branum, Allen R., Professor Emeritus of Psychology; B.S., Montana State University, 1966; M.A., University of Montana, 1968; Ph.D., 1971.

Brown, Lewis F., Dean and Professor Emeritus of the Jerome J. Lohr College of Engineering; B.S., South Dakota State University, 1984; M.S., Iowa State University, 1986; Ph.D., 1988.

Brown, Michael L., Professor Emeritus of Fisheries Science; B.S., Arkansas Technical University, 1986; M.S., Texas A&M University, 1989; Ph.D., 1993.

Browning, Larry M., Professor Emeritus of Physics; B.S., Syracuse University, 1975; M.S., Purdue University, 1980; Ph.D., 1984.

Buchenau, George W., Professor of Plant Science Emeritus; B.S., New Mexico State University, 1954; M.S., 1955; Ph.D., Iowa State University, 1960.

Burke, Robert, Professor Emeritus of Psychology; B.S., Wheaton College, 1966; Ph.D., Baylor University, 1972.

Burns, Robert V., Professor Emeritus of Political Science and Dean Emeritus of the Honors College; B.S., South Dakota State University, 1964; M.A., University of Missouri, 1966; Ph.D., 1973.

Burrows, Rhoda L., Professor Emerita of Horticulture and Extension Specialist; A.A., Commercial College, 1979; B.A., Montana State University, 1983; M.S., University of Minnesota, 1987; Ph.D., 2001.

Canaan, Charles W., Professor Emeritus of Music; B.S., California State University, 1965; M.A., Western Michigan University, 1973; D.M.A., Arizona State University, 1986.

Cardenas, Karen, Professor Emerita of Spanish; B.A., Grinnell College, 1965; M.A., University of Kansas, 1970; Ph.D., 1973.

Carlson, C. Gregg, Professor Emeritus of Plant Science; B.S., Western Illinois University, 1969; M.S., South Dakota State University, 1972; Ph.D., 1978.

Carson, Paula P., Associate Professor Emerita of Nursing; B.S., South Dakota State University, 1975; M.S.N., University of Minnesota, 1985; Ph.D., University of Arizona, 1992.

Caspers-Graper, Mary, Professor Emerita, H.M. Briggs Library; B.A., Luther College, 1979; M.A., University of Iowa, 1980; M.L.S., University of Arizona, 1985.

Cecil, Charles F., Instructor Emeritus of Journalism and Mass Communication; B.S., South Dakota State University, 1959; M.A., 1970.

Chappell, Gary S., Professor and Head of Pharmaceutical Sciences Emeritus; B.S., Ohio State University, 1963; Ph.D., University of Kansas, 1968.

Chase, Christopher, Professor Emeritus of Veterinary and Biomedical Sciences; DVM, Iowa State University, 1980; M.S., University of Wisconsin, 1987; Ph.D., 1990.

Chicoine, David L., Professor Emeritus of Economics and President Emeritus of South Dakota State University; B.S., South Dakota State University, 1969; M.S., University of Delaware, 1971; M.A., Western Illinois University, 1978; Ph.D., University of Illinois, 1979.

Christopher-Hennings, Jane, Professor Emerita of Veterinary and Biomedical Sciences; B.S., University of Wisconsin, 1975; M.S., 1990; DVM, University of Minnesota, 1983.

Chu, Shu-Tung, P.E., Professor Emeritus of Agricultural and Biosystems Engineering; B.S., National Taiwan University, 1956; M.S., University of Minnesota, 1960; Ph.D., 1966.

Clague, Carolyn L., Associate Professor Emerita of Extension Youth Development/4-H Specialist; B.A., South Dakota State University, 1974; M.Ed., 1975; Ed.D., University of South Dakota, 2000.

Clapper, Jeffrey A., Professor Emeritus of Animal Science; B.S., Ohio State University, 1982; M.S., 1987; Ph.D., Purdue University, 1992.

Clay, David E., South Dakota Corn Endowed Chair in Precision Agriculture, Distinguished Professor of Agronomy, Horticulture and Plant Science, Graduate Faculty; B.S., University of Wisconsin, 1976; M.S., University of Idaho, 1984; Ph.D., University of Minnesota, 1988.

Clay, Sharon A., Distinguished Professor Emerita of Agronomy; B.S., University of Wisconsin, 1977; M.S., University of Idaho, 1982; Ph.D., University of Minnesota, 1986.

Clever, Charles C., Associate Professor Emeritus of Mathematics; B.S., Grove City College, 1961; M.A., University of Kentucky, 1965.

Cogswell, Kurt D., Professor and Department Head Emeritus of Mathematics and Statistics; B.S., Massachusetts Institute of Technology, 1978; M.S., North Dakota State University, 1991; Ph.D., Northwestern University, 1996.

Cole-Dai, Jihong, Distinguished Professor Emeritus of Chemistry, Biochemistry and Physics; B.S., University of Science and Technology of China, 1982; M.S., University of Maryland, 1984; Ph.D., 1987.

Colson, John F., Professor Emeritus of Music; E.M.E., University of Iowa, 1955; M.A., 1956.

Corbett, Keith W., Dean and Professor Emeritus of University College; B.S., South Dakota State University, 1976; M.Ed., 1987; Ed.D., University of South Dakota, 2001.

Craig, Gloria P., Professor Emerita of Nursing; B.S.N., Buena Vista College, 1989; M.S.N., Drake University, 1993; Ed.S., 1996; Ed.D., 1997.

Crain, David A., Professor Emeritus of History; B.A., Pittsburgh State University, 1960; M.A., George Washington University, 1962; Ph.D. Indiana University, 1972.

Crews, Georgia W., Associate Emeritus Professor of Nutrition, Food Science and Hospitality; B.S., Middle Tennessee State University, 1968; M.S., University of Tennessee, 1970; Ph.D., Kansas State University, 2000.

Crews, Michael G., Professor Emeritus of Nutrition, Food Science and Hospitality; B.S., Virginia Polytechnic Institute and State University, 1972; Ph.D., 1978.

Crowe, Don, Professor Emeritus of Music, School of Performing Arts; B.M.E., Furman University, 1976; M.M., Florida State University, 1979; D.M.A., University of Arizona, 1994.

Cumber, Carol J., Professor Emerita of Economics; B.A., North Dakota State University, 1979; M.B.A., 1984; Ph.D., South Dakota State University, 1994.

Danker, Kathleen A., Professor Emerita of English; B.A., University of Nebraska, 1971; M.A., 1974; Ph.D., 1985.

Davis, Alan, Professor Emeritus of Counseling and Human Development; B.A., Western Washington University, 1978; M.R.C., University of Kentucky, 1980; Ph.D., Oregon State University, 1984.

DeBoer, Darrell W., Professor Emeritus of Agriculture and Biosystems Engineering; B.S., Iowa State University, 1963; M.S., 1964; Ph.D., 1969.

DeBoer, Delvin E., Professor Emeritus of Civil and Environmental Engineering; B.S., South Dakota State University, 1978; M.S., 1980; Ph.D., Iowa State University, 1990.

Delfanian, Fereidoon, Professor Emeritus of Mechanical Engineering; B.S., South Dakota State University, 1977; M.S., 1980; Ph.D., North Dakota State University, 1995.

Diddle-Hildebrant, Laura D., Professor Emerita of Voice and Choral Activities; B.M., Indiana University, 1989; M.A.T., 1991; Ph.D., University of South Carolina, 2005.

Dieter, Charles, Professor Emeritus of Natural Resource Management; B.S., Concordia Teachers College, 1977; M.S., South Dakota State University, 1987; Ph.D., 1993.

Dobbs, Thomas L., Professor Emeritus of Economics; B.S., South Dakota State University, 1965; Ph.D., University of Maryland, 1969.

Donovan, Kathleen, Professor Emerita of English; B.A., Spalding College, 1968; M.A., University of Nebraska, 1988; Ph.D., University of Arizona, 1994.

Doolittle, James J., Professor Emeritus of Soil Science; B.S., Purdue University, 1982; M.S., Texas A&M University, 1986; Ph.D., 1991.

Dwivedi, Chandradhar, Distinguished Professor and Department Head Emeritus of Pharmaceutical Sciences; B.S., Gorakhpur University, 1964; M.S., 1966; Ph.D., Lucknow University, 1972.

Dybing, C. Dean, Professor of Plant Science Emeritus; B.S., Colorado State University, 1953; M.S., 1955; Ph.D., University of California, 1959.

Ellerbruch, Virgil G., Dean and Professor Emeritus of Electrical Engineering; B.S., University of Wyoming, 1960; M.S., 1961; Ph.D., 1969.

Elverson, Cynthia D., Professor of Nursing Emerita; B.S., University of Missouri, 1979; M.S., University of California, 1986, Ph.D., University of Nebraska, 2007.

Emery, Mary, Professor Emerita of Sociology, School of Psychology, Sociology and Rural Studies, Graduate Faculty; Ph.D., Rutgers University.

Enevoldsen, Bernadine L., Professor Emerita of Consumer Affairs; B.S., South Dakota State University, 1964; M.S., 1986; Ph.D., University of Minnesota, 1993.

Evans, David A., Professor Emeritus of English; B.A., Morningside College, 1962; M.A., University of Iowa, 1964; M.F.A., University of Arkansas, 1976.

Everett, V. Duane, Professor Emeritus of Education; B.S., University of Nebraska, 1953; M.S., 1962; Ed.D., 1966.

Farver, Debra K., Professor Emerita of Pharmacy Practice; Pharm.D., University of Nebraska, 1983.

Fausti, Scott W., Professor Emeritus of Economics; B.A., North Dakota State University, 1986; M.S., University of Illinois, 1988; Ph.D., 1991.

Fischer, Janet, Professor Emeritus of Pharmacy Practice; Pharm.D., Creighton University, 1986.

Flake, Lester D., Distinguished Professor Emeritus of Wildlife and Fisheries Sciences; B.S., Brigham Young University, 1965; M.S., 1966; Ph.D., Washington State University, 1971.

Fleming, Mary J., Emeritus Extension EFNEP Coordinator/Assistant Professor of Nutrition, Food Science and Hospitality; B.S., South Dakota State University, 1958; M.S., 1974.

Foland, Kay L., Professor Emerita of Nursing; B.S., South Dakota State University, 1980; M.S.N., University of Nebraska, 1982; Ph.D., University of Texas, 1989.

Forsyth, Harry L., Professor Emeritus of HPER; B.S., South Dakota State University, 1951; M.S., 1956; D.P.Ed., Springfield College, 1970.

Francis, David H., Professor Emeritus of Veterinary and Biomedical Sciences; B.S., Brigham Young University, 1971; M.S., 1974; Ph.D., University of Missouri, 1978.

Froehlich, Don P., Professor Emeritus of Mechanical Engineering; B.S., South Dakota State University, 1972; M.S., 1973; Ph.D., Cornell University, 1976.

Fuller, Billy W., Professor Emeritus of Entomology; B.S., Auburn University, 1976; M.Ed., Auburn University, 1978; M.S., Clemson University, 1982; Ph.D., Louisiana State University, 1987.

Funchion, Michael F., Professor Emeritus of History; B.A., Iona College, 1966; M.A., Loyola University, 1968; Ph.D., 1973.

Galipeau, David W., Harold C. Hohbach Endowed Professor Emeritus of Electrical Engineering; B.E., University of Rhode Island, 1971; M.S., University of Maine, 1989; Ph.D., 1992.

Gee, Dan H., Professor Emeritus of Animal and Range Sciences; B.S., University of Minnesota, 1965; M.S., South Dakota State University, 1967; Ph.D., 1970.

Gehrke, Jr., Henry, Professor Emeritus of Chemistry and Biochemistry; B.S., Oklahoma State University, 1958; M.S., University of Iowa, 1963; Ph.D., 1964.

Gerwing, James R., Professor of Plant Science Emeritus; B.S., University of Minnesota, 1975; M.S., 1978.

Getz, Jack, Professor Emeritus of Journalism and Mass Communication; B.S., South Dakota State University, 1964; M.A., University of Arizona, 1985; Ed.D., University of South Dakota, 2001.

Ghazi, Hassan S., Professor Emeritus of Mechanical Engineering; B.S., Purdue University, 1954; M.S., Ohio State University, 1956; Ph.D., 1962.

Gibbons, William R., Distinguished Professor of Agricultural and Biosystems Engineering Emeritus; B.S., South Dakota State University, 1980; M.S., 1982; Ph.D., 1987.

Gleim, David E., Dean Emeritus of the Briggs Library; B.A., Brescia University, 1971; M.S.L.S., University of Kentucky, 1973; Ph.D., University of North Carolina-Chapel Hill, 1992.

Gorham, Elizabeth E., Associate Professor Emerita of Extension Family Resource Management; B.S., Iowa State University, 1968; M.S., Utah State University, 1971; Ph.D., Oregon State University, 1993.

Granholm, Nels H., Distinguished Professor Emeritus of Biology, Microbiology and Global Studies; B.A., University of Massachusetts, 1964; Ph.D., Iowa State University, 1968.

Grant, Geoffrey W., Associate Professor Emeritus of Rural Sociology; B.A., Carroll College, 1964; M.A., University of Nebraska, 1969; Ph.D., 1980.

Graper, David F., Professor Emeritus of Horticulture Science; B.S., University of Wisconsin, 1983; M.S., Colorado State University, 1985; Ph.D., University of Maryland, 1990.

Gritzner, Charles F., Distinguished Professor Emeritus of Geography; B.A., Arizona State University, 1958; M.A., Louisiana State University, 1960; Ph.D., 1969.

Gritzner, Janet H., Professor Emerita of Geography; B.A., University of Maryland, 1965; M.A., 1970; Ph.D., Louisiana State University, 1978.

Grove, John A., Professor Emeritus of Chemistry; B.S., Ohio State University, 1961; M.S., 1964; Ph.D., 1966.

Guan, Xiangming, Professor Emeritus of Pharmaceutical Sciences; B.S., Zhejiang Medical University, 1982; M.S., University of Kansas, 1988; Ph.D., 1991.

Hacker, Patricia E., Professor Emerita of Health and Nutritional Sciences; B.Ed., Glenville State College, 1973; M.S., West Virginia University, 1983; Ph.D., University of Wyoming, 1988.

Haertel, Lois S., Professor of Biology and Microbiology Emeritus; B.S., University of Illinois, 1961; M.S., 1963; Ph.D., Oregon State University, 1969.

Halaweish, Fathi T., Professor Emeritus of Chemistry, Biochemistry and Physics; B.S., University of Mansoura (Egypt), 1976; M.S., 1981; Ph.D., University of Wales (United Kingdom), 1987.

Haleta, Laurie L., Professor Emerita of Communication Studies and Theatre; B.S., South Dakota State University, 1977; M.A., 1983; Ph.D., University of Nebraska, 1994.

Hall, Robert G., Professor Emeritus of Plant Science; B.S., University of Idaho, 1969; M.S., 1974; Ph.D., University of Missouri, 1978.

Hallman, Clark, Professor Emeritus of Libraries; B.S., University of Pittsburgh, 1971; M.L.S., 1977; M.S., South Dakota State University, 1988.

Hamer, George H., Associate Professor Emeritus of Computer Sciences; B.S., North Dakota State University, 1980; M.S., Moorhead State University, 1992; Ph.D., North Dakota State University, 2006.

Hamilton, Edward D., Professor of Veterinary Science Emeritus; B.S., Texas A&M University, 1973; DVM, 1974.; M.S., 1992.

Hanson, Clark W., Professor Emeritus of Education; B.S., University of Minnesota, 1963; M.A., 1971; Ph.D., Iowa State University, 1972.

Harper, Ruth, Professor Emerita of Counseling and Human Development; B.A., Cornell College, 1973; M.Ed., University of Wisconsin-Oshkosh, 1977; Ph.D., Kansas State University, 1987.

Hassoun, Nadim M., Professor Emeritus of Civil Engineering; B.S., Cairo University, 1956; M.S., University of Michigan, 1966; Ph.D., 1968.

Hatfield, Warren G., Professor Emeritus of Music; B.A., University of Northern Iowa, 1952; M.S., University of Iowa, 1959; Ph.D., 1967.

Haug, Mary, Associate Professor Emerita of English; B.A., South Dakota State University, 1968; M.A., 1976.

Hecht, Harry G., Professor Emeritus of Education; B.S., Brigham Young University, 1958; M.S., 1959; Ph.D., University of Utah, 1962.

Hefling, Joel L., Assistant Professor Emeritus of Communication Studies and Theatre; B.S.E., Emporia State University, 1964; M.S., 1970.

Hegge, Margaret J., Distinguished Professor Emerita of Nursing, Director of Academic Evaluation and Assessment Emerita; B.A. Gustavus Adolphus College, 1969; M.Ed., South Dakota State University, 1972; Ed.D., University of South Dakota, 1983; M.S., University of Minnesota, 1984.

Hegland, Jane E., Professor Emerita of Consumer Sciences; B.A., Saint Olaf College, 1985; M.A., University of Minnesota, 1991; Ph.D., 1995.

Held, Jeffrey E., Professor Emeritus of Animal Science; B.S., University of Wisconsin, 1982; M.S., University of Illinois, 1985; Ph.D., University of Wisconsin,1989.

Helder, Dennis L., Distinguished Professor Emeritus of Electrical Engineering; B.S., South Dakota State University, 1979; B.S., 1980; M.S., 1985; Ph.D., North Dakota State University, 1991.

Helgeland, David, Professor Emeritus of Pharmacy Practice; B.S., South Dakota State University, 1974; M.B.A., University of South Dakota, 1982; Ed.D., 2000.

Hellickson, Mylo A., Professor Emeritus of Agricultural and Biosystems Engineering; B.S., North Dakota State University, 1964; M.S., 1966; Ph.D., West Virginia University, 1969.

Helling, Mary Kay, Vice Provost Emerita; B.S., South Dakota State University, 1977; M.S., 1982; Ph.D., Purdue University, 1992.

Henning, David R., Associate Professor Emeritus of Dairy Science; B.S., University of Illinois, 1962; Ph.D., Oregon State University, 1967.

Hietpas, Steven M., Professor Emeritus of Electrical Engineering; B.S., Montana State University, 1984; M.S., 1991; Ph.D., 1994.

Higgins, Kenneth F., Professor Emeritus of Wildlife and Fisheries; B.S., Colorado State University, 1965; M.S., South Dakota State University, 1968; Ph.D., North Dakota State University, 1981.

Hildreth, Michael B., Professor Emeritus of Biology; B.S., South Dakota State University, 1965; M.S., 1968; Ph.D., Tulane University, 1983.

Hobbs, Barbara B., Associate Professor Emerita of Nursing; B.S.N., San Diego State University, 1970; M.S.N., California State University, 1991; Ph.D., University of Nebraska, 2004.

Hofland, Sharon A., Professor Emerita of Nursing; B.S., South Dakota State University, 1972; M.S., 1972; Ph.D., 1976; M.N., University of Washington, 1979.

Holler, Larry, Professor Emeritus of Veterinary and Biomedical Sciences; B.S., Kansas State University, 1980; DVM, 1984; Ph.D., Washington State University, 1993.

Houglum, Joel E., Professor of Pharmaceutical Sciences and Assistant Dean Emeritus; A.A., Lake Region Junior College, 1969; B.S., University of Minnesota, 1972; Ph.D., University of Wisconsin, 1979.

Howard, Richard K., Emeritus Assistant Professor of the Cooperative Extension Service; B.S., South Dakota State University, 1966; M.Ed., 1976.

Humburg, Daniel S., Professor Emeritus of Agricultural and Biosystems Engineering; B.S., University of Wisconsin, 1982; M.S., South Dakota State University, 1987; Ph.D., University of Illinois, 1991.

Iken, Martha B., Assistant Professor Emerita of Nursing; B.S., Dakota State University, 1967; M.A., University of South Dakota, 1968; B.S., South Dakota State University, 1977; M.S., 1984; Ed.D., University of South Dakota, 2000.

Janssen, Larry L., Professor Emeritus of Economics; B.S., University of Nebraska, 1971; M.S., Oklahoma State University, 1974; Ph.D., University of Nebraska, 1978.

Jenks, Jonathan A., Distinguished Professor Emeritus of Wildlife Science; A.A., Unity College, 1982; B.S., 1984; M.S., University of Maine, 1986; Ph.D., Oklahoma State University, 1991.

Jensen, Darrell, Professor of Education/Dean of Education and Counseling Emeritus; B.S., Northwest Missouri State University, 1959; M.A., Drake University, 1965; Ph.D., University of Iowa, 1971.

Jensen, William, Professor Emeritus of Chemistry; B.S., University of Minnesota, 1959; M.S., University of Iowa, 1962; Ph.D., 1964.

Joffer, Coral Lee, Assistant Professor Emeritus of Nursing; B.S., South Dakota State University, 1964; M.S., University of Minnesota, 1969.

Johnson, Corliss L., Professor Emeritus of Music; B.M.E., Emporia State University, 1965; M.S., 1966; D.M.A., University of Colorado, 1972.

Johnson, Darrell D., Professor Emeritus of Veterinary Science; B.S., North Dakota State University, 1956; B.S., Kansas State University, 1961, DVM, 1963, Ph.D., 1976.

Johnson, James L., Distinguished Professor Emeritus of Communication Studies and Theatre; B.S., Kansas State University, 1960; M.A., University of South Dakota, 1961; Ph.D., University of Kansas, 1973.

Johnson, James R., Professor Emeritus of Animal and Range Sciences; B.S., Montana State University, 1964; M.S., 1966; Ph.D., Oregon State University, 1974.

Johnson, Patricia S., Professor Emerita of Range Science; B.A., Fort Lewis College, 1974; B.S., 1975; M.S., Utah State University, 1978; Ph.D., 1987.

Johnson, Paul J., Professor Emeritus of Entomology; B.S., Oregon State University, 1982; M.S., University of Idaho, 1987; Ph.D., University of Wisconsin, 1992.

Johnson, W. Carter, Distinguished Professor Emeritus of Ecology; B.S., Augustana College, 1968; Ph.D., North Dakota State University, 1971.

Johnston, Carol A., Professor Emeritus of Ecology; B.S., Cornell University, 1974; M.S., University of Wisconsin, 1977; Ph.D., 1982.

Jones, Allen L., Professor Emeritus of Civil and Environmental Engineering; B.S., University of Idaho, 1986; M.S., 1988; Ph.D., University of Washington, 2003.

Jones, Eluned, Director Emerita of the Ness School of Management and Economics; B.S., University of Bath (United Kingdom), 1977; M.S., North Carolina State University, 1979; Ph.D., Texas A&M University, 1987.

Jorgensen, Jerry D., Professor Emeritus of Communication Studies and Theatre and Dean Emeritus of the College of Arts and Sciences; B.S., South Dakota State University, 1978; M.S.,1984; Ph.D., University of Nebraska, 1990.

Kaatz, Brian L., Professor and Dean Emeritus of the College of Pharmacy; B.S., South Dakota State University, 1974; Pharm.D., University of Minnesota, 1977.

Kattelmann, Kendra K., Distinguished Professor Emerita of Nutrition and Dietetics; B.S., South Dakota State University, 1977; M.S., University of Arkansas, 1984; Ph.D., University of Missouri, 1993.

Kayongo-Male, Diane E., Professor Emerita of Sociology and Rural Studies; B.A., State University of New York, 1970; M.A., Michigan State University, 1972; Ph.D., 1974.

Keller, Michael A., Professor Emeritus of English; B.A., Colorado State University, 1975; M.A., University of Illinois at Chicago, 1981; Ph.D., 1993.

Kelley, Van C., Department Head and Associate Professor Emeritus of Agricultural and Biosystems Engineering; B.S., Texas A&M University, 1976; M.S., New Mexico State University, 1978; Ph.D., University of Illinois, 1999.

Kemp, Daniel C., Professor Emeritus of Mathematics; B.A., Knox College, 1963; M.S., University of Arizona, 1967; Ph.D., Oklahoma State University, 1975.

Kephart, Kevin D., Vice President Emeritus for Research and Economic Development; B.S., Montana State University, 1979; M.S., University of Wyoming, 1982; Ph.D., Iowa State University, 1987.

Keys Hall, Teresa J., Professor and Department Head Emerita of Construction and Operations Management; B.A., University of Northern Iowa, 1989; M.S., 1991; Ph.D., Iowa State University of Science and Technology, 1997.

Kim, Bang J., Professor Emerita; B.A., Ewha Women's University, 1961; M.A., University of Oregon, 1965.

Kim, Han J., Professor Emeritus of Economics; A.A., San Joaquin Delta College, 1958; B.A., University of California, 1960; M.A., University of Oregon, 1962; Ph.D., Oregon State University, 1969.

Kraljic, Mary B., Librarian Emerita, H.M. Briggs Library; B.S., Saint Cloud State University, 1980; M.A., University of Texas, 1984; M.L.S., Texas Woman's University, 1989.

Krishnan, Padmanaban G., Professor Emeritus of Dairy and Food Science; B.S., University of Madras (India),1977; M.S., North Dakota State University, 1983; Ph.D., 1989.

Lamberton, Charles E., Professor Emeritus of Economicsy; B.B.A., University of Minnesota, 1960; M.S., University of Wyoming, 1970; Ph.D., Iowa State University, 1975.

Langham, Marie A. C., Professor Emerita of Plant Pathology; B.S., East Texas State University, 1975; M.S., 1977; Ph.D., Texas A&M University, 1986.

Lattin, Danny L., Professor and Dean Emeritus of the College of Pharmacy; B.S., University of Kansas, 1965; Ph.D., University of Minnesota, 1970.

Leslie, Jerome R., Assistant Professor Emeritus; B.S., South Dakota State University, 1962; M.S., 1990.

Libal, George W., Professor Emeritus of Animal and Range Sciences; B.S., University of Nebraska, 1966; M.S., 1968; Ph.D., South Dakota State University, 1974.

Lis, Anthony, Professor Emeritus of Music; B.M., University of Oklahoma, 1979; M.M., University of Cincinnati, 1981; D.M.A., 1985.

Lonowski, Delmer E., Professor Emeritus of Political Science; B.A., George Washington University, 1968; M.A.Ed., University of Nebraska-Kearney, 1986; M.A., 1988; Ph.D., University of Nebraska-Lincoln 1991.

Lucchesi, Roxanne, Professor Emerita of Communication and Journalism; B.A., South Dakota State University, 1983; M.A., University of Illinois, 1985.

Lyons, Nancy N., Professor Emerita of Consumer Sciences; B.S., North Dakota State University, 1974; M.S., 1977; Ed.D., University of South Dakota, 2001.

Malo, Douglas D., Distinguished Professor Emeritus of Soil Science; B.S., Iowa State University, 1971; M.S., North Dakota State University, 1974; Ph.D., 1975.

Marquardt, Steve R., Dean and Professor of Libraries Emeritus; B.A., Macalester College, 1966; M.A., University of Minnesota, 1970; M.A., 1974; Ph.D., 1978.

Matthees, Duane, Professor Emeritus of the SDSU Veterinary and Biomedical Sciences Department and the SD Agricultural Experiment Station; B.A. Augsburg College, 1972; Ph.D., University of Maryland, 1978.

Matz, Ralph L., Extension Program Development Coordinator Emeritus; B.S., South Dakota State University, 1969; M.Ed., 1971; M.S., 1975.

Mc Farland, Douglas C., Distinguished Professor Emeritus of Animal Science; B.A., Southern Connecticut State College, 1971; M.S., Washington State University, 1975; Ph.D., 1984.

Mc Kinney, Jimmy R., Professor Emeritus of Music and Director Emeritus of The Pride of the Dakotas; B.M.E., Oklahoma State University, 1971; M.Ed., University of Arkansas, 1972.

Messerschmidt, Kimberly, Professor Emerita of Pharmacy Practice; B.S., South Dakota State University, 1985; Pharm.D., 1995.

Miller, Peggy Gordon, President and Professor of Education Emeritus; B.A., Transylvania University, 1959; M.S., Northwestern University, 1964; Ed.D., Indiana University, 1975, L.L.D., Transylvania University (Honorary Degree), 1993.

Mistry, Vikram V., David A Thompson Endowed Department Head, Associate Dean, and Professor Emeritus; B.S., Gujarat Agricultural University, 1979; M.S., Cornell University, 1982; Ph.D., 1986.

Moeller, Lonell L., Professor Emeritus of Agricultural Education; B.S., South Dakota State University, 1970; M.Ed., 1976; Ph.D., Iowa State University, 1981.

Monahan, Maurice L., Professor Emeritus of Mathematics and Statistics; B.S., South Dakota State University, 1956; M.S., University of Illinois, 1964.

Morrill, Keith, Associate Professor of Biology/Microbiology Emeritus; B.S., South Dakota State University, 1959; M.A., University of South Dakota, 1963.

Mort, Jane R., Dean Emeritus of the College of Pharmacy and Allied Health Professions; Pharm.D., University of Nebraska, 1985.

Moutsoglou, Alexandros, Professor Emeritus of Mechanical Engineering; B.S., University of Missouri, 1973; M.S., 1974; Ph.D., 1977.

Muxen, Marla J., Professor Emerita of Counseling and Human Development; B.S., South Dakota State University, 1971; M.S., Southern Illinois University, 1980; Ph.D., University of Minnesota, 1990.

Mylant, Mary Lou, Professor Emerita of Nursing; B.S.N., Cleveland State University, 1974; M.S.N., Case Western Reserve University, 1978; Ph.D., University of Texas, 1988.

Napton, Darrell E., Professor Emeritus of Geography and Geospatial Sciences; B.S., University of Missouri, 1973; M.A., 1975; Ph.D., University of Minnesota, 1987.

Nelson, David S., Professor Emeritus of Philosophy; B.A., Augustana College, 1960; M.S., S.D. School of Mines and Technology, 1962; Ph.D., University of Oregon, 1967.

Nielsen, G. Howard, Professor Emeritus of Mathematics; B.S., South Dakota State University, 1963; M.A., University of Colorado, 1966; Ph.D., 1969.

Norris, Virginia, Professor Emerita of Psychology; B.A., Baldwin-Wallace College, 1983; M.A., Kent State University, 1986; Ph.D., 1991.

Nussbaumer, Linda L., Professor Emerita of Interior Design; B.S., Mankato State University, 1990; M.S., 1992; Ph.D., University of Minnesota, 1998.

Olson, Kenneth, Professor Emeritus of Animal Science; B.S., Montana State University, 1979; M.S., 1982; Ph.D., Utah State University 1986.

Olson, Lyle D., Professor Emeritus of Communication and Journalism; A.A., Bartlesville Wesleyan College, 1974; B.S., South Dakota State University, 1976; M.A., University of Oklahoma, 1981; Ed.D., Oklahoma State University, 1988.

Olson, Roberta K., Dean and Professor Emerita of Nursing; B.S., South Dakota State University, 1964; M.S.N., Washington University, 1968; Ph.D., Saint Louis University, 1984.

Owens, Vance N., Professor Emeritus of Plant Science; B.S., Utah State University, 1990; M.S., 1992; Ph.D., University of Wisconsin, 1996.

Palmer, Ivan S., Professor Emeritus of Chemistry and Biochemistry; B.S., South Dakota State University, 1955; M.S., 1956; Ph.D., Pennsylvania State University, 1960.

Parsons, John G., Professor and Head Emeritus of Dairy Science; B.S., University of Manitoba, 1961; M.S., 1963; Ph.D., Pennsylvania State University, 1968.

Paulson, James, Associate Professor Emeritus of Communication and Journalism; B.A., University of Nebraska, 1970; M.B.A., University of South Dakota, 1993.

Pedersen, Scott, Professor Emeritus of Biology; B.A., University of Colorado, 1984; M.A., 1988; Ph.D., University of Nebraska, 1993.

Penor-Ceglian, Cindi M., Professor Emerita of Human Development; B.S., South Dakota State University, 1979; M.Ed., 1980; Ph.D., 1997.

Penrod, Kathryn M., Professor Emerita of Teaching, Learning and Leadership; B.S., Purdue University, 1975; M.S., Cornell University, 1981; Ph.D., 1984.

Perpich, Mary, Associate Professor Emerita of Journalism and Mass Communication; B.A., Michigan State University, 1976; M.A., Michigan State University, 1981.

Peterson, Carol J., Provost and Vice President Emerita for Academic Affairs; Diploma in Nursing, Methodist Kahler School of Nursing, 1960; B.S., University of Minnesota, 1963; M.Ed., 1964; Ph.D., 1969.

Peterson, Donald L., Professor Emeritus of Economics; A.A., Austin Community College, 1960; B.A., Mankato State University, 1965; M.A., 1967; Ph.D., University of Nebraska, 1973.

Peterson, Gary, Professor Emeritus of Biology and Microbiology; B.S., University of Utah, 1965; M.S., Emporia State University, 1969; D.A., University of Northern Colorado, 1971.

Peterson, Ronald M., Professor Emeritus of Horticulture; B.S., Colorado State University, 1947; M.S., University of California, 1949; Ph.D., University of Minnesota, 1953.

Phelps, Brady, Professor Emeritus of Psychology; B.S., Utah State University, 1983; M.S., 1986; Ph.D., 1992.

Piersel, David, Professor Emeritus of Music; B.M.E., Simpson College, 1958; M.A., University of Iowa, 1964; Ph.D., 1970.

Pohl, Stephen H., Professor Emeritus of Agricultural and Biosystems Engineering; B.S., South Dakota State University, 1973; M.S., 1975; Ph.D., University of Nebraska, 2000.

Pollmann, Robert J., Associate Professor of Plant Science/Manager of Seed Certification Emeritus; B.S., South Dakota State University, 1961; M.Ed., 1967.

Quist, Oren P., Professor Emeritus of Physics; B.A., Gustavus Adolphus College, 1965; M.S., University of Denver, 1967; Ph.D., 1973.

Rauber, Joel D., Professor Emeritus of Physics; B.S., Emory University, 1978; Ph.D., University of North Carolina, 1985.

Raynie, Douglas, Professor and Department Head Emeritus of Chemistry and Biochemistry; B.A., Augustana College, 1981; M.S., South Dakota State University, 1983; Ph.D., Brigham Young University, 1990.

Redlin, Meredith, Professor Emerita of Sociology, School of Psychology, Sociology and Rural Studies; B.A., Macalester College, 1979; M.A.L.S., Hamline University, 1993; Ph.D., University of Kentucky, 2000.

Reese, R. Neil, Professor Emeritus of Biology; B.S., Utah State University, 1977; M.S., University of Idaho, 1980; Ph.D., 1984.

Reeves, Dale L., Professor of Plant Science Emeritus; B.S., Kansas State University, 1958; M.S., 1963; Ph.D., Colorado State University, 1969.

Reid, Richard A., Associate Dean and Professor Emeritus of the Jerome J. Lohr College of Engineering; B.S., The Citadel, 1981; M.S., Georgia Institute of Technology, 1987; Ph.D., 1995.

Rice, James A., Professor Emeritus of Chemistry and Biochemistry; B.A., Saint John's University, 1978; M.S., Colorado School of Mines, 1982; Ph.D., 1987.

Richardson, Jay R., Professor Emeritus of Human Development/Child and Family Studies; B.S., Brigham Young University, 1957; M.S., 1958; Ed.D., Pennsylvania State University, 1969.

Richardson, Marilyn, Associate Professor Emerita of HPER; B.A., Brigham Young University, 1956; M.A., Pennsylvania State University, 1963.

Richter, Anthony H., Professor Emeritus of German; B.A., Northwestern University, 1965; M.A.T., 1966; Ph.D., 1971.

Rickerl, Diane Holland, Professor Emerita of Plant Science; B.S., Iowa State University, 1972; M.A., 1976; M.S., Auburn University, 1984; Ph.D., 1986.

Rogers, Lawrence, Professor Emeritus of Education; B.A., University of Nebraska, 1964; Ph.D., 1975.

Rollag, Dwayne A., Professor Emeritus of Civil and Environmental Engineering; B.S., University of Minnesota, 1959; M.S., South Dakota State University, 1966; Ph.D., Purdue University, 1975.

Rose, Madeleine S., Associate Professor of Nutrition, Food Science and Hospitality Emerita; B.S., University of California, 1970; M.S., University of Maryland, 1972; Ph.D., Texas Woman's University, 1985.

Rose, Robert, Associate Professor of Nutrition, Food Science and Hospitality Emeritus; B.S., South Dakota State University, 1970; M.S., University of Maryland, 1972; Ph.D., Texas Woman's University, 1991.

Ruffolo, John J., Professor Emeritus of Biology and Microbiology; B.S., Loyola University, 1965; M.S., University of Iowa, 1969; Ph.D., 1972.

Ryder, Mary R., Distinguished Professor Emerita of English; B.A., Monmouth College, 1972; M.A., Illinois State University, 1981; Ph.D., University of Illinois, 1987.

Sander, Duane, Dean Emeritus and Professor Emeritus of Electrical Engineering; B.S., S.D. School of Mines and Technology, 1960; M.S., Iowa State University, 1962; Ph.D., 1964.

Sandness, Roger K., Professor and Head Emeritus of Geography; B.S., University of North Dakota, 1967; M.S., 1968; Ph.D., University of Iowa, 1986.

Satterlee, James L., Professor Emeritus of Rural Sociology; B.S., South Dakota State University, 1962, M.S., 1963; Ph.D., 1970.

Schingoethe, David J., Distinguished Professor Emeritus of Dairy Science; B.S., University of Illinois, 1964; M.S., 1965; Ph.D., Michigan State University, 1968.

Schipull, Martin A., Professor Emeritus of Agricultural and Biosystems Engineering; B.S., University of Wisconsin, 1974; M.Ed., University of Minnesota, 1981.

Schliessmann, Michael R., Professor Emeritus of Communication Studies and Theatre; B.S., South Dakota State University, 1973, M.S., 1974; Ph.D., University of Kansas, 1981.

Schumacher, Thomas E., Professor Emeritus of Plant Science; B.A., Bluffton College, 1972; M.S., Michigan State University, 1979; Ph.D., 1982.

Sckerl, Jo Ann, Director Emerita of Academic Evaluation and Assessment; B.A., South Dakota State University, 1973; M.A., Mississippi University for Women, 1980; Ed.D., University of South Dakota, 2002.

Selim, Ali A., Professor Emeritus of Civil and Environmental Engineering; B.S., Ain-Shams University (Egypt), 1967; M.S., University of Missouri, 1974; Ph.D., 1976.

Shane, Richard C., Professor Emeritus of Economics; B.S., South Dakota State University, 1969; M.S., University of Arizona, 1971; Ph.D., Washington State University, 1978.

Shin, Sung Yun, Professor Emeritus of Computer Science; B.S., Kentucky State University, 1984; M.S., University of Wyoming, 1986, Ph.D., 1991.

Sigl, Arden B., Professor Emeritus of Civil and Environmental Engineering; B.S., South Dakota State University, 1967; M.S., 1969; Ph.D., Northwestern University, 1977.

Singh, Yadhu N., Professor of Pharmaceutical Sciences Emeritus; B.S., University of Otago (New Zealand), 1967; M.S., University of Strathclyde (Scotland), 1974; Ph.D., 1979.

Smith, Howard, Associate Dean of the College of Education and Counseling Emeritus and Professor Emeritus of Counseling and Human Resource Development; B.A., University of Sioux Falls, 1965, M.Div., Central Baptist Theological Seminary, 1968; M.Ed., South Dakota State University1974; Ed.D., University of South Dakota, 1980.

Specker, Bonny, Ethel Austin Martin Endowed Chair and Professor Emerita, Health and Nutritional Sciences; B.S., University of Cincinnati, 1977; M.S., 1980; Ph.D., 1983.

Steele, Michael Tim, Professor Emeritus of Graphic Design; A.A., Spokane Falls Community College, 1975; B.F.A., Fort Wright College of the Holy Names, 1978; M.F.A., Washington State University, 1980.

Steinley, Gary L., Professor Emeritus of Education and Counseling; B.S., Black Hills State University, 1963; M.A., Fresno State University, 1967; Ph.D., University of Utah, 1970.

Stenvig, Thomas E., Professor of Nursing Emeritus; B.S.N., Wayne State University, 1971; MPH, University of Hawaii, 1976; M.S., South Dakota State University, 1991; Ph.D., University of Wisconsin, 2001.

Stover, Ronald G., Professor Emeritus of Sociology and Rural Studies; B.A., University of Georgia, 1970; M.A., 1973; Ph.D., 1975.

Stremmel, Andrew J., Professor Emeritus of Early Childhood Education; B.A., Pennsylvania State University, 1978; M.S., Purdue University, 1981; Ph.D., 1989.

Stuart, Signe, Professor Emerita of Visual Arts; B.A., University of Connecticut, 1959; M.A., University of New Mexico, 1960.

Stymiest, Clair, Associate Professor of Plant Science Emeritus; B.S., South Dakota State University, 1966; M.S., 1970.

Sunde, Carl R., Professor Emeritus of German; B.A., Luther College, 1962; M.A., University of Iowa, 1967; Ph.D., 1974.

Sutton, Fedora, Professor Emerita of Molecular Biology; B.A., University of Maryland, 1981; Ph.D., Howard University, 1985.

Swedlund, Harriet, P., Assistant Professor Emerita of Apparel Merchandising and Director of International Programs Emerita; B.S., Iowa State University, 1954; M.S., 1957.

Sweeney, Jerry K., Professor Emeritus of History, Graduate Faculty; B.A., Fort Hays Kansas State University, 1962; M.A., Kansas State University, 1967; Ph.D., Kent State, 1970.

Thiex, Nancy, Professor Emerita of the SDSU Veterinary and Biomedical Sciences Department and the SD Agricultural Experiment Station; B.A., Northern State University, 1970; M.Ed., South Dakota State University, 1972; M.S., 1974.

Tidemann, Gail Dobbs, Dean Emerita of Continuing and Extended Education; B.S., Jacksonville State University, 1977; M.A., University of Alabama, 1978; Ph.D., 1986.

Tidemann, Larry J., Director Emeritus of the Cooperative Extension Service; B.S., South Dakota State University, 1970; M.S., 1972.

Tiltrum, Charles A., Associate Professor Emeritus of Civil Engineering; B.S., South Dakota State University, 1972; M.S., 1974.

Tolle, Gordon J., Professor Emeritus of Political Science; B.A., Oberlin College, 1965; M.A., University of Notre Dame, 1967; Ph.D., University of Colorado, 1978.

Troelstrup, Jr., Nels H., Professor Emeritus of Ecology; B.A., University of Colorado, 1981; M.S., University of Nebraska, 1985; Ph.D., University of Minnesota, 1992.

Tschetter, Lois J., Professor Emerita of Nursing; B.S., South Dakota State University, 1974; M.S., 1985; Ed.D., University of South Dakota, 2001.

Tschetter, Wesley G., Vice President Emeritus for Finance and Business/Chief Financial Officer; B.S., South Dakota State University, 1969; M.B.A., University of South Dakota, 1971.

Turnipseed, E. Brent, Professor Emeritus of Agronomy; B.S., Mississippi State University, 1984; M.S., 1987; Ph.D., 1993.

VanRiper, Gary, Assistant Professor of Pharmaceutical Sciences Emeritus; B.S., South Dakota State University, 1969; M.S., 1972.

Voss, Jo, Associate Professor of Nursing Emerita; B.S.N., Winona State University, 1980; M.S.N., University of Minnesota, 1993; Ph.D., University of Nebraska, 2003.

Wadsworth, Jr., William S., Professor Emeritus of Chemistry; B.S. Trinity College, 1950; M.S., 1952; Ph.D., Pennsylvania State University, 1955.

Walker, Darwin E., Professor Emeritus of Music; B.S., Northern State University, 1959; M.A., University of Northern Colorado, 1968; Ed.D., 1972.

Wallace, Scott, Professor Emeritus of Studio Art; B.F.A., Northern Illinois University, 1981; M.A., 1983; M.F.A., University of Arizona, 1985.

Wehbe, Nadim I., Professor and Department Head Emeritus of Civil and Environmental Engineering; B.E., American University of Beirut (Lebanon), 1980; M.S., University of Nevada, 1992; Ph.D., 1997.

Werner, Hal D., Professor Emeritus of Agricultural and Biosystems Engineering; B.S., South Dakota State University, 1970; M.S., 1971; Ph.D., University of Minnesota, 1984.

Wilson, Ann L., Professor Emerita of Teaching, Learning and Leadership; B.A., Lewis and Clark College, 1969; M.A., Michigan State University 1973; Ph.D., 1975; M.S., South Dakota State University, 1994; M.A., Augustana College, 1995.

Woldt, Bradley, Professor and Department Head Emeritus of Psychology; B.S., South Dakota State University, 1988; M.A., University of Montana, 1991; Ph.D., 1993.

Wolf-Hall, Charlene, Dean Emerita of the College of Natural Sciences; B.S., South Dakota State University, 1990; M.S., 1992; Ph.D., University of Nebraska-Lincoln, 1995.

Woodard, Charles L., Distinguished Professor Emeritus of English; B.S., Dakota State University, 1964; M.A., University of Nebraska, 1966; Ph.D., University of Oklahoma, 1975.

Woodard, Howard J., Professor Emeritus of Soil Science; B.S., University of Rochester, 1973; Ph.D., Rutgers University, 1985.

Wrage, Leon J., Distinguished Professor of Plant Science Emeritus; B.S., South Dakota State University, 1961; M.S., 1964.

Wright, David, Department Head and Professor Emeritus of Agronomy, Horticulture and Plant Science; A.A., Ellsworth Community College, 1980; B.S., Iowa State University, 1982; M.S., 1986; Ph.D., Kansas State University, 1991.

Yen, Yang, Professor Emeritus of Biology and Microbiology; B.S., Sichuan Teachers University, 1978; M.S., Nanjing Agricultural University, 1986; Ph.D., University of Missouri, 1989.

Zeman, David H., Professor Emeritus of Veterinary and Biomedical Sciences and Animal Disease Research and Diagnostic Laboratory; B.S., North Dakota State University, 1976; DVM, Oklahoma State University, 1980; Ph.D., Louisiana State University, 1986.