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South Dakota State University Graduate Bulletin 1998-2000

South Dakota State University

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SDSU

Graduate Bulletin 1998-2000

South Dakota State University *Bulletin*

Academic Calendar

— Fall Semester 1998 —

August 31, *Monday*Registration and Orientation
September 1, *Tuesday*Instruction Begins
September 7, *Monday*Labor Day Holiday
September 15, *Tuesday*Last Day to Drop/Add and
Adjust Final Fees
September 18, *Friday*Last Day to Submit
Graduation Application for Fall 1998
October 12, *Monday*Native American Day Holiday
October 15, *Thursday*“W” Grade Begins
October 17, *Saturday*Hobo Day
October 21, *Wednesday*First Half Fall Semester Ends
October 26, *Monday*Deficiency Reports Due to Registrar
Adm 208, by 5 p.m.
November 11, *Wednesday*Veterans Day Holiday
November 12, *Thursday*Last Day to Drop a Course
November 26-27, *Thursday-Friday*Thanksgiving Recess
December 12, *Saturday*Graduation, 10 a.m.
December 15, *Tuesday*Last Day of Classes, Fall 1998
December 16-22, *Wednesday-Tuesday*Final Examinations
December 28, *Monday*Grades Due in Registrar’s Office, 5 p.m.

— Fall Semester 1999 —

August 30, *Monday*Registration and Orientation
August 31, *Tuesday*Instruction Begins
September 6, *Monday*Labor Day Holiday
September 14, *Tuesday*Last Day to Drop/Add and
Adjust Final Fees
September 17, *Friday*Last Day to Submit
Graduation Application for Fall 1999
October 11, *Monday*Native American Day Holiday
October 14, *Thursday*“W” Grade Begins
October 21, *Thursday*First Half Fall Semester Ends
October 23, *Saturday*Hobo Day
October 26, *Tuesday*Deficiency Reports Due to Registrar
Adm 208, by 5 p.m.
November 10, *Wednesday*Last Day to Drop a Course
November 11, *Thursday*Veterans Day Holiday
November 25-26, *Thursday-Friday*Thanksgiving Recess
December 11, *Saturday*Graduation, 10 a.m.
December 14, *Tuesday*Last Day of Classes, Fall 1999
December 15, *Wednesday*Reading Day
December 16-22, *Thursday-Wednesday*Final Examinations
December 28, *Tuesday*Grades Due in Registrar’s Office, 5 p.m.

— Spring Semester 1999 —

January 6, *Wednesday*Registration and Orientation
January 7, *Thursday*Instruction Begins
January 18, *Monday*Martin Luther King, Jr. Day Holiday
January 21, *Thursday*Last Day to Drop/Add and
Adjust Final Fees
February 3, *Wednesday*Last Day to Submit
Graduation Application for Spring 1999
February 15, *Monday*Presidents’ Day Holiday
February 22, *Monday*“W” Grade Begins
March 1, *Monday*First Half Spring Semester Ends
March 4, *Thursday*Deficiency Reports Due to Registrar
Adm 208, by 5 p.m.
March 8-12, *Monday-Friday*Spring Break
March 29, *Monday*Last Day to Drop a Course
April 2-5, *Friday-Monday*Easter Recess
April 30, *Friday*Last Day of Classes, Spring 1999
May 1, *Saturday*113th Annual Commencement, 10 a.m.
May 3-7, *Monday-Friday*Final Examinations
May 12, *Wednesday*Grades Due in Registrar’s Office, 5 p.m.

— Spring Semester 2000 —

January 12, *Wednesday*Registration and Orientation
January 13, *Thursday*Instruction Begins
January 17, *Monday*Martin Luther King, Jr. Day Holiday
January 27, *Thursday*Last Day to Drop/Add and
Adjust Final Fees
February 9, *Wednesday*Last Day to Submit
Graduation Application for Spring 2000
February 21, *Monday*Presidents’ Day Holiday
February 29, *Tuesday*“W” Grade Begins
March 6-10, *Monday-Friday*Spring Break
March 15, *Wednesday*First Half Spring Semester Ends
March 20, *Monday*Deficiency Reports Due to Registrar
Adm 208, by 5 p.m.
April 4, *Tuesday*Last Day to Drop a Course
April 21-24, *Friday-Monday*Easter Recess
May 5, *Friday*Last Day of Classes, Spring 2000
May 6, *Saturday*114th Annual Commencement, 10 a.m.
May 8-12, *Monday-Friday*Final Examinations
May 17, *Wednesday*Grades Due in Registrar’s Office, 5 p.m.

South Dakota State University Graduate Bulletin 1998-2000

South Dakota State University Bulletin Quarterly (USPS 474-180)

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September 1998

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ultimately the student's responsibility to stay abreast of current regulations, curricula, and the status of specific programs being offered. Furthermore, 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. Web Site: <http://www.sdstate.edu>.

Address from the Dean

Welcome to South Dakota State University's Graduate School



Thank you for considering graduate school at South Dakota State University. Individuals have many different reasons for pursuing graduate level education. These include a desire to broaden your knowledge base, the need to obtain the credentials necessary to assume or maintain a leadership role in your professional career, and personal fulfillment. Whether you are motivated by one of these or by other factors, SDSU will provide a high quality educational experience in a wide range of disciplines in M.S., M.A., M.Ed. and Ph.D. programs for degree-seeking students as well as individual classes for those enrolled as special (non-degree) students.

South Dakota State University's approximately 300 graduate faculty provide graduate education in 30 majors in agriculture, engineering, humanities, health sciences, education, natural sciences and social sciences. Depending upon your major, you may conduct research that expands the boundaries of knowledge or follow a non-thesis option. In either case, your plan of study will be carefully developed to prepare you to live, work and contribute in the 21st century.

This Graduate Bulletin is your best source of information about our programs and the guidelines and procedures associated with admissions, degree requirements and graduation procedures. You are encouraged to keep it as a reference throughout your graduate career at SDSU. Information is also available on-line. General information about SDSU can be obtained by connecting to the University's homepage at: www.sdstate.edu. Information more specific to the graduate school can be reached at: www.sdstate.edu/grad_school or by clicking on "academics" on the University's homepage.

South Dakota State University is located in Brookings, South Dakota, a very friendly town of about 17,000. You can learn more about Brookings by checking the website: www.brookings.com.

I invite you to contact us by telephone at (605) 688-4181, or to visit our campus and your prospective department. I assure you that you will find many interesting and challenging opportunities as a part of your graduate education at SDSU!



*David C. Hilderbrand
Dean of the Graduate School
and Director of Research*

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South Dakota State University Non-Discrimination Policy

It is the policy of South Dakota State University (SDSU) *not* to discriminate on the basis of race, color, creed, religion, national origin, ancestry, citizenship, age, gender, sexual orientation, disability, or Vietnam Era Veteran status in the offering of all benefits, services, and education and employment opportunities.

Discrimination complaints on the basis of sex, including sexual harassment complaints, should be directed to the Title IX Coordinator: Ms. Saila Gandhi, SDSU Advocacy Officer, Administration Building (AD), Room 217, Phone: 605-688-6361.

Discrimination complaints on the basis of disability should be directed to the Section 504/ADA Coordinator: Mr. Eugene T. Butler, Jr., Administration Building, Room 217, Phone: 605-688-6361 (TTY 605-688-4394).

Discrimination complaints based on other protected categories should be directed to Ms. Saila Gandhi, SDSU Director of Diversity and Equal Opportunity, Administration Building, Room 217, Phone: 605-688-6361.

Board and Council Members

— Board of Regents —

- Honorable
Robert T. (Tad) Perry
Pierre
Executive Director
- Honorable Daniel Cronin
Gettysburg
Term expires March 31, 2004
- Honorable David Gienapp
Madison
Term expires March 31, 2003
- Honorable James Hansen
Pierre
Term expires March 31, 2001
- Honorable Harvey C. Jewett, IV
Aberdeen
Term expires March 31, 1999
- Honorable Curt Jones
Britton
Term expires March 31, 2003
- Honorable Pat Lebrun
Rapid City
Term expires March 31, 1999
- Honorable Jack Rentschler
Sioux Falls
Term expires March 31, 2003

— Graduate Council —

- David C. HilderbrandChair; Dean of Graduate School
- Donald P. EvensonProfessor of Chemistry and Biochemistry
Term expires 1999
- Ruth HarperAssistant Professor of Counseling and
Term expires 1999 Human Resource Development
- Douglas D. MaloProfessor of Plant Science
Term expires 1999
- M.L. FlynnAssociate Professor of English
Term expires 2000
- David W. GalipeauAssociate Professor of Electrical Engineering
Term expires 2000
- Robbi H. PritchardProfessor of Animal and Range Sciences
Term expires 2000
- Roger K. SandnessProfessor and Head of Geography
Term expires 2001
- Charles G. ScaletProfessor and Head of Wildlife and Fisheries Sciences
Term expires 2001
- Bonny L. SpeckerDirector and Professor of Ethel Austin Martin-
Term expires 2001 Edward Moss Martin Chair of Human Nutrition
- Steve R. MarquardtDean of Libraries; Professor of Library Science
Ex-officio

— SDSU Administration —

- Peggy Gordon ElliottPresident
Ed.D., Indiana University, 1975 *Professor of Education*
- Carol J. PetersonVice President for Academic Affairs
Ph.D., University of Minnesota-Minneapolis/St. Paul, 1969 *Professor of Nursing*
- Michael P. RegerVice President for Administration
Ph.D., The Ohio State University, 1983 *Assistant Professor of Education*
- Edward P. HoganAssistant Vice President for Academic Affairs
Ph.D., Saint Louis University, 1969 *Professor of Geography*

— College Deans —

- David C. HilderbrandDean, Graduate School; Director of Research
Ph.D., University of Missouri, 1971 *Professor of Chemistry*
- Fred CholickDean, College of Agriculture and Biological Sciences
Ph.D., Colorado State University, 1977 *Professor of Plant Science*
- Herbert Cheever, Jr.Dean, College of Arts and Science
Ph.D., University of Iowa, 1967 *Professor of Political Science*
- Dee HopkinsDean, College of Education and Counseling
Ed.D., Indiana University, 1982 *Professor of Education*
- Duane E. SanderDean, College of Engineering
Ph.D., Iowa State University, 1964 *Professor of Electrical Engineering*
- Laurie Stenberg NicholsDean, College of Family and Consumer Sciences
Ph.D., The Ohio State University, 1988 *Professor of Human Development,
Consumer and Family Sciences*
- Roberta OlsonDean, College of Nursing
Ph.D., Saint Louis University, 1984 *Professor of Nursing*
- Danny L. LattinDean, College of Pharmacy
Ph.D., University of Minnesota, 1970 *Professor of Medicinal Chemistry*

General Information

An act of the Territorial Legislature approved in 1881 provided for the establishment of what is now South Dakota State University. The institution granted its first Master of Science degree in 1891, its first Master of Education degree and Doctor of Philosophy degree in 1958. All graduate work was supervised by a committee until 1957, when the Graduate School was established.

A **Graduate Council** of nine members elected from the Graduate Faculty assists the Graduate Dean. The council includes the Graduate Dean (chair); one member each from Animal Sciences, Biological Sciences, Education and Counseling, Engineering Sciences, Health Sciences, Physical Sciences, Plant Sciences, Social Sciences and Humanities. The Dean of the Library serves as an ex-officio member.

The **Graduate Faculty** is composed of the University President, Vice President for Academic Affairs, Vice President for Administrative Affairs, college deans, heads of departments in which graduate courses are given, and other faculty, chosen on the basis of their training and experience, in accordance with the policies of the Graduate School. All matters of policy and standards are acted on by the Graduate Faculty. In addition, Graduate Faculty are authorized to serve as advisor to graduate students or on their examining committee and to teach courses for graduate credit.

The **Graduate School** provides an atmosphere for qualified students to obtain rigorous advanced education in a variety of fields in preparation for service and leadership in their professions and society. It also promotes scholarly pursuits and scientific research for the advancement of knowledge within a climate of freedom of inquiry.

This bulletin deals only with the graduate programs of the institution. For material on undergraduate programs and for general information concerning South Dakota State University, refer to the General Catalog, available in the Admissions Office, Administration Bldg 200.

South Dakota State University is a land-grant university and as such subscribes to the land-grant philosophy of education, research, and extension as its three-fold mission. The Graduate School is a separate administrative unit composed of selected scholars within the university.

Listed below are the SDSU areas noting the accrediting boards:

SDSU Graduate Programs through the Doctoral Degree — *North Central Association of Colleges and Secondary Schools, the regional accrediting agency for 19 states including South Dakota*

Agricultural, Civil, Electrical, and Mechanical Engineering Departments — *Engineers Council for Professional Development*

Journalism Curriculum — *American Council on Education for Journalism*

College of Nursing — *National League for Nursing*

Chemistry Department — *American Chemical Society*

Preparation of secondary teachers, administrators and guidance counselors at the graduate level — *National Council for Accreditation of Teacher Education*

Memberships include:

SDSU Graduate School — *Council of Graduate Schools in the United States and the Midwestern Association of Graduate Schools*

University — *American Council on Education, National Association of State Universities and Land-Grant Colleges*

Other — *American Society for Engineering Education, The Association of Accredited Schools and Departments of Journalism, American Library Association, the National Commission on Accrediting Agencies*

This bulletin is printed to provide information about the graduate programs of South Dakota State University. Every effort has been made to provide as complete and accurate information as possible; however, it should be noted that changes may occur at any time. Students are allowed to fulfill the degree requirements in effect at the time of initial enrollment as a degree-seeking student, provided the student completes the degree requirements within the stated time frame through continuous enrollment. If a student needs to re-apply into the degree program, the guidelines in effect at the time of re-application must then be followed. It is the student's responsibility to become familiar with and complete the requirements for the degree being sought.

Admission Information

Graduate Degrees Offered

Doctor of Philosophy

- *Agricultural Engineering*
- *Agronomy*
- *Animal Science*
 - Animal and Range Sciences*
 - Dairy Science*
- *Atmospheric, Environmental and Water Resources*
- *Biological Sciences,*
 - areas of study:*
 - Animal and Range Sciences*
 - Biology and Microbiology*
 - Dairy Science*
 - Plant Science*
 - Veterinary Science*
 - Wildlife and Fisheries Sciences*
- *Chemistry*
- *Sociology*

Master of Arts

- *English*

Master of Education

- *Curriculum and Instruction*
- *Educational Administration*

Master of Science

- *Agronomy*
- *Animal Science*
- *Biology*
- *Chemistry*
- *Communication Studies and Journalism*
- *Counseling and Human Resource Development*
- *Dairy Science*
- *Economics*
- *Engineering,*
 - areas of study:*
 - Agricultural and Biosystems Engineering*
 - Civil and Environmental Engineering*
 - Computer Science*
 - Electrical Engineering*
 - Mechanical Engineering*
 - Physics*
- *Entomology*
- *Family and Consumer Sciences,*
 - areas of study:*
 - Human Development, Consumer and Family Sciences*
 - Nutrition and Food Sciences*
- *Geography*
- *Health, Physical Education and Recreation*
- *Industrial Management*
- *Mathematics*
- *Microbiology*
- *Nursing*
- *Plant Pathology*
- *Rural Sociology*
- *Wildlife and Fisheries*
 - Fisheries Option*
 - Wildlife Option*

Admission to Graduate School

Students must be admitted to the Graduate School before enrolling in any graduate course, whether or not they are pursuing an advanced degree. A completed application must be filed with the Graduate School at least one month before the beginning of the first term of graduate work. Students applying for Special Student (non-degree) status must also complete an application and be admitted to Graduate School. NOTE: Being admitted to the Graduate School does not admit a student to a degree program.

Admission Requirements

Baccalaureate Degree — Admission to the Graduate School requires that the applicant be a graduate of an institution of higher learning. The institution must be one of recognized standing (regional accreditation) whose requirements are substantially the same as those of the South Dakota State University department(s) in which the advanced degree will be taken.

Graduate Record Examination (GRE) — Submission of the results of a Graduate Record Examination is not a Graduate School requirement. However, the following programs require that scores be submitted: Agronomy; Biology; Electrical Engineering; English; Entomology; Health, Physical Education and Recreation; Microbiology; Plant Pathology and Wildlife and Fisheries. For information about the GRE test, contact the department concerned or the Academic Evaluation and Assessment Office, Pugsley Continuing Education Center, Room 201.

Department Requirements — Individual departments may have additional admission requirements. Applicants should inquire about such requirements from the department of interest.

Application Procedure

Application Form — A completed form supplied by the Graduate School must be submitted and accompanied by a non-refundable application fee of \$15. An application form can be found at the back of this catalog.

Official Transcripts — For degree-seeking students, official transcripts of all undergraduate and graduate course work must be sent directly to the Graduate School. For those students not actively pursuing a degree, the Bachelors degree must be stated on the application form and the degree will be verified. Students will be withdrawn from graduate coursework if a degree cannot be verified.

If application is submitted before the Bachelor's degree is complete, an incomplete transcript must be filed. When the Bachelor's degree is awarded, a final transcript must then be sent. This final transcript must be filed during the first semester of graduate work.

International students who cannot provide original transcripts may submit notarized or certified copies at the time of application. A Provisional degree will be accepted.

Letters of Recommendation — Two letters of recommendation from persons acquainted with the academic ability and professional competency of the applicant should be sent directly to the Graduate School. Forms are available with the application packet as well as in the back of this catalog. This requirement may be waived by the Dean of the Graduate School on recommendation of the department.

Application Procedure for International Students

In addition to the above procedures, International Students must also submit the following:

TOEFL Score — A score of 525 or above is required by the Graduate School for the Test of English as a Foreign Language (TOEFL). This score pertains to paper-based test score reports. Department requirements are listed with each department section in this bulletin. Additional English testing is given after arrival and students who do not possess satisfactory language skills may be required to enroll in remedial courses. Remedial courses may not be used toward a graduate degree and require separate tuition payment.

Financial Support — Evidence of available financial support for at least two years (M.S., M.A., M.Ed.) or four years (Ph.D.) must be submitted to the International Student Affairs (ISA) Office, Administration Building Room 312. For any financial assistance from this institution the applicant should correspond with the Head of the Major Department.

Physical Examination Record — A physical evaluation is helpful. A record of 2 (two) immunizations for measles and 2 (two) for rubella, signed by a doctor, is required.

Documents for entry into the U.S. will be issued by the ISA Office after academic admission and financial certification are complete.

Application Process

After an application for admission and all supporting documents are received and evaluated by the Graduate School, they are sent for review to the department concerned. Using the recommendations made by the department, the Dean of the Graduate School acts on the application and notifies the applicant, department, and/or committee concerned.

Admission Status

Unconditional Admission

An applicant may be admitted without condition if a Bachelor's degree has been earned, all undergraduate prerequisites for major and minor (if required) fields of study satisfactorily completed, and the applicant had an average of "B" (3.0 or higher on a 4-point grading system; A = 4, B = 3, C = 2, D = 1) during the last two academic years of undergraduate work.

Applicants with grade point average between 3.0 and 2.75 may also be considered for unconditional admission if other aspects of their academic and/or professional record indicate superior performance and potential.

Admission to all degree programs is competitive and limited by the availability of personnel, facilities, and funding necessary to provide quality graduate education within each program.

Conditional Admission

Conditional admission may be granted if:

- 1) The applicant meets the requirements for unconditional admission for the last three semesters but has not completed the last semester of undergraduate study. Admission is conditional until the Bachelor's degree is granted, **OR**
- 2) The applicant lacks prerequisite undergraduate courses specified by the major department. Admission is conditional until these courses have been completed to the satisfaction of the department and these courses cannot be used on the graduate Plan of Study, **OR**
- 3) The applicant has a grade point average between 2.5 and 3.0 for the junior and senior years.

Students admitted conditionally with a cumulative or junior/senior grade point average of less than 2.75 must complete a minimum of 10 graduate credits with grades of B or above before becoming eligible for a graduate assistantship.

Course Numbering System

300-499 series — Advanced undergraduate courses which may be used in meeting part of the requirements for graduate degrees in accordance with the policy on converted credit, page 106.

These courses are not listed in this bulletin, but are listed in the General Catalog.

NOTE: When credits in the 300-499 series are applied to a graduate program, they are entered on the transcript without notation. It is doubtful, therefore, that they could be transferred as graduate credit to another institution.

500-599 series — Entry level graduate courses (may be dual listed with a 400 level undergraduate course and may include limited enrollment by undergraduates). See below.

600-699 series — Graduate level courses.

These courses are open to SDSU senior students for graduate credit if they meet the following requirements:

1. Within 15 credits of completing a Bachelor's degree;
2. Have an overall grade point average of 2.5 or higher, or a Junior-Senior grade point average of 3.0 or higher;
3. Enroll for no more than 18 credits, undergraduate and graduate credits combined (9 credits during Summer Term).
4. The course(s) cannot be required, or included, for the Bachelor's degree.
5. A signed permit is required.

These courses are approved as graduate credit and undergraduate students must meet the same level of performance as graduate students.

700-799 series — Graduate level courses open only to graduate students.

800-899 series — Doctoral and post-doctoral level courses open only to doctoral students or those holding an earned doctoral degree.

Experimental Courses — Courses at the 500-800 levels ending in 98 or 99 are experimental and may be active for two years from the date of the first offering, at which time they end or must become permanent courses.

A student admitted conditionally must satisfy any conditions within the first year after admission. Departments will assign advisors to such students. Failure of a student to fulfill the above conditions or to do satisfactory graduate work at any point in his/her program is sufficient grounds for dismissal or reclassification as a Special (non-degree) Student.

Students with a junior-senior grade point average above 2.75 and who have pass-fail (or equivalent) grades shall have instructors for such courses furnish letter grades or shall furnish satisfactory Graduate Record Examination (GRE) scores.

Special Student (non-degree)

Students not meeting the above admission requirements, those initially enrolled only in evening classes, and those not working toward a degree may be granted admission and take courses as Special Students. Special Students may not receive Graduate Assistantships, financial aid, or enroll for thesis/dissertation credits. The Graduate Dean will act as advisor for these students unless they are assigned to a department advisor. No more than ten credits under Special Student status may be applied toward a degree.

Change of Admission Status

Students with Special Student status may request and be granted a change in status to work toward a degree, provided ten credits of graduate work have been completed with a cumulative GPA of 3.0 or better. The request must include complete official transcripts and application fee if these have not been supplied previously. This request must be submitted to the Graduate School by the student or advisor, after which it will be submitted to the appropriate department for a recommendation and processed as other applications.

Readmission

Students formerly enrolled as graduate students at South Dakota State University (who interrupt continuous registration) should apply for readmission at least one month prior to registration. Forms for this purpose can be obtained from the Graduate School. Official transcripts for graduate work taken at other institutions since last enrollment at South Dakota State University must be furnished.

Graduate School rules and regulations in effect at the time of readmission apply to students who are readmitted. The Graduate School or graduate program may require applicants for readmission to update their application file or to complete a new application including current references if required by the program. Students who are readmitted may be required to change their advisory committee and file a new Plan of Study.

A personal interview with the head of the major department should be arranged prior to registration.



Departments of Instru■tion

Department of Agricultural and Biosystems Engineering

Graduate Faculty

Gary A. Anderson
Associate Professor
Ph.D., Iowa State University of
Science and Technology, 1987
Environment, Structures

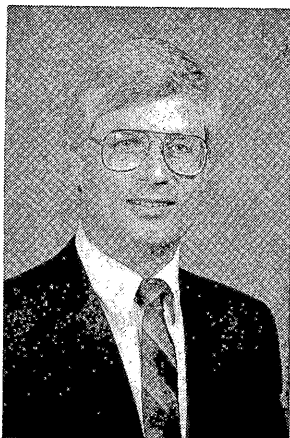
Shu Tung Chu
Professor
Ph.D., University of Minnesota-
Minneapolis/St. Paul, 1966
Infiltration, Modeling,
Hydrology

Darrell W. DeBoer
Professor
Ph.D., Iowa State University of
Science and Technology, 1969
Drainage, Irrigation, Water
Quality

Mylo A. Hellickson
Professor
Ph.D., West Virginia University,
1969
Energy Systems, Structures

Daniel S. Humburg
Associate Professor
Ph.D., University of Illinois,
1991
Machine Design, Machine Vision

James L. Julson
Assistant Professor
M.S., South Dakota State
University, 1977
Biological Materials, Value
Added



Darrell W. DeBoer
Acting Department Head
Graduate Coordinator
Agricultural and Biosystems
Engineering

Acting Department Head: Professor Darrell W. DeBoer

Graduate Coordinator: Professor Darrell W. DeBoer

For additional information contact:

Mailing address: SDSU Box 2120

Agricultural Engineering — AE

WWW: <http://www.abs.sdstate.edu/ae/index.htm>

E-mail: goenss@mg.sdstate.edu

Phone: 605/688-5141

Fax: 605/688-6764

Program Description

The Department of Agricultural Engineering offers coursework toward the Master of Science in Engineering. The M.S. in Engineering has a primary and secondary core requirement as defined in the College of Engineering section of this catalog on page 52. Areas of specialization include machine vision, food and biological-materials processing, soil and water engineering, structures and machine design.

The Department currently offers a Ph.D. degree in cooperation with Iowa State University. The area of specialization pertaining to the cooperative Ph.D. is in soil and water engineering.

Major Degrees Offered

Master of Science: Engineering, with coursework in Agricultural and Biosystems Engineering

Doctor of Philosophy: Agricultural Engineering,
cooperatively with Iowa State University

Available Options for Graduate Degrees

Master of Science: Option A
Option B

See page 113 for descriptions of available options.

Core Requirements

Refer to College of Engineering section, pages 51-53, for specific details regarding Engineering, with an emphasis in Agricultural and Biosystems Engineering.

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 550

General Requirements begin on page 111 (Master's Degree) and page 116 (Ph.D.). Graduate students should consult with their advisor before registering for graduate work.

Agricultural Engineering (AE) Course Offerings

- AE 503 Energy & Environment** 3
Discussion of conventional energy sources, their historic and projected use patterns, predicted resources and energy conservation. Evaluation of alternate energy sources such as solar, wind, biomass, tidal, geothermal, ocean thermal, oil shale and nuclear. Energy and the environment and energy and the agricultural industry.
- AE 512 Advanced Agricultural Tractors & Machines**2
Units of instruction will be selected from the following areas: tractor chassis mechanics and dynamics, transmissions, hydraulics, human factors considerations for agricultural machine operators, soil dynamics in tillage and machine-plant concepts. P, Math 321 or equivalent.
- AE 522 Bio-environmental Engineering**2
Analysis of farm animals and their environment employing engineering principles combined with biological principles. Homeothermic mechanisms of animals and the influence of thermal environment upon growth and production. P, AE 324 or consent.

AE 533 Advanced Irrigation Engineering	3
Basic soil-water-crop relationships. Theory and design of pumping plants, surface, sprinkler, and drip irrigation systems. P, AE 434 or consent.	
AE 533A Advanced Irrigation Engineering Lab	0
AE 544 Unit Operations of Biological Materials Processing	4 S
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, reverse osmosis), mechanical separation processes, extrusion. P, senior standing or consent.	
AE 544A Unit Operations of Biological Materials Processing Lab	0
AE 554 Advanced Unit Operations in Food/Biomaterials Processing	4
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. P, senior standing or consent.	
AE 554A Advanced Unit Operations in Food/Biomaterials Processing Lab	0
AE 700-701 Seminar	0-1
AE 732 Advanced Hydrology in Ag	2
Small watershed hydrology principles. Unit hydrograph theory. Infiltration and evapotranspiration processes. Small watershed surface runoff simulation. Soil erosion principles. P, consent.	
AE 733 Ground Water Engineering in Ag	3
Saturated and unsaturated ground water flow theory. Steady and transient well hydraulics. Aquifer groundwater flow simulation. Infiltration models. Vadose zone simulation. Groundwater recharge. P, consent.	
AE 752 Theoretical Micro-Climatology	2
Derivation and application of physical laws to air layer near the ground occupied by plants and animals. Instruments used to take measurements in layer near ground. P, Calculus, Physics, AE 353 or consent.	
AE 763 Instrumentation	3
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. P, Phys 213, Math 225.	
AE 763A Instrumentation Lab	0
AE 770 Special Problems in Ag Engineering	1-2 (on demand)
Graduate students who wish to pursue detailed studies in one or several areas of the Agricultural and Biosystems Engineering field including meteorology and climatology.	
AE 771 Graduate Seminar	1
Discussion and reports of current topics and investigations in Agricultural and Biosystems Engineering. (Limit of 2 credits.)	
AE 772 Similitude	2
A systematic approach to the principles and theory of dimensional analysis, problems of model design and test. The use of true, distorted and dissimilar models as they pertain to engineering design and research.	
AE 772A Similitude Lab	0
AE 773 Programming Agricultural Systems	3
The use of programs and computers in advanced engineering for the solution of problems occurring in Agricultural and Biosystems Engineering studies. Gathering, processing, evaluating mass engineering and scientific data. P, BASIC or FORTRAN.	
AE 773A Programming Agricultural Systems Lab	0
AE 790 Thesis	1-7 FSSu
AE 791 Thesis Sustaining	0 FSSu
AE 792 Research Report/ Design Paper	1-2 FSSu (on demand)
AE 793 Engineering Research/Design Paper Sustaining	0
AE 795 Special Topics	1-3 (on demand)
AE 797 Research	1-9
AE 890 Dissertation, Ph.D.	1-12
AE 891 Dissertation, Ph.D. Sustaining	0

*Kasiviswanathan
Muthukumarappan
Assistant Professor
Ph.D., University of Wisconsin,
1993
Food and Biomaterials Processing*

*Hal D. Werner
Professor
Ph.D., University of Minnesota,
1984
Irrigation*

Key to Course Descriptions

Course Number & Name
Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Agricultural Systems Technology (AST) Course Offerings

- AST 512 Hydraulic and Pneumatic Systems and Controls2 Su (even years)**
Principles of fluid power, hydraulic and pneumatic components and system function. Component selection and off-the-shelf system design. Manual, microprocessor and electronic control of systems.
- AST 512A Hydraulic and Pneumatic Systems and Controls Lab0**
- AST 522 Environmental Control in Structures.....2 Su (even years)**
Study of heat and moisture balance, gases, dust, and odors. Selection and design of fans, ducts, diffusers and efficient ventilation patterns.
- AST 522A Environmental Control in Structures Lab0**
- AST 562 Advanced Irrigation Mechanics & Practices2 Su (odd years)**
Sprinkler, surface and trickle irrigation systems and equipment. Irrigation scheduling, management, and economics. Water laws and irrigation program financing. Water quality and environmental impact of irrigation.
- AST 562A Advanced Irrigation Mechanics & Practices Lab0**
- AST 582 Advanced Farm Engines2 Su (odd years)**
Operation, selection, care, adjustment, and new development of internal combustion engines as applied to farm power units.
- AST 582A Advanced Farm Engines Lab0**
- AST 792 Special Problems1-3 FSSu**
- AST 793 Special Topics1-4 FSSu**

Department of Animal and Range Sciences

Acting Department Head: Professor George W. Libal
Graduate Coordinator: Professor George W. Libal

For additional information contact:

Mailing address: SDSU Box 2170

Animal Science Complex — ASC

WWW: <http://www.abs.sdstate.edu/ars/index.htm>

E-mail: libalg@mg.sdstate.edu

Phone: 605/688-5166

Fax: 605/688-6170

Program Description

The Department of Animal and Range Sciences offers graduate programs leading to the Master of Science and Doctor of Philosophy degrees in Animal Science or the Doctor of Philosophy degree in Biological Sciences. Faculty and graduate students are actively involved in basic and/or applied research in the fields of nutrition, reproductive physiology, muscle biology, range science, animal breeding, meat science and animal production.

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

Major Degrees Offered

Master of Science: Animal Science

Doctor of Philosophy: Animal Science

Biological Sciences, with an area of study in Animal and Range Sciences

Available Options for Graduate Degrees

Master of Science: Option A

Doctor of Philosophy: 60-Credit Plan

90-Credit Plan

See pages 113 (M.S.) and 116 (Ph.D.) for descriptions of available options.

Core Requirements

M.S. students required to have 1 credit of Graduate Seminar.

Ph.D. students required to have 2 credits of Graduate Seminar.

All students required to present seminar on thesis or dissertation.

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 550

Introductory Animal Science, plus 9 other credits of Animal Science

The department requires applicants to submit a current resume and a letter of application that outlines interests and goals in addition to materials required by the Graduate School.

General Requirements begin on page 111 (Master's Degree) and 116 (Ph.D.). Graduate students should consult with their advisor before registering for graduate work.

Animal Science (AS) Course Offerings

AS 591 Research Problems.....1-3 FSSU
Investigation of problems in following areas with results submitted as technical paper: Animal Breeding, Nutrition, Meats, Livestock Production, Reproductive Physiology, Wool Technology, Poultry. Maximum of 3 credits for student program.

AS 592 Special Topics.....1-6 FS
Advanced study of one or more selected topics: breeding, management, product technology, physiology, nutrition, research methods or marketing.

AS 711 Ruminology.....3 F (odd years)
Biochemical, physiological, and microbiological activity occurring in the rumen and the relation of rumen function to animal response. P, Chem 361 and Vet 223 or consent.

Graduate Faculty

Jeffrey A. Clapper
Assistant Professor
Ph.D., Purdue University, 1992
Reproductive Physiology

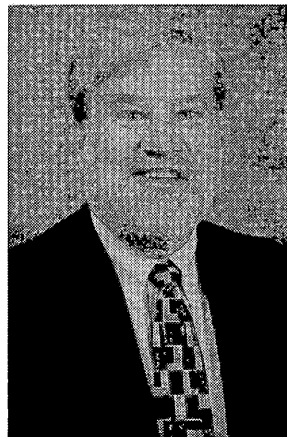
W. J. Costello
Distinguished Professor
Ph.D., Oklahoma State
University, 1963
Meat Science

Patricia S. Johnson
Professor
Ph.D., Utah State University,
1987
Range Science

George W. Libal
Professor
Ph.D., South Dakota State
University, 1974
Swine Nutrition

Donald M. Marshall
Professor
Ph.D., Oklahoma State
University, 1984
Animal Breeding

Douglas C. McFarland
Professor
Ph.D., Washington State
University, 1984
Muscle Biology



George Libal
Acting Department Head
Graduate Coordinator
Animal and Range Sciences

Herley L. Miller
Associate Professor
Ph.D., Purdue University, 1973
Reproductive Physiology

Robbi H. Pritchard
Professor
Ph.D., Washington State
University, 1983
Ruminant Nutrition

Richard J. Pruitt
Professor
Ph.D., Kansas State University
of Agriculture and Applied
Science, 1983
Cow-Calf Management

Lowell Slyter
Professor
Ph.D., Kansas State University,
1969
Reproductive Physiology/Sheep
Management

AS 712 Ruminant Nutrition	3 S (even years)
Principles of nutrition for ruminants in relation to growth, reproduction and lactation. P, AS 233, AS 323, Chem 361, Vet 223 or Zool 325.	
AS 723 Population Genetics	3 S (odd years)
Genetic structure of populations and forces affecting this structure. Theories of biological variation, race and species formation. P, Bio 371 or equivalent. Stat 541 or equivalent highly recommended.	
AS 731 Experimental Procedures.....	2 S (even years)
Research methods and planning of experimental work, necessary records, interpretation of results and presentation of material. Introduction to research application of linear programming. P, Stat 541 or equivalent.	
AS 732 Advanced Physiology of Reproduction.....	3 S (even years)
Anatomical and physiological process of reproduction in domestic animals with special emphasis on research techniques and the findings of recent research. P, AS 433.	
AS 732A Advanced Physiology of Reproduction Lab	0
AS 733 Vitamins and Minerals	3 S (odd years)
Relationships between nutrients in metabolism. Comparing metabolic significance of required nutrients for different animal species and as applied to human nutrition. P, AS 233, AS 323, Chem 361, Vet 223 or Zool 325.	
AS 734 Protein and Energy Nutrition.....	3 F (even years)
Principles of protein and energy metabolism and the partitioning of these nutrients for maintenance, growth and production in domestic farm animals. P, AS 233, AS 323, Chem 361, Vet 223 or Zool 325.	
AS 736 Monogastric Nutrition.....	3 F (even years)
Nutrition principles for nonruminants related to reproduction, lactation and growth. P, AS 233, AS 323, Chem 361, Vet 223 or Zool 325.	
AS 750 Animal Growth and Development	3 S (even years)
Growth of animals at the cellular level, including hormones, growth factors, receptors and signalling and growth at the whole animal level.	
AS 753 Meat Science.....	3 F (odd years)
Basic physical, chemical, microbiological and histological characteristics of meat and effects of various processing methods on meat products and by-products. P, AS 241, Chem 361.	
AS 753A Meat Science Lab	0
AS 781 Graduate Seminar	1 FS
Reports and discussion of current research in animal science. Maximum of two credits for M.S. and four credits for Ph.D.	
AS 790 Thesis.....	1-7 FSSu (as arranged)
AS 791 Thesis Sustaining, M.S.....	0 FSSu (as arranged)
AS 890 Dissertation, Ph.D.....	1-12 FSSu (as arranged)
AS 891 Dissertation Sustaining, Ph.D.....	0 FSSu (as arranged)
BioS 890 Dissertation—Ph.D	1-7 FSSu
BioS 891 Dissertation Sustaining.....	0 FSSu
BioS 892 Ph.D. Seminar	1 FS

Range Science (Rang) Course Offerings

Rang 521 Grassland Fire Ecology	3 F
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. P, consent; Cross-list with WL 421-521.	
Rang 521A Grassland Fire Ecology Lab	0
Rang 591 Research Problems in Range Science.....	1-3 FSSu
Investigation of problems in Range Science with results submitted as a technical paper.	
Rang 592 Special Topics	1-3 FSSu
Advanced study of one or more selected topics in Range Science including Grassland Fire Ecology and Grazing Management.	
Rang 621 Grassland Fire Ecology	3
Rang 621A Grassland Fire Ecology Lab	0

Department of Apparel Merchandising and Interior Design

Department Head: Professor Sandra Evers
Graduate Coordinator: Professor Sandra Evers

For additional information contact:

Mailing address: SDSU Box 2275A
Nursing/Family/A&S — NFA
WWW: <http://www.dbf.sdstate.edu/fcs/amid/index.htm>
E-mail: everss@ur.sdstate.edu

Phone: 605/688-5196
Fax: 605/688-4439

Graduate Faculty

Sandra Evers
Professor
Ph.D., Michigan State
University, 1976
Interior Design

Program Description

Courses offered in Apparel Merchandising and Interior Design support the Master of Science in Family and Consumer Sciences degree program. Students may select courses in Apparel Merchandising and Interior Design to support their graduate program.

Major Degrees Offered

Master of Science: Not available
Doctor of Philosophy: Not available

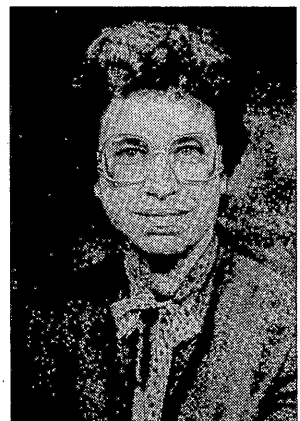
Refer to College of Family and Consumer Sciences section, pages 57-58, for specific details.

Apparel Merchandising (AM) Course Offerings

- AM 580 Travel Studies**1-5
Study of businesses, museums, and other relevant places through site tours and presentations in selected locations. Includes pre-travel orientation and post-travel written report. P, consent of department.
- AM 592 Special Problems**1-3
Problems for independent study selected according to special interests and needs. Arranged by contract with instructor.
- AM 593 Current Topics**1-3
Discussion of current literature and issues. Investigation of topics for which there is a current need but which are not part of any class. P, consent.
- AM 770 Seminar in Apparel Merchandising & Textiles**1-2
- AM 792 Special Problems**1-3
Problems for advanced study selected according to student's specific interests, needs or current research with which student is familiar. Credit arranged by professor in charge. Can be repeated.

Interior Design (ID) Course Offerings

- ID 573 Travel Studies**.....1-5 Su
Study of businesses, museums and other relevant places through site tours and presentations in selected locations. Includes pre-travel orientation and post-travel written report. P, consent of department.
- ID 592 Special Problems**1-3
Problems for independent study selected according to special interests and needs. Arranged by contract with instructor.
- ID 593 Current Topics** 1-3
Discussion of current literature and issues. Investigation of topics for which there is a current need but not part of any class. P, consent.



Sandra Evers
Department Head
Graduate Coordinator
Apparel Merchandising and
Interior Design

Department of Biology and Microbiology

Graduate Faculty

Bruce Bleakley
Associate Professor
Ph.D., University of Florida,
1986
Soil Microbiology

Thomas M. Cheesbrough
Associate Professor
Ph.D., Purdue University,
1982
Plant Molecular Biology

Charles D. Dieter
Assistant Professor
Ph.D., South Dakota State
University, 1993
Wildlife Ecologist

Melvin R. Duvall
Associate Professor
Ph.D., University of
Minnesota/St. Paul, 1987
Molecular Evolution

William Ray Gibbons
Professor
Ph.D., South Dakota State
University, 1987
Industrial Microbiology

Susan A. Gibson
Assistant Professor
Ph.D., University of Oklahoma,
1989
Environmental Microbiology

Department Head: Professor Charles R. McMullen

Graduate Coordinator: Professor Carl A. Westby

For additional information contact:

Mailing address: SDSU Box 2207B

Agricultural Hall — AGH

WWW: <http://www.abs.sdstate.edu/biolindex2.htm>

E-mail: mcmullec@mg.sdstate.edu

Phone: 605/688-6141

Fax: 605/688-6677

Program Description

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. Alumni rate the learning environment, scholarly excellence and quality of teaching as areas of strength in the department's graduate program.

Major Degrees Offered

Master of Science: Biology
Options in Biology, Botany, and Zoology
Microbiology

Doctor of Philosophy: Biological Sciences, with an area of study in
Biology/Microbiology

Available Options for Graduate Degrees

Master of Science: Option A (Microbiology)
Option A and B (Biology)

Doctor of Philosophy: 60-Credit Option
90-Credit Option

See pages 113 (M.S.) and 116 (Ph.D.) for descriptions of available options.

Core Requirements

All M.S. and Ph.D. students are required to take two credits of graduate seminar.

Additional Admission Requirements

GRE: Required by all applicants

TOEFL: Graduate School requirement of 525

Qualifying examinations will be given to all first-year graduate students at the end of their second semester. Students entering the program with an approved M.S. may be exempted from this exam. This examination is intended to judge the progress of students and their potential success in the program. Details concerning the make-up of the qualifying examination panel, source of questions, structure and grading of the exam may be obtained from the Department.

General Requirements begin on page 111 (Master's Degree) and 116 (Ph.D.). Graduate students should consult with their advisor before registering for graduate work.



Charles R. McMullen
Department Head
Biology and Microbiology

Biology (Bio) Course Offerings

- Bio 515 Mycology**3 F (odd years)
Comprehensive taxonomic survey of the Kingdom Fungi; reproductive biology, physiology, genetics, and ecology of fungal organisms; relationship of fungi to human affairs. Cross-listed with PS 415-515.
- Bio 515A Mycology Lab**0
- Bio 525 Biology of Aging**.....3 F
Physical, sensory, and physiological changes with age, aging of cells and tissues. Cellular, developmental, endocrine and other theories of aging. Pathologies of aging. P, physiology course.
- Bio 545 Histological Techniques**.....3 S
Preparation and observation of animal and plant tissues for microscopic and photomicroscopic study. Emphasis will be given to various techniques used in current research areas.
- Bio 545A Histological Techniques Lab**0
- Bio 553 Advanced Genetics**.....3 F (even years)
Procedures in genetic studies as they relate to molecular and classical genetic applications. P, 371. Cross-listed with PS 453-553.
- Bio 562 Molecular Biology I**2 F
Charge, partitioning migration of molecules; protein structure, enzymes; DNA structure and properties, procaryotic and eukaryotic conjugation, transduction and transformation; DNA replication and repair; genetic recombination; RNA structure and properties; RNA replication and repair; mRNA synthesis and processing; kinetics; chromosomes and chromosome replication. P, Micr 436, Chem 361, or consent. Cross-listed with PS 462-562.
- Bio 564 Molecular Biology II**2 S
Structure of the nucleus; endocytosis; genome of mitochondria and chloroplasts; cell growth and division; cancer; immune system; pattern formation; homeoboxes; intracellular transport; gene expression and regulation. P, 462-562 or consent of instructor. Cross-listed with PS 464-564.
- Bio 565 Molecular Biology II Lab**2 S
Screening recombinant DNA libraries; DNA sequencing; analysis of proteins; detection of proteins; RNA transfer and hybridization analyses; use of nucleic acid and protein databases. P, 462-562, 463-563, or consent of the instructor. Cross-listed with PS 465-565.
- Bio 580 Environmental Stress Physiology**3 S (even years)
Physiological and cellular response of plants to environmental stresses. P, Bot 327. Cross-listed with HO 580.
- Bio 597 Special Topics**1-5 FS
Field Ecology, Human Ecology, Mammalian Developmental Genetics.
- Bio 740 Metabolic Responses to Environmental Stress**3 F (even years)
Mechanism by which plants and animals respond to environmental stress at the molecular level. P, Bio 343 and Chem 361 or Micr 436.
- Bio 751 Biology of Algae**.....4 F (odd years)
Physiology, ecology, taxonomy and evolution of algae. Laboratory includes identification and field and laboratory techniques. P, two years of biological science and one year of chemistry or consent.
- Bio 751A Biology of Algae Lab**0
- Bio 773 Cytogenetics**3 F (odd years)
To study the nature and behavior of chromosomes in relation to heredity. Cross-listed with PS 773. P, Bio 343 or Bio 371.
- Bio 773A Cytogenetics Lab**0
- Bio 780 Developmental Genetics**3 S
A comprehensive study of genetic mechanisms that direct and regulate fundamental processes of animal development. Topics of discussion include but are not limited to: (1) Nature of DNA and techniques of DNA analysis, (2) Transcription, and RNA processing, and (3) Molecular strategies of development in nematodea (*C. elegans*), *Drosophila*, and the mouse (*Mus musculus*). P, Bio 343, Bio 371, Zool 383, Micr 436 or equivalent of the above or consent of the instructor.
- Bio 782 Special Problems**1-4 FSSu
Independent study in specialized area of the biological sciences. Objectives, scope of work and plan of study specified by professor and student(s). P, consent of instructor and department.

Tagir G. Gilmanov
Assistant Professor
Ph.D., Moscow State University,
1976
Ecological Modeling

Nels H. Granholm
Professor
Ph.D., Iowa State University of
Science and Technology, 1968
Developmental Genetics

Michael Hildreth
Professor
Ph.D., Tulane University, 1983
Parasitology

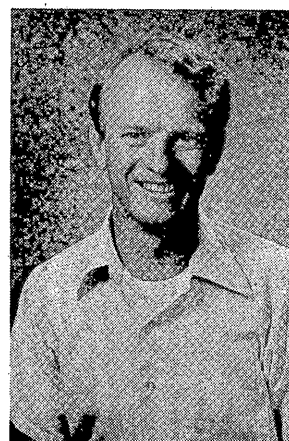
David J. Hurley
Associate Professor
Ph.D., Pennsylvania State
University, 1988
Immunology and Biophysics

Harvie L. Hutcheson, Jr.
Professor
Ph.D., University of Oklahoma,
1965
Plant Ecology

Henry Kayongo-Male
Professor
Ph.D., Michigan State
University, 1974
Mineral Metabolism

Gary E. Larson
Professor
Ph.D., North Dakota State
University, 1979
Plant Systematics

Charles R. McMullen
Professor
Ph.D., South Dakota State
University, 1974
Plant Ultrastructure



Carl A. Westby
Graduate Coordinator
Biology and Microbiology

Gary B. Peterson
Professor
D.A., University of Northern
Colorado, 1971
Science Education

R. Neil Reese
Associate Professor
Ph.D., University of Idaho,
1984
Plant Physiology

Raymond R. Rowland
Assistant Professor
Ph.D., University of New
Mexico, 1989
Molecular Virology

Nels Troelstrup
Associate Professor
Ph.D., University of
Minnesota-Minneapolis/St.
Paul, 1992
Aquatic Ecology

Carl A. Westby
Professor
Ph.D., University of California-
Davis, 1965
Microbial Genetics

Richard H. Whalen
Professor
Ph.D., Purdue University,
1965
Plant Genetics

Joint Appointments
David A. Benfield
Professor of Veterinary Science
Ph.D., University of Missouri-
Columbia, 1979
Animal Virology

Christopher Chase
Assistant Professor of
Veterinary Science
Ph.D., University of
Wisconsin-Madison, 1990
Virology/Immunology

Alan K. Erickson
Assistant Professor of
Veterinary Science
Ph.D., North Dakota State
University, 1989
Microbial Attachment

Donald P. Evenson
Professor of Station
BioChemistry
Ph.D., University of Colorado-
Boulder, 1968
Cellular Biochemistry

Bio 790 Thesis.....	1-7 FSSu
Bio 791 Thesis Sustaining.....	0 FSSu
Bio 792 Graduate Seminar.....	1 FSSu
Bio 793 Biological Research Problems	1-3 FSSu
BioS 890 Dissertation—Ph.D.....	1-7 FSSu
BioS 891 Dissertation Sustaining.....	0 FSSu
BioS 892 Ph.D. Seminar	1 FS

Botany (Bot) Course Offerings

Bot 512 Morphology of Non-Vascular Plants	1-3 F (odd years)
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. P, Bot 301, or consent of instructor.	
Bot 512A Morphology of Non-Vascular Plants Lab	0
Bot 513 Morphology of Vascular Plants.....	3 S (even years)
Bot 513A Morphology of Vascular Plants Lab	0
Morphology has been defined as philosophical anatomy. This course addresses comparative structure and evolutionary patterns existing in the diverse vascular plant groups including club mosses, ferns, gymnosperms and angiosperms. The student will gain insight into unity from homeostasis and diversity through evolution of this group of plants.	
Bot 705 Aquatic Plants	3 F (odd years)
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. P, Bot 301, or consent of instructor.	
Bot 705A Aquatic Plants Lab.....	0
Bot 715 Advanced Plant Ecology	4 S
Analysis of the energy relationships of communities with emphasis on productivity. Literature readings. Laboratory work in techniques of community analysis. P, consent.	
Bot 715A Advanced Plant Ecology Lab	0
Bot 727 Advanced Plant Physiology.....	4 F (even years)
Role of organic and inorganic compounds in plant nutrition. Emphasis on photosynthesis, respiration, metabolism, and other cellular processes. P, Bot 327, Chem 120.	
Bot 727A Advanced Plant Physiology Lab	0
Bot 730 Plant Molecular Biology	3 F (odd years)
Molecular mechanisms involved in regulation of subcellular assemblies and metabolism in higher plants. P, Bio 343 and Chem 361 or Micr 436.	
Bot 781 Plant Tissue Culture	3 F (even years)
Comparative studies in in vivo and in vitro cellular differentiation, organ formation, and plant development. P, Bot 421 or Bio 371 or Bot 327.	
Bot 781A Plant Tissue Culture Lab	0
Bot 782 Special Problems	1-4 FSSu
Independent study in specialized area of botanical sciences. Objectives, scope of work and plan of study specified by professor and student(s). P, consent of instructor and department.	
Bot 785 Growth and Development	4 F (odd years)
Relations of light, temperature, water, wind, growth regulators, nutrients and other factors to various stages of plant growth and development. P, Bot 327, Chem 120.	
Bot 785A Growth and Development Lab	0
Bot 797 Special Topics.....	1-5 FS

Microbiology (Micr) Course Offerings

- Micr 514 Anaerobic Microbiology**3 F
 Anaerobic metabolism and ecology of bacteria, culturing techniques for anaerobic microorganisms. P, Micr 231.
- Micr 514A Anaerobic Microbiology Lab**0
- Micr 524 Medical and Veterinary Virology**4 S (odd years)
 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. P, 422 or consent. Cross-listed with Vet 424-524.
- Micr 524A Medical and Veterinary Virology Lab**0
- Micr 537 Systematic Bacteriology**4 F
 Techniques for isolation, identification, classification, and preservation of bacterial cultures are presented. Current topic areas and theory in taxonomy and nomenclature are discussed in detail. P, 231 (or equivalent).
- Micr 537A Systematic Bacteriology Lab**0
- Micr 597 Advances in Microbiology**1-4 S
 In-depth study of selected areas or specialties within Microbiology to strengthen and expand the current knowledge and technical skills of advanced undergraduate and graduate students in Microbiology. Prerequisites will vary depending upon the area studied. P, 231 and consent of instructor.
- Micr 713 Industrial Microbiology**4 F
 A course detailing the use of microorganisms by people. Topics include the production of food and beverages, agricultural and industrial chemicals, pharmaceuticals, and alternate fuels. Legal and ethical ramifications are presented. P, Micr 332 (or equivalent) and consent. Chem 361 or equivalent is recommended.
- Micr 713A Industrial Microbiology Lab**0
- Micr 722 The Molecular and Cellular Biology of the Immune Response**3 S (even years)
 An in depth examination of the molecular and cellular basis of immune function and regulation.
- Micr 726 The Cell Physiology of Signal Transduction—
 a perspective using leukocyte models**3 S (odd years)
 A basic review of cellular physiology, membrane biology and cell signalling mechanisms in leukocyte models will be provided. The course will then examine recent primary literature to survey developments in this area.
- Micr 738 Microbial Metabolism**4 S
 A course dealing with microbial respiration of organic and inorganic compounds, anaerobic respiration, the various fermentations, photosynthesis, nitrogen fixation, and the biosynthesis of certain organic intermediates. The lab introduces the student to the usage of various research equipment. Elementary biochemistry recommended.
- Micr 738A Microbial Metabolism Lab**0
- Micr 742 Graduate Seminar**1 FS
- Micr 782 Microbiology Problem**1-4 FSSu
 Independent study in specialized areas of microbiology. Objectives scope of work and plan of study specified by professor and student(s). P, consent of instructor and department.
- Micr 790 Thesis**1-7 FSSu
- Micr 791 Thesis Sustaining**0 FSSu

Zoology (Zool) Course Offerings

- Zool 723 Systematic Physiology**4
- Zool 723A Systematic Physiology Lab**0
- Zool 782 Special Problems** 1-4 FSSu
- Zool 797 Special Topics in Zoology** 1-5 FS
 Special Topics are taught as regular courses dependent upon student demand. Information about content, prerequisites and semester offered can be obtained from the department.

Anne Fennell
 Assistant Professor of
 Horticulture, Forestry,
 Landscape and Parks
 Ph.D., University of Minnesota-
 Minneapolis/ St. Paul, 1985
 Plant Stress Physiology

David H. Francis
 Professor of Veterinary Science
 Ph.D., University of Missouri-
 Columbia, 1978
 Pathogenic Microbiology

David R. Henning
 Associate Professor of Dairy
 Science
 Ph.D., Oregon State University,
 1966
 Food Safety

Paul Johnson
 Assistant Professor of Plant
 Science
 Ph.D., University of Wisconsin-
 Madison, 1992
 Insect Systematics

Douglas C. McFarland
 Associate Professor of Animal
 and Range Sciences
 Ph.D., Washington State
 University, 1984
 Muscle Biology

Fedora Sutton
 Associate Professor of Plant
 Science
 Ph.D., Howard University, 1985
 Plant Molecular Biology

Thomas P. West
 Professor of Chemistry
 Ph.D., Texas A&M University,
 1980
 Microbial Biochemistry

Adjunct Faculty
Walter E. Riedell
 Assistant Professor of Plant
 Science
 Ph.D., Southern Illinois
 University, 1984
 Plant Physiology

Carolyn Hull Sieg
 Professor of Biology and
 Microbiology
 Ph.D., Texas Tech University,
 1991
 Fire Ecology

Department of Chemistry and Biochemistry

Graduate Faculty

Jeffrey J. Elbert
Assistant Professor
Ph.D., Northwestern University,
1990
Physical Organic Photochemistry

Donald P. Evenson
Distinguished Professor
Ph.D., University of Colorado-
Boulder, 1968
Cellular Biochemistry

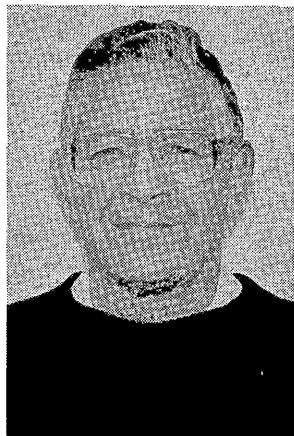
John J. Fitzgerald
Professor
Ph.D., Illinois Institute of
Technology, 1972
Inorganic Chemistry/Materials
Science

John A. Grove
Professor
Ph.D., The Ohio State
University, 1966
Biochemistry

Harry G. Hecht
Professor
Ph.D., University of Utah, 1962
Physical Chemistry

David C. Hilderbrand
Professor
Ph.D., University of Missouri-
Columbia, 1971
Analytical Chemistry

William P. Jensen
Professor
Ph.D., University of Iowa, 1964
Inorganic Chemistry



Harry Hecht
Acting Department Head
Chemistry

Acting Department Head: Professor Harry G. Hecht

Graduate Coordinator: Professor James A. Rice

For additional information contact:

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Program Description

The research and instructional programs of the Department cover a wide range of topics. Currently active research projects in the Department focus on various aspects of analytical chemistry, organic synthesis, materials science, the chemistry and biochemistry of cell membranes, environmental chemistry, the biochemistry of animal health, nutrition and fertility, bioinorganic chemistry, computational chemistry, and solid-state NMR. The Department is equipped with modern instrumentation to support research in these areas. Most of this equipment is readily available to graduate students for "hands-on" experience after successfully completing a short training course. This equipment includes: a solution FT-NMR spectrometer; high-resolution solid-state NMR, a high-resolution magnetic sector mass spectrometer with EI and CI sources and GC, HPLC, pyrolysis and fast-atom bombardment capabilities; a FT-IR spectrometer with far-IR capabilities; near-IR reflectance scanning spectrophotometer; flow cytometer with cell-sorting capabilities; atomic absorption and diode-array UV-Vis spectrophotometers. In addition to these departmental resources, individual research groups also maintain their own instrumentation. Campus mainframe computer facilities and on-line computer access to Chemical Abstracts Services are readily available through terminals in the Department. Individual groups maintain their own computer systems for molecular modeling, word processing, or dedicated data manipulation.

Major Degrees Offered

Master of Science: Chemistry

Doctor of Philosophy: Chemistry

Available Options for Graduate Degrees

Master of Science: Option A

Doctor of Philosophy: 60-Credit Plan

90-Credit Plan

See pages 113 (M.S.) and 116 (Ph.D.) for descriptions of available options.

Core Requirements

Master of Science: Chem 622 Advanced Organic Chemistry I3
(4 of the 5 Chem 632 Advanced Analytical Chemistry3
courses listed) Chem 642 Advanced Physical Chemistry3
Chem 654 Advanced Inorganic Chemistry3
Chem 662 Principles of Biochemistry3

Doctor of Philosophy: Chem 616 Chemical Literature3
(Chem 616 and Chem 622 Advanced Organic Chemistry I3
4 of the 5 Chem 632 Advanced Analytical Chemistry3
courses listed) Chem 642 Advanced Physical Chemistry3
Chem 654 Advanced Inorganic Chemistry3
Chem 662 Principles of Biochemistry3

Additional Admission Requirements

GRE: General & subject score are recommended but not required.

TOEFL: Department requirement of 580*

*The TSE score is recommended for international students seeking an assistantship.

General Requirements begin on page 111 (Master's Degree) and 116 (Ph.D.). Graduate students should consult with their advisor before registering for graduate work.

Chemistry (Chem) Course Offerings

(if not listed, see department for schedule of offerings)

- Chem 616 Chemical Literature**3 S
The course will present methods of searching the chemical literature including patents and government documents. Emphasis is placed on both traditional and computer assisted literature search procedures.
- Chem 622 Advanced Organic Chemistry I**.....3 F
Review and discussion of nomenclature, stereochemistry, resonance theory, equilibria, elementary kinetics, intermediate and mechanisms. Chemistry of polymers, heterocyclics, and natural products. P, Chem 328, Chem 344.
- Chem 632 Advanced Analytical Chemistry**3 S
Theoretical treatment of principles involved in noninstrumental analytical chemistry including sampling and statistics. P, Chem 344.
- Chem 642 Advanced Physical Chemistry**3 F
A review of the principles and applications of physical chemistry. Topics such as thermochemistry, quantum mechanics, spectroscopy, kinetics, and electrochemistry considered. P, Chem 344.
- Chem 654 Advanced Inorganic Chemistry**.....3 F
Inorganic systems including theoretical, representative group and transition metal topics. P, Chem 344 or Chem 352.
- Chem 662 Principles of Biochemistry**3 F
Chemistry of biological processes occurring in plants and animals. P, Chem 361.
- Chem 691 Special Problems**1-4 FS
P, consent, Limited to a total of 4 credits.
- Chem 720 Special Topics in Organic Chemistry**1-6
One term advanced courses taught upon demand and covering such topics as stereochemistry, advanced synthetic organic chemistry, etc. P, consent.
- Chem 722 Synthesis of Natural Products**3
Synthetic strategies in pathways for the formation of natural products P, Chem 328.
- Chem 724 Structural Determination of Organic Compounds**3 (alternate years)
Determination of the structure of organic compounds primarily by spectroscopic techniques P, Chem 328.
- Chem 724A Structural Determination of Organic Compounds Lab**.....0
- Chem 725 Polymer Chemistry**4
The chemistry of high molecular weight polymeric molecules will be discussed. The laboratory will consist of the preparation, reactions, and properties of select polymers. P, Chem 328.
- Chem 725A Polymer Chemistry Lab**0
- Chem 726 Advanced Organic Chemistry II**.....3 (alternate years)
Physical organic, reaction mechanisms, M.O. calculations, orbital symmetry, and E.S.R. spectroscopy. P, Chem 328 and Chem 344.
- Chem 728 Bioorganic Chemistry**.....3
Interpretation and categorization of biochemical reactions in terms of principles of organic chemistry. Synthesis of biologically active macromolecules and models for enzyme catalysis. P, Chem 224, Chem 662.
- Chem 730 Special Topics in Analytical Chemistry**1-6
Individualized studies in mass spectrometry, electroanalytical, trace analysis, or instrumentation and electronics, P, consent.

Rita Majerle
Associate Professor
Ph.D., University of Minnesota,
1989
Synthetic Organic Chemistry

Duane P. Matthees
Professor
Ph.D., University of Maryland-
College Park, 1978
Analytical Chemistry

James A. Rice
Professor
Ph.D., Colorado School of Mines,
1987
Environmental
Geochemistry/Analytical
Chemistry

Harrell Sellers
Associate Professor
Ph.D., Arkansas State
University, 1979
Physical/Computational
Chemistry

Jay S. Shore
Assistant Professor
Ph.D., University of Illinois at
Champaign-Urbana, 1992
Physical Chemistry/Solid-state
NMR

Ronald E. Utecht
Professor
Ph.D., Iowa State University of
Science and Technology, 1986
Bioinorganic Chemistry

Thomas West
Professor
Ph.D., Texas A&M University,
1980
Biochemistry



James A. Rice
Graduate Coordinator
Chemistry

Joint Appointment

Joel E. Houghlum

Professor of Pharmaceutical
SciencesPh.D., University of Wisconsin,
1979

Analytical Chemistry

Courtesy Faculty**Appointments**

Henry Kayongo-Male

Professor of Biology/Microbiology
Ph.D., Michigan State

University, 1974

Trace Element Biochemistry

Douglas C. McFarland

Associate Professor of Animal
and Range SciencesPh.D., Washington State
University, 1984

Biochemistry

Adjunct Faculty**Appointments**

Royce Engstrom

Professor at University of South
DakotaPh.D., University of Wisconsin-
Madison, 1979

Chemistry

Chem 732 Analytical Ag and Environmental Chemistry4

The principles of analytical chemistry as applied to agricultural environmental chemistry will be presented in the lecture portion of the course and the performance of those procedures will be presented in the laboratory section of the course. P, Chem 434.

Chem 732A Analytical Ag and Environmental Chemistry Lab.....0**Chem 734 Analytical Spectroscopy3 (alternate years)**

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. P, Chem 434.

Chem 736 Chromatography and Separations.....3 (alternate years)

Theory and practice of solvent extraction and paper, thin layer, gas and liquid chromatographic techniques. P, Chem 232.

Chem 738 Electroanalytical Chemistry3

The principles of electrochemistry as applied to analytical methods will be presented in this course. Topics covered will include polarography, potentiometry, conductance, coulometry, and related topics. P, Chem 434.

Chem 740 Special Topics in Physical Chemistry1-6

One-term advanced courses taught upon demand covering such topics as electrochemistry, surface chemistry, kinetics, quantum chemistry, etc. P, consent.

Chem 741 Quantum Chemistry I3 (triennial years)

The application of wave mechanics to simple atomic and molecular systems, properties of wave functions, and approximate methods. P, Chem 642, Math 321.

Chem 742 Quantum Chemistry II3 (triennial years)

Continuation of Chem 741. P, Chem 741.

Chem 744 Chemical Thermodynamics3 (alternate years)

Discussion of the laws and theories of classical and statistical thermodynamics as related to macroscopic chemical systems. P, Chem 344.

Chem 745 Statistical Thermodynamics3 (triennial years)

Fundamental principles of statistical thermodynamics with applications to chemical systems. P, Chem 642, Chem 744.

Chem 746 Atomic and Molecular Structure3 (alternate years)

Introduction to quantum mechanics and theoretical treatment of chemical structure and binding. P, Chem 328, Chem 344, or concurrent registration in Chem 344.

Chem 748 Chemical Kinetics.....3 (triennial years)

Experimental methods and theoretical approaches to the study of reaction rates. P, Chem 328, Chem 344.

Chem 750 Special Topics in Inorganic Chemistry1-6

One-term advanced courses taught upon demand and covering such topics as coordination chemistry of transition elements, structural determinations, etc. P, consent.

Chem 752 Descriptive Inorganic Chemistry3 (alternate years)

Discussion centered on periodic relationships of the elements. The laboratory work includes preparation and purification of typical inorganic compounds. P, Chem 120 (4 credits), Chem 232, Chem 352.

Chem 752A Descriptive Inorganic Chemistry Lab0**Chem 753 Organometallic Chemistry.....3**

The study of metal compounds containing organic moieties and related inorganic compounds. Major emphasis will be focused on transition metal-carbon compounds such as the carbonyls, aromatic hydrocarbons and nonaromatic olefin and acetylene complexes. Homogenous catalysts will be discussed. P, Chem 352.

Chem 754 Physical Methods of Inorganic Chemistry3

The study of instrumental methods and spectral interpretation used to investigate inorganic compounds. EPR, X-ray, NMR, UV-Vis and IR will be discussed. P, Chem 344, Chem 352.

Chem 760 Special Topics in Biochemistry1-6**Chem 764 Biochemistry I3 (alternate years)**

Study of metabolism of carbohydrates and lipids. Includes aspects of enzyme kinetics and regulation as well as principles and characteristics of ATP-synthesizing complexes. P, Chem 662.

Chem 766 Biochemistry II	3 (alternate years)
Study of the metabolism of amino acids, proteins, nucleotides and nucleic acids. Includes some aspects of enzymology and the mechanism of intra and intercellular communication. P, Chem 662.	
Chem 767 Biophysical Chemistry	3
Discussion of the theoretical and practical aspects of biophysical methods. These will include an examination of electrophoresis, centrifugation, light scattering, optical rotary dispersion, X-ray diffraction, viscosity/diffusion, and spectroscopy. P, Chem 340, Chem 662.	
Chem 768 Plant Biochemistry	3
Chemistry of structural and functional elements of plants with special emphasis on bioenergetics, photosynthesis, nitrogen fixation, sulfur metabolism, carbohydrate interconversion, secondary plant products, seed development and fruit ripening, and genome expression. P, Chem 662.	
Chem 769 Nutritional Biochemistry	3
Study of the biochemistry of systems that are significant in nutrition including metabolism, requirements and deficiencies.	
Chem 772-773 Seminar	1 FS
Required of all graduate majors in chemistry.	
Chem 781 Bioinorganic Chemistry	3 (alternate years)
A study of biological systems stressing the role of metals ions, primarily the transition metals. Model systems included in the discussion. P, Chem 120 (4 credits), Chem 352 or consent.	
Chem 782 Radioisotope Techniques	4 S
Theory and measurement of radioactivity. Techniques for the application of radioactive isotopes in chemical and biological experimentation. P, consent.	
Chem 782A Radioisotope Techniques Lab	0
Chem 790 Thesis	1-7
Chem 791 Thesis Sustaining (M.S.)	0
Chem 890 Dissertation (Ph.D.)	1-12
Chem 891 Dissertation Sustaining (Ph.D.)	0

Physics (Phys) Course Offerings

The following Physics courses may be used in the graduate major plan of study. (See complete descriptions under Department of Physics.)

Phys 743 Statistical Mechanics	2
Phys 775 Tensors & General Relativity	3
Phys 779 Group Theory in Quantum Mechanics	3

Key to Course Descriptions

Course Number & Name	Credits
	F = Fall
	S = Spring
	Su = Summer
	(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Department of Civil and Environmental Engineering

Graduate Faculty

Delvin DeBoer
Professor
Ph.D., Iowa State University,
1990
Environmental Engineering

Nadim Hassoun
Professor
Ph.D., University of Michigan-
Ann Arbor, 1968
Structural Engineering

Richard A. Reid
Assistant Professor
Ph.D., Georgia Institute of
Technology, 1995
Geotechnical/Transportation
Engineering

Dwayne A. Rollag
Professor
Ph.D., Purdue University, 1975
Environmental Engineering

Vernon Schaefer
Professor
Ph.D., Virginia Polytechnic
Institute and State University,
1987
Geotechnical/Geoenvironmental
Engineering

Christopher G. Schmit
Assistant Professor
Ph.D., Iowa State University,
1977
Environmental Engineering



Dwayne Rollag
Department Head
Graduate Coordinator
Civil and
Environmental Engineering

Department Head: Professor Dwayne Rollag
Graduate Coordinator: Professor Dwayne Rollag

For additional information contact:

Mailing address: SDSU Box 2219
Crothers Engineering Hall — CEH
WWW: <http://www.engineering.sdstate.edu>
E-mail: rollagd@mg.sdstate.edu

Phone: 605/688-5427
Fax: 605/688-5878

Program Description

Courses, design, and research activities within Civil and Environmental Engineering are related to structural, transportation, geotechnical, water resources, hydrology, hydraulics and environmental engineering as well as engineering mechanics. These are supportive of the Master of Science in Engineering.

Major Degrees Offered

Master of Science: Engineering, with coursework in Civil Engineering
Doctor of Philosophy: Not available

Core Requirements

Students in CEE must register and pass CEE 700 (Seminar, 0 cr.) all semesters in residence except when enrolled in CEE 701 (Seminar, 1 cr.) (2 credits required).
Refer to College of Engineering section, pages 52-53, for specific details.

Additional Admission Requirements

GRE: Not required
TOEFL: Civil and Environmental Engineering requirement of 525

General Requirements begin on page 111 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

Civil and Environmental Engineering (CEE) Course Offerings

- CEE 511 Bituminous Materials**3 F (alternate years)
Properties of bituminous materials including their compatibility with various types of aggregates. Asphalt mixes are designed and tested. Standards tests are performed on bituminous materials with emphasis on test results. Asphalt surface evaluation techniques. P, 216.
- CEE 511A Bituminous Materials Lab**0
- CEE 524 Industrial Waste Treatment**2 S
Characteristics and composition of industrial wastes, sampling and methods of analysis of these wastes and remedial measures for treatment and disposal. P, 423 or consent.
- CEE 527 Environmental Engineering Instrumentation**3 F
Analysis of water and waste water samples, using environmental laboratory instrumentation. Design of treatment facility process instrumentation and controls. P, 423 or consent.
- CEE 527A Environmental Engineering Instrumentation Lab**0
- CEE 528 Solid Waste Engineering and Management**3 S
Solid waste regulation and characterization. Design of disposal facilities, management of collection, transport, transfer, storage and disposal systems. Field trips to various disposal facilities required. P, 446.
- CEE 528A Solid Waste Engineering and Management Lab**0
- CEE 535 Water Resources Engineering**3 S
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. P, 433.

CEE 536 Foundation Engineering.....	3
Bearing capacity, load induced pressures and settlements; soil exploration and sampling, lateral-earth pressure, retaining walls, sheet pile structures, pile formations and caissons. P, 446.	
CEE 536A Foundation Engineering Lab	0
CEE 543 Matrix Analysis of Structures	3
Theory and application of matrix methods in structural analysis. P, 353.	
CEE 544 Precast Concrete Structures.....	3 (alternate years)
Advantages of precast concrete. Structural and architectural precast elements. Building systems. Design concepts and structural design. Connections, specifications, and detailing. P, 456.	
CEE 547 Advanced Soils Engineering	3
Application to engineering problems. Stability, compaction, embankments, seepage, draining, stabilization. P, 446.	
CEE 547A Advanced Soils Engineering Lab	0
CEE 552 Prestressed Concrete	3
Theory and design of prestressed concrete including pre-tensioning and post-tensioning. P, 456.	
CEE 559 Advanced Structural Mechanics.....	3 S (alternate years)
Review of principal moments of inertia; relationship of plain stresses and strains; use of rosettes; shear center; unsymmetrical bending; theories of failure; curved beams and closed rings; thick-walled cylinders; beams on continuous elastic support, miscellaneous topics in structural analysis. P, 353.	
CEE 559A Advanced Structural Mechanics Lab	0
CEE 572 Geosynthetics.....	2
Detailed study of the types of geosynthetic materials used in environmental, geotechnical, and transportation engineering as well as how they are used and manufactured. Particular emphasis will be placed on erosion control, landfill, transportation, drainage, tiltration and reinforcement applications. P, CEE 336.	
CEE 593 Special Topics	1-3 FSSu
P, consent.	
CEE 623 Advanced Sanitary Engineering	3 (alternate years)
Advanced engineering topics related to sanitary engineering and public health, including housing, air conditioning and ventilation, air pollution, hospital and institutional sanitation, stream sanitation, waste disposal, radiological health and industrial hygiene.	
CEE 625 Environmental Engineering Planning	3 S (alternate years)
Analysis and review of basic concepts and procedures involved in environmental aspects of planning. Consideration given to local effects of projects as well as effects on the area and the state or region. P, Graduate standing or consent.	
CEE 632 Advanced Foundation Engineering	3 (alternate years)
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. P, CEE 547.	
CEE 632A Advanced Foundation Engineering Lab	0
CEE 633 Open Channel Hydraulics.....	3 F (alternate years)
Energy and momentum principles in open channel flow, flow resistance, flow in uniform and non-uniform channels, flood routing, P, CEE 433.	
CEE 634 Fluvial Hydraulics	3 S (alternate years)
Erosion, transportation and deposition of sediments by flowing water, bed load and suspended load movement, river behavior and control. P, CEE 433.	
CEE 639 Geotechnical Testing	3 (alternate years)
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. P, CEE 446.	
CEE 639A Geotechnical Testing Lab	0
CEE 654 Advanced Design of Steel Structures.....	3 (alternate years)
Design of slender compression elements tapered members, hybrid plate girders, column base plates subjected to bending moments, bolted and welded connections. Cold form steel structures. P, CEE 455.	

Ali A. Selim
 Professor
 Ph.D., University of Missouri-
 Rolla, 1976
 Transportation Engineering

Arden B. Sigl
 Professor
 Ph.D., Northwestern University,
 1977
 Structural Engineering

Francis C.K. Ting
 Associate Professor
 Ph.D., California Institute of
 Technology, 1989
 Fluid Mechanics/Hydraulic
 Engineering

Nadim Wehbe
 Assistant Professor
 Ph.D., University of Nevada,
 1997
 Engineering Mechanics/
 Structural Engineering

Key to Course Descriptions

Course Number & Name Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

CEE 656 Advanced Reinforced Concrete Design	3 (alternate years)
Design of rigid frames, effect of plastic behavior, details for complex structures, analysis of flat plate and other two-way floor systems. Design comparisons. P, CEE 456.	
CEE 664 Highway Capacity Analysis	3 S (alternate years)
Sizing road segments in terms of number of lanes based on traffic volume and level of service. Eliminating traffic conflict on road sections and intersections. Vehicle and pedestrian analysis. P, CEE 363.	
CEE 664A Highway Capacity Analysis Lab	0
CEE 693 Special Topics	1-3 FSSu
CEE 700-701 Seminar	0-1
Current, state-of-the-art, topics in civil engineering.	
CEE 721 Environmental Engineering	3 (alternate years)
The relationship of man's environment to health and control of this environment from an engineering standpoint. P, consent.	
CEE 722 Hazardous/Toxic Waste Disposal	3 (alternate years)
Legislation, regulation, business aspects and technology related to the management and disposal of hazardous and toxic wastes. P, consent.	
CEE 722A Hazardous/Toxic Waste Disposal Lab	0
CEE 724 Land Treatment of Wastes	3 (alternate years)
State-of-the-art planning and process design of land treatment systems for the disposal of municipal, industrial, and agricultural wastes. Physical, chemical and biological limiting factors with emphasis on site selection and process feasibility. Land disposal of sludges.	
CEE 724A Land Treatment of Wastes Lab	0
CEE 725 Biological Principles of Environmental Engineering	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. P, CEE 423 or consent.	
CEE 725A Biological Principles of Environmental Engineering Lab	0
CEE 726 Physical/Chemical Principles in Environmental Engineering	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, adsorption, ion exchange, and gas/liquid interfaces. P, CEE 423 or consent.	
CEE 726A Physical/Chemical Principles in Environmental Engineering Lab	0
CEE 727 Water Treatment Plant Design	3 F (alternate years)
Water supply sources, design of treatment plants, cost estimates of water supply systems. P, CEE 327 or consent.	
CEE 727A Water Treatment Plant Design Lab	0
CEE 728 Waste Water Treatment Plant Design	3 S (alternate years)
Design of waste collection and disposal facilities, waste treatment plants, cost estimates of waste disposal and treatment systems. P, CEE 423; graduate standing.	
CEE 728A Waste Water Treatment Plant Design Lab	0
CEE 733 Advanced Water Resources Engineering	3 S (alternate years)
Advanced 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. P, CEE 435/535.	
CEE 734 Surface Water Quality Modeling	3 (alternate years)
Modeling advective and dispersive mass transport in surface and engineered water systems. Analysis of reactions affecting the fate of dissolved oxygen, nutrients, toxic compounds and pathogens. Analytical and numerical solutions to deterministic modeling equations. Application and use of the QUALI-IIIE and EPANET models. P, CEE 423, Math 321.	
CEE 737 Hydraulic Design	3 F (alternate years)
Hydraulic design as applied to hydroelectric power development and turbine design, flood routing in reservoirs and natural channels, design of drainage structures, and energy dissipators. P, CEE 433; graduate standing.	

CEE 738 Advanced Hydraulics	3 S (alternate years)
Introduction to topics related to water resources engineering including: dimensional analysis, similitude, mechanics of sediment transport, river engineering, coastal hydraulics and stream channel mechanics. P, CEE 433; graduate standing.	
CEE 738A Advanced Hydraulics Lab	0
CEE 749 Structural Dynamics	3 (alternate years)
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. P, CEE 353, CEE 456.	
CEE 756 Reinforced Masonry Design	3 (alternate years)
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. P, CEE 456.	
CEE 762 Pavement Management and Rehabilitation	3 F (alternate years)
Assessment of road networks to determine maintenance rehabilitation needs. Rehabilitation strategies for various types of pavements. Prioritization schemes for road section repair. P, CEE 467, CEE 765, or concurrent.	
CEE 762A Pavement Management and Rehabilitation Lab	0
CEE 765 Pavement Design	3 S (alternate years)
Stresses in and design of flexible and rigid pavements including subgrades, bases and sub-bases. P, CEE 363.	
CEE 765A Pavement Design Lab	0
CEE 769 Design of Steel and Concrete Bridges	3 (alternate years)
Determination of bridge loadings and bearings. Design of concrete and steel bridge systems. Specifications and detailing related to bridge. P, CEE 455, CEE 456.	
CEE 770 Engineering Research or Design Paper	1-2
Conduct a research or design project and write a report on the work done using thesis format.	
CEE 790 Thesis	1-7 FSSu
CEE 791 Thesis Sustaining	0 FSSu
CEE 792 Special Engineering Problems	1-3 FS
CEE 793 Special Topics	1-3
CEE 795 Engineering Research or Design Paper Sustaining	0
CEE 797 Research	1-9

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Department of Communication Studies and Theatre

Graduate Faculty

Jerry Ferguson
Professor
Ph.D., Southern Illinois
University-Carbondale, 1973
Interpersonal Communication

Laurie Haleta
Associate Professor
Ph.D., University of Nebraska,
1994
Instructional Communication

James L. Johnson
Professor
Ph.D., University of Kansas,
1973
Theatre Studies, Rhetoric

Jerry Jorgensen
Professor
Ph.D., University of Nebraska,
1990
Media Studies, Organizational
Communication

Michael Schliessmann
Professor
Ph.D., University of Kansas,
1981
Public Address, Rhetorical
Criticism

James Tallmon
Associate Professor
Ph.D., University of Washington,
1993
Rhetorical Theory



Michael Schliessmann
Department Head
Communication Studies and
Theatre

Department Head: Professor Michael Schliessmann
Graduate Coordinator: Associate Professor Laurie L. Haleta

For additional information contact:

Mailing address: SDSU Box 2218
Pugsley Center — PC
WWW: <http://www.sdstate.edu/cst>
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Fax: 605/688-6551

Program Description

The Master of Science program in Communication Studies and Theatre is designed to provide advanced studies in the area of public address, rhetorical theory, radio/television studies, and theatre arts. It provides further professional preparation and competencies in the area of communication.

Major Degrees Offered

Master of Science: Communication Studies and Journalism
(See also Journalism)
Doctor of Philosophy: Not available

Available Options for Graduate Degrees

Master of Science: Option A: Communication Studies
OR
Journalism

Option Descriptions

Communication Studies – Designed to provide advanced studies in the areas of public address, rhetorical theory, radio/television studies, and theatre arts. This option provides further professional preparation and competencies in the area of communication.

Journalism – Designed to provide for professional journalists who wish to broaden their education in communication and social sciences; and for individuals with undergraduate degrees in non-journalism specialties who wish to develop their knowledge in mass communication.

See page 113 for descriptions of available options.

Core Requirements

RTVF 792 Research Methods in Communication (taken by second semester)
SPCM 700 Instructional Methods in Communications
(for Graduate Teaching Assistants)
GCom 605 Current Approaches to Communication

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 525
Master of Science: Minimum of 20 semester hours of undergraduate credit in Speech, Theatre, Journalism, or Communication. Other undergraduate programs *may* qualify.

General Requirements begin on page 111 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

General Communication (GCom) Course Offerings

- GCom 605 Current Approaches to Communication**3 S
Major theories of communication, including media and interpersonal communication.
- GCom 793 Special Topics in Communication**1-3 FSSu

Radio, Television, and Film (RTVF) Course Offerings

- RTVF 537 Educational & Corporate TV**3 (offered on demand)
Educational broadcasting with practical work in preparation and presentation of educational and instructional materials for radio, TV, and film and their use in the classroom. Cross-listed with MCom 437-537.
- RTVF 564 Film Studies**3 (alternate years)
Film art forms, artists and critics. Viewing and making films. Emphasis on major film theories.
- RTVF 762 Special Problems in Radio, TV, or Film** 1-2 FSSu
- RTVF 792 Research Methods in Communications**3
Research Methods in Communication under Department of Journalism and Mass Communication.

Speech Communication (SpCm) Course Offerings

- SpCm 516 Rhetorical Criticism**3 F (alternate years)
Critical evaluation of American speakers from Colonial to contemporary. P, consent.
- SpCm 552 General Semantics**3 F (alternate years)
Relations between symbols; human behavior in reaction to symbols including unconscious attitudes, linguistic assumptions; and the objective systematization of language. Cross-listed with Ling 452-552.
- SpCm 700 Instructional Methods in Communication**3 F
Problems and issues in teaching the basic communication course, development of communication courses, and issues relevant to communication education.
- SpCm 707 Speech/English/Drama for Teachers** 1-3
Designed to help teachers develop curriculum materials and curricular/co-curricular instruction of literature and drama.
- SpCm 766 Rhetorical Theory**3 F (alternate years)
Historical development of rhetorical theory from classical to modern times.
- SpCm 790 Thesis** 1-7 FSSu (Pass/Fail)
- SpCm 791 Thesis Sustaining** 0 (Pass/Fail)
- SpCm 792 Special Problems in Oral Interpretation**..... 1-2 FSSu
Directed research. May be repeated to a total of 4 credits in problems courses. P, consent.
- SpCm 794 Special Problems in Public Address**1-2 FSSu
Directed research. May be repeated to a total of 4 credits in problems courses. P, consent.

Theatre (Thea) Course Offerings

- Thea 510 Dramatic Literature** 3 F (alternate years)
Analysis of important drama through present day.
- Thea 560 History of Theatre** 3 S (alternate years)
Periods, theatres, and representative dramatic literature from the classical to the present day.
- Thea 792 Special Problems** 1-2 FSSu
Directed research; may be repeated to total of 4 credits in problems courses. P, consent.

Key to Course Descriptions

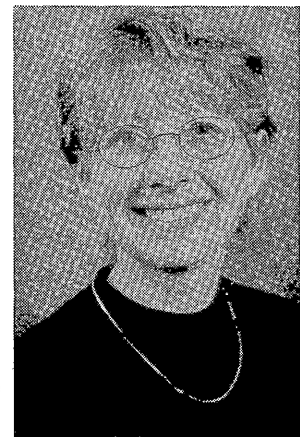
Course Number & Name

Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite



Laurie Haleta
Graduate Coordinator
Communication Studies and
Theatre

Department of Computer Science

Graduate Faculty

Gerald Bergum
 Professor
 Ph.D., Washington State
 University, 1969
 Numerical Analysis

Ali Salehnia
 Professor
 Ph.D., University of Missouri-
 Columbia, 1989
 Information Systems

Sung Y. Shin
 Associate Professor
 Ph.D., University of Wyoming,
 1991
 Software Engineering

Department Head: Professor Gerald Bergum
 Graduate Coordinator: Professor Gerald Bergum

For additional information contact:

Mailing address: SDSU Box 2201
 Administration — AD
 E-mail: bergumg@mg.sdstate.edu

Phone: 605/688-5719
 Fax: 605/688-5878

Program Description

The Department of Computer Science offers coursework supportive of the Master of Science in Engineering. The purpose of this coursework is to support the M.S. in Engineering and provide opportunities for those students who wish to pursue further education and career opportunities with strong backgrounds in software, hardware, and related management areas in the computer industry. Students should clearly understand that the degree pursued is a Master of Science in Engineering and not a Master of Science in Computer Science.

Major Degrees Offered

Master of Science: Engineering, with coursework in Computer Science
Doctor of Philosophy: Not available

Computer Science Core Requirements

CSc 705	Design and Analysis of Computer Algorithms	3
CSc 710	Structure and Design of Programming Languages.....	3
CSc 720	Theory of Computation.....	3
CSc 770	Software Engineering Management.....	3

Additional Admission Requirements

GRE: Not required
 TOEFL: Department requirement of 525
 Refer to College of Engineering section, pages 51-53, for specific details.

Computer Science (CSc) Course Offerings

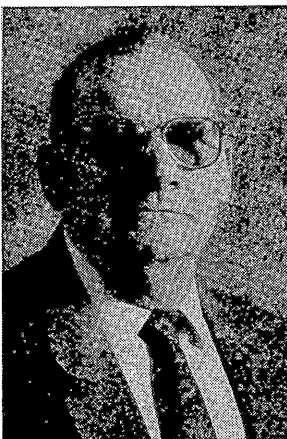
CSc 572 Artificial Intelligence3 Su
 Introduction to ideas, issues and applications of Artificial Intelligence. Knowledge representation, problem solving, search, inference techniques, theorem proving. Expert systems. Artificial intelligence programming languages. P, 290.

CSc 574 Computer Networks3 S
 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. P, 285, Math 381 or Stat 341.

CSc 576 Computer Graphics3 F
 Principles of computer graphics. A study of the algorithms used to generate raster and vector graphics. P, 285, Math 215 and 224.

CSc 593 Special Topics in Computer Science1-3
 Individualized problems determined by mutual agreement between instructor and student. Programming language optional. P, consent of department head.

CSc 630 Principles of Data Base System Design3
 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. P, CSc 484.



Gerald Bergum
 Department Head
 Graduate Coordinator
 Computer Science

CSc 643 System Analysis and Design	3
Advanced theory and practice of systems analysis. Life cycle concept of information system development. Covers HIPO charts, dataflow analysis, Nasis-Schneiderman charts, decision tables, structured walkthroughs, PERT and CPM, computer selection and evaluation. Modular design and the use of a computer aided software engineering (CASE) tools in the completion of an analysis and design project are also emphasized. P, CSc 325, or consent of instructor.	
CSc 700-701 Seminar	0-1
Current state-of-the-art topics in Computer Science. P, permission of instructor.	
CSc 705 Design and Analysis of Computer Algorithms	3 S
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. P, CSc 285.	
CSc 710 Structure and Design of Programming Languages.....	3 F
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. P, CSc 290.	
CSc 720 Theory of Computation	3 S
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. P, CSc 328.	
CSc 740 Management Information Systems.....	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. P, CSc 325.	
CSc 750 Recent Advances in Parallel Processing	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. P, CSc 705.	
CSc 770 Software Engineering Management	3 F
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. P, CSc 470, or consent of instructor.	
CSc 790 Thesis	1-7
CSc 791 Thesis Sustaining.....	0
CSc 792 Research Report/Design Paper	1-2
Conduct an approved research or design project and complete an approved research report or design paper in Computer Science.	
CSc 793 Special Topics in Computer Science.....	1-2
Individual topics determined by mutual agreement between the instructor and the student. Programming language optional. P, consent of Department Head.	
CSc 794 Special Problems in Computer Science	1-3 (max 6)
Independent study in specialized areas of computer science. Problems for advanced study selected according to students' specific interests, needs, or current research. Maximum of 6 credits. P, consent of instructor.	
CSc 795 Computer Science Research or Design Paper Sustaining	0
CSc 797 Research	1-9 (repeatable P/F)
Individualized research. Repeatable P/F. Credits cannot be used on Plan of Study. P, consent.	

Key to Course Descriptions

Course Number & Name	Credits
	F = Fall
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	Su = Summer
	(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Department of Counseling and Human Resource Development

Graduate Faculty

Julie Baumberger
Assistant Professor
Ed.D., University of South
Dakota, 1995
School Setting

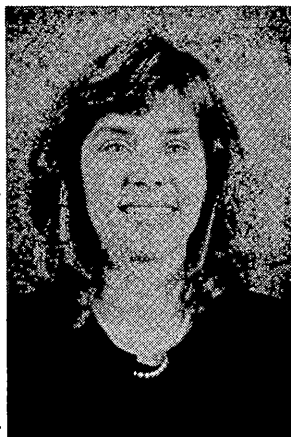
Ken Coll
Associate Professor
West River Graduate Center
Ph.D., Oregon State University,
1989
Agency Setting

Brenda Freeman
Associate Professor
West River Graduate Center
Ph.D., University of Wyoming,
1986
Student Affairs Setting

Ruth Harper
Associate Professor
Ph.D., Kansas State University,
1987
Student Affairs Setting

Marla Muxen
Associate Professor
Ph.D., University of Minnesota-
Minneapolis/ St. Paul, 1990
Agency Setting

Nona Wilson
Associate Professor
Ph.D., Ohio University, 1993
Agency Setting



Nona Wilson
Acting Department Head
Graduate Coordinator
Counseling and Human
Resource Development

Acting Department Head: Associate Professor Nona Wilson
Graduate Coordinator: Associate Professor Nona Wilson

For additional information contact:

Mailing address: SDSU Box 507

Wenona Hall — WEN

WWW: <http://www.sdstate.edu/~wedc/http/cec.htm>

E-mail: RobertsR@ur.sdstate.edu

Phone: 605/688-4190

Fax: 605/688-6074

Program Description

The Counseling and Human Resource Development program is designed to assist the student in developing professional skills and competencies expected of qualified counselors in school, agency or higher education settings. These include, but are not limited to: 1) intervention and assessment strategies appropriate for master's level counselors, 2) individual and group counseling competencies, 3) professional responsibility, and 4) self-knowledge and self-development.

Major Degrees Offered

Master of Science: Counseling and Human Resource Development

Doctor of Philosophy: Not available

Available Options for Graduate Degrees

Master of Science: Option A

Option B

Option C

See page 113 for descriptions of available options.

Core Requirements

EdER 761	Research and Writing.....	3
CHRD 601	Introduction to Counseling	3
CHRD 610	Developmental Issues in Counseling.....	3
CHRD 661	Theories of Counseling	3
CHRD 736	Appraisal of the Individual	3
CHRD 742	Career Counseling and Planning	3
CHRD 766	Group Counseling	3
CHRD 786	Pre-Practicum.....	3
CHRD 787	Counseling Practicum	3

Additional Requirements

The following courses are required for the respective areas of emphasis:

Counseling in an Agency Setting

CHRD 723	Counseling the Family.....	3
CHRD 755	Clinical Diagnosis & Treatment Planning.....	3
CHRD 789	Counseling Internship: Agency Setting.....	6

Counseling in a School Setting

CHRD 603	School Counseling	3
CHRD 722	Administration and Management of School Counseling Programs	3
CHRD 755	Clinical Diagnosis & Treatment Planning.....	3

OR

CHRD 723	Counseling the Family.....	3
CHRD 789	Counseling Internship: School Setting	6

Counseling in a Student Affairs Setting

CHRD 770	Student Development: Theory and Practice	3
CHRD 771	Student Personnel Services	3
CHRD 772	Administration & Leadership in Student Affairs	3
CHRD 789	Counseling Internship: Student Personnel.....	6

Additional Admission Requirements

- GRE: Not required
- TOEFL: Department requirement of 525

General Requirements begin on page 111 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

Key to Course Descriptions

Course Number & Name
Credits
F = Fall
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(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Requirements for Admission to the Program

Step 1

Acceptance by the Graduate School. (*see page 6 for additional information*)

If accepted to the Graduate School, those seeking admittance to the Counseling and Human Resource Department will be given a "Special Student Status." The Graduate School Bulletin states that a student given this status may not receive Graduate Assistantships, financial aid, or enroll for thesis/dissertation credits. The Graduate Dean will act as advisor for these students. **No more than ten credits under Special Student status may be applied toward a degree.** The last statement is important in that it will limit the number of credits you can take in our department before being formally accepted.

The formal acceptance process is outlined in Step 2.

Step 2

Admission to the Counseling and Human Resource Development Department.

- You need to make formal application to the CHRD Department. To be considered for formal admission a file containing the following items must be submitted to the Graduate School office by **May 1** for Fall, and **October 1** for Spring.
 - A one page, typewritten goal statement including **one or more** of the following:
 - Your aspirations related to the field of counseling.
 - One significant life event that contributed to the development of these aspirations.
 - The single greatest personal asset that will serve you in realizing your aspirations.
 - The one personal characteristic or quality that you most need to modify, improve, or change in order to realize your aspirations.

Goal statements that exceed one page will not be considered.

- A current typewritten resume that includes all previous work experience, volunteer service, and education that you feel has contributed to your desire to enter the counseling profession.
 - Two completed CHRD Reference Evaluation Forms, which are available from the department. **These Evaluation Forms are in addition to the Graduate School reference forms.**
- Applicants are **required** to attend an orientation and group interview held approximately one month after the October and May deadline. If your application is complete by the deadline, please contact the departmental secretary at 605/688-4190 to obtain the specific date and place of the interview.

Soon after the orientation and interview, each applicant will receive a letter granting or denying admission.

If granted admission you will have **one calendar year from the time of acceptance to begin taking courses**. Otherwise, you will be required to reapply formally into our program.

If admission was not granted and the student has exceeded the 10 hours allowed as Special Student status, the student will be administratively dropped from counselor education courses in which she/he enrolls. However, those students who have not been admitted may want to consider reapplying during the next application period.

Key to Course Descriptions

Course Number & Name Credits
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Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Counseling and Human Resource Development (CHRD) Course Offerings

- CHRD 530 Gender Issues in Counseling3**
- CHRD 571 Gerontology Issues in Counseling3**
- CHRD 601 Introduction to Counseling3 F**
 This course provides an introduction to the counseling profession. Historic events, current concerns, responses to societal issues, legal and ethical issues are covered. This course serves as an orientation to the profession.
- CHRD 603 School Counseling3 F**
 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 610 Developmental Issues in Counseling.....3 FSSu**
 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 651 Mental Health and Personality Development3**
 The nature of personality and developmental theory, mental health issues of children, adolescence and adults with emphasis on programs/strategies for positive mental health. Various personality assessment methods are used. On demand.
- CHRD 661 Theories of Counseling3 FS**
 An overview of major theories, the methods employed and appropriate applications. Assist beginning counseling students in comprehending the scope of various approaches in dealing with clients.
- CHRD 681 Workshop.....1-3 FSSu**
 Special topics are comprehensively explored in an intensive time framework. Designed to increase specific skills and understandings in a current topic area.
- CHRD 682 Seminar1-3 FSSu**
 Selected area of education including special investigation, reports, and discussion.
- CHRD 690 Special Topics1-3 FSSu**
 Advanced courses taught upon demand covering such topics as crisis intervention, counseling special groups, cross cultural counseling, various counseling approaches, chemical dependency, etc.
- CHRD 706 Counseling the Victim.....3 SSu (even years)**
 Study of effective counseling during the crisis and recovery stages of the healing process. Addresses the victim's experience with such issues as developmental concerns, dissociation, post-traumatic reaction, denial and loss of memory about/around the victimization. P, consent.
- CHRD 713 Administration and Management of Mental Health Organizations3**
 Developing and managing a comprehensive counseling program in schools and agencies. Emphasis on the planning process management, budgeting, organizational structure, supervision, evaluation and consultation. P, consent.
- CHRD 716 Human Resource Management in Business and Industry3 S**
 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 722 Administration and Management of School Counseling Programs.....3 S**
 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 Family3 F**
 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 736 Appraisal of the Individual3 FS**
 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 742 Career Counseling & Planning3 FS**
 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 755 Clinical Diagnosis and Treatment Planning.....	3 F
Focuses on the various abnormalities in personalities, behaviors and levels of functioning in society. Specific attention given to the behavioral disorders which are most commonly seen in our society. P, Abnormal Psychology, consent.	
CHRD 756 Counseling the Addictive Client	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 766 Group Counseling.....	3 FSSu
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. P, CHRD 601, 610, 661, EdER 761. Written permission. P, consent.	
CHRD 770 Student Development: Theory and Practice	3 F
Develops an understanding of college student personnel functions and their interrelatedness in a coordinated effort to provide student services. Focuses on the personnel administrator's role in understanding and incorporating concepts to student development.	
CHRD 771 Student Personnel Services	3 S
Focuses on legal cases and precedents that have a major impact on higher education and the field of student personnel administration, the development of conflict management skills, control theory, transactional analysis, and other communication concepts.	
CHRD 772 Administration and Leadership in Student Affairs	3 S
Provides an overview of administrative and leadership practice in Student Affairs work. The course focuses on the theoretical foundations of Student Affairs administration and the utilization of those foundations in the daily management of Student Affairs units. Student will gain both knowledge and experience in applying theory to the administration of Student Affairs operations. Cross-listed with AHED 772.	
CHRD 786 Pre-Practicum	3 FSSu
Developing basic human relations and helping skills; self-awareness and self-examination of the interpersonal communications process; emphasis on understanding self and others. Introduction to basic counseling and helping skills. P, CHRD 601, 610, 661, EdER 761.	
CHRD 787 Counseling Practicum.....	3-5 FSSu
Eligibility for this course requires the completion of a minimum of 20 semester credit hours including EdER 761, CHRD 601, 610, 661, 766, and 786 with a grade of "B" or above in CHRD 766 and 786. Students must also have proof of professional liability insurance prior to enrollment. This course is where students begin to apply their skills with clients and the faculty reserve the right to deny admission to CHRD 787 if they have reason to suspect that the student's personal limitations might impair their ability to deliver quality services to clients. Written permission. P, consent.	
CHRD 788 Group Counseling Practicum	3
Supervised practicum in conducting small group counseling sessions. P, CHRD 766, consent.	
CHRD 789 Internship.....	2-6 FSSu
Eligibility for Internship requires that the student have completed CHRD 787 Counseling Practicum with the grade of "B" or better, and a substantial amount of their course work. Ideally, all course work would be completed prior to enrollment. Students must have proof of professional liability insurance that is in force for the duration of this experience. Internships must be in appropriate settings under the direct supervision of a qualified and appropriately credentialed professional. Due to the nature of this course (students working directly with clients) the faculty reserve the right to deny admission to CHRD 789 if they have reason to suspect that the student's personal limitations might keep them from rendering competent services. P, consent, approval from Internship Committee.	
CHRD 790 Thesis	1-6 FSSu
CHRD 791 Thesis Sustaining	0 FSSu
CHRD 792 Research Problems in Counseling and Guidance	2 FSSu
A problem is selected, analyzed, and reported in form approved by the research advisor. <i>Required</i> of all graduate students in counseling qualifying for Master's degree under Option B. Can be <i>elected</i> under Option C if desired. P, consent.	
CHRD 793 Problems.....	1-3 FSSu
Directed reading and research in selected individual guidance and counseling topics.	

Key to Course Descriptions

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Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Department of Dairy Science

Graduate Faculty

Robert J. Baer
Professor
Ph.D., University of Georgia,
1983
Sensory Evaluation of Dairy
Products, Dairy Chemistry

David Henning
Associate Professor/Alfred Chair
Ph.D., Oregon State University,
1966
Microbiology of Dairy Products,
Product Safety

Vikram Mistry
Professor
Ph.D., Cornell University, 1986
Membrane Processing, Cheese
Technology, Dairy Chemistry

John G. Parsons
Professor
Ph.D., Pennsylvania State
University, 1968
Dairy Chemistry, Flavor
Analysis

David J. Schingoethe
Professor
Ph.D., Michigan State
University, 1968
Protein/Energy Nutrition,
Metabolism/Whey Utilization
by Dairy Cattle

Department Head: Professor John Parsons
Graduate Coordinator: Professor John Parsons

For additional information contact:

Mailing address: SDSU Box 2104
Dairy Microbiology — DM
E-mail: parsonsj@ur.sdstate.edu

Phone: 605/688-4116
Fax: 605/688-6276

Program Description

The Dairy Science Department invites applications to graduate programs leading to a Master of Science degree with a major in Dairy Science and a Doctor of Philosophy degree with a major in Animal Science or Biological Sciences. The department offers M.S. programs in Dairy Manufacturing and both M.S. and Ph.D. programs in Dairy Cattle Nutrition and Management. A Ph.D. degree is available through the Biological Sciences program with an area of study in Dairy Manufacturing.

Major Degrees Offered

Master of Science: Dairy Science
Doctor of Philosophy: Animal Science
Biological Sciences, with an area of study in Dairy Science

Available Options for Graduate Degrees

Master of Science: Option A
Doctor of Philosophy: 60-Credit Plan
90-Credit Plan

See pages 113 (M.S.) and 116 (Ph.D.) for descriptions of available options.

Core Requirements

None

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 525

General Requirements begin on page 111 (Master's Degree) and page 116 (Ph.D.).
Graduate students should consult with their advisor before registering for graduate work.

Dairy Science (DS) Course Offerings

DS 513 Physiology of Lactation3 S (odd years)
Anatomy, physiology, and biochemistry of mammary glands. Factors affecting quality and quantity of milk. P, Vet 223 or equivalent.

DS 702 Seminar1 S
Research report writing, oral reports and discussion of current research in dairy production, dairy manufacturing, and related sciences. Maximum of 2 credits will be allowed for Master of Science or 4 credits for Doctor of Philosophy degree.

DS 711 Ruminology3 F (odd years)
Biochemical, physiological, and microbiological activity occurring in the rumen and the relation of rumen function to animal response. P, Chem 361 and Vet 223 or consent.

DS 722 Advanced Dairy Microbiology3 S (even years)
Role of microorganisms in manufacture and spoilage of dairy products. Emphasis on starter culture technology. P, DS 301 or Micr 311.

DS 722A Advanced Dairy Microbiology Lab0

DS 731 Laboratory Techniques in Dairy Science2 F (even years)
Research design, laboratory techniques, and data management and presentation in Dairy Science. Laboratory procedures include photometry, gas chromatography, and microbiological (aerobic and anaerobic) assays.



John Parsons
Department Head
Graduate Coordinator
Dairy Science

DS 780 Dairy Science Problems	1-4 FSSu
DS 790 Thesis	1-7 (as arranged)
DS 791 Thesis Sustaining	0
DS 890 Dissertation—Ph.D.	1-12 (as arranged)
DS 891 Dissertation Sustaining	0

Biological Sciences (BioS) Course Offerings

BioS 890 Dissertation—Ph.D.	1-7 FSSu
BioS 891 Dissertation Sustaining.....	0 FSSu
BioS 892 Ph.D. Seminar	1 FS

Key to Course Descriptions

Course Number & Name	Credits
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	Su = Summer
	(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

SDSU is one of the few universities in the U.S. with a traditional Dairy Science Department. It is equipped with excellent laboratories, a dairy processing plant which manufactures fluid milk, cheese, butter, ice cream, and other products; and a newly constructed dairy production research and training facility where it maintains a herd of 400 Holstein and Brown Swiss cattle for teaching and research. Metabolism and surgical facilities in the Animal Science Complex, and specialized laboratory equipment in Station Biochemistry, Veterinary Science, and Nutrition and Food Science Departments 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, microbiology, chemistry, food safety, dairy cattle nutrition, metabolism, breeding, ruminal microbiology, immunology, and management, while interacting with well-qualified faculty.

The SDSU Dairy Science Department, in collaboration with the Food Science and Nutrition Department at the University of Minnesota, is a National Dairy Foods Research Center partially supported by the National Dairy Research and Promotion Board. This provides graduate students in the manufacturing area a unique opportunity to be involved with current issues and research needs.

Department of Economics

Graduate Faculty

Dwight Adamson
Associate Professor
Ph.D., Washington State
University, 1988
Macroeconomics; Statistics

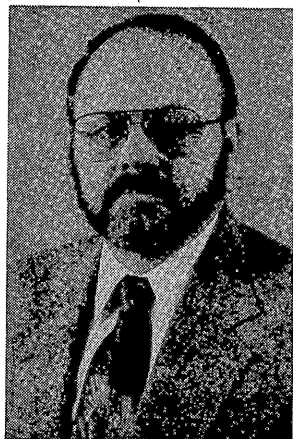
Martin K. Beutler
Professor
Ph.D., Purdue University, 1986
Agricultural Impacts and
Coordinated Resource
Management

Carol Cumber
Assistant Professor
Ph.D., South Dakota State
University, 1994
Business Management and
Business Policy

Thomas L. Dobbs
Professor
Ph.D., University of Maryland-
College Park, 1969
Sustainable Agriculture; Natural
Resource Economics;
Agricultural Production

Scott Fausti
Associate Professor
Ph.D., University of Illinois,
1991
Macroeconomics; Mathematical
Economics

Howard A. Gilbert
Professor
Ph.D., Oregon State University,
1967
Microeconomic Theory; Small
Business Management



Richard Shane
Department Head
Economics

Department Head: Professor Richard Shane

Graduate Coordinators: Professor Charles Lamberton – Curriculum
Associate Professor Scott Fausti – Recruitment

For additional information contact:

Mailing address: SDSU Box 504A
Scobey Hall — SCO
E-mail: shaner@mg.sdstate.edu

Phone: 605/688-4141
Fax: 605/688-6386

Program Description

The graduate curriculum is designed to prepare students for professional placement or further graduate study. Emphasis is placed upon development and application of analytical skills. Students can design an individualized program within any of four areas of concentration: business economics; agricultural business; general economics; or, agricultural economics. All students take a core of applied theory and analysis courses and complete their individual program such as computer science, statistics, or engineering. Many courses are offered in the evening. A limited number of research and teaching assistantships are available for qualified students. The Economics Department participates in the Master of Science in Industrial Management program. Many Economics Department courses satisfy the requirements for the MSIM degree.

Major Degrees Offered

Master of Science: Economics
J.D./M.S. in Econ, cooperatively with USD
Doctor of Philosophy: Not available

Available Options for Graduate Degrees

Master of Science: Option A
Option B

See page 113 for descriptions of available options.

Core Requirements

Econ 703 Advanced Macroeconomics.....	3
Econ 704 Advanced Microeconomics.....	3
Econ 705 Econometrics.....	3

No converted graduate credit will be granted for the following 300-499 advanced undergraduate courses: Econ 301 Intermediate Microeconomics, Econ 302 Intermediate Macroeconomics, BAdm 380 Personal Finance, Stat 341 Statistical Methods I.

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 550
Prerequisites for unconditional admission into the program are completion of Econ 301, Econ 302, Stat 341, and calculus.

General Requirements begin on page 111 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

J.D./M.S. in Economics. A cooperative program between the University of South Dakota School of Law and South Dakota State University Department of Economics. The two institutions mutually accept up to nine semester hours of transferred credit. Students design their academic program in Economics to best suit their career goals and interests. For details, consult the USD Law School or SDSU Economics Department.

Agricultural Economics (AgEc) Course Offerings

- AgEc 571 Advanced Farm & Ranch Management3 S**
Leasing arrangements, capital investment, computerized accounting and budgeting. Linear programming as a tool for planning and organizing the farm business. P, senior standing, 271, Econ 301, or consent.
- AgEc 621 Advanced Production Economics.....3**
Economic theory and quantitative techniques used in the analysis of agricultural production decisions; estimation of production functions; determination of optimal input and output combinations; and the impacts of risk on production decisions. P, Econ 423 and BAdm 324.
- AgEc 630 Advanced Agricultural Marketing & Prices3**
Economic theory and quantitative techniques used in analysis of agricultural market problems, construction of economic models, statistical estimates of supply and demand, and price forecasting. P, AgEc 354, Econ 301, Econ 423, or consent.
- AgEc 690 Special Problems1-3 FS**
Advanced work or special problems with focus on agriculture. Open to graduate students. P, consent.

Economics (Econ) Course Offerings

- Econ 504 History of Economic Thought3 F**
The historical development of economic ideas. Various schools of economic thought and the economic environment which produced them. P, 301, 302 or consent.
- Econ 520 Economics of the Public Sector.....3**
Governmental operations, policies, and revenues as related to employment, productivity and economic welfare. Alternatives that would affect social services, education, commerce and trade, fiscal policies, and quality of life. P, 201 or consent.
- Econ 531 Managerial Economics3 S**
Applications of microeconomic theory, statistics and other quantitative methods to analysis and solution of decision making problems confronted by managers of agribusiness, commercial and manufacturing enterprises. Topics include economic analysis of demand, production, cost, market structure, government regulation, risk, and capital budgeting. P, 301, Math 222, Stat 341, or equivalent.
- Econ 540 Economics of the International Sector.....3**
International flow of trade and balance of payments. Monetary and fiscal policies. Trade controls and their effect upon the agricultural and domestic economies. Significant current developments in trade and finance. P, 201, 202, 330 or consent.
- Econ 550 Industrial Organization3**
The elements involved in market power and how they function. How the structure of institutions and conduct of sellers and buyers affect economic performance. P, 301 and 302 or consent.
- Econ 560 Economic Development3**
Developing and developed national economies. Factors impacting economic development. Role of public policies in development. Agricultural and rural development issues emphasized. P, 201, 202, or consent.
- Econ 572 Resource and Environmental Economics3**
Allocation, conservation, and development of natural resources. Environmental economics, water and land use, and methods of evaluating projects and programs. P, 201.
- Econ 601 Economic Study in Industrial Management3 F**
Intensive study of economic choice and value theory, financial statement structure and analysis, and financial management. Not open to Economics majors.
- Econ 610 Financial Management3**
Advanced techniques for managing working capital, capital budgeting, analysis of financial structure and cost of capital, valuation, financial planning and control. P, BAdm 310, Stat 341 or Math 381, or consent.
- Econ 624 Advanced Mathematical Economics.....3**
Integral calculus, differential and difference equations, optimal control and other methods used to analyze economic dynamics, investment, growth and other advanced topics in economics. P, Econ 428.
- Econ 653 Advanced Market Research3**
Strategic marketing and decision making with emphasis on utilizing both qualitative and quantitative techniques as well as marketing models. P, Econ 301, Econ 353, and Stat 341 or Math 381.

Larry Janssen
Professor
Ph.D., University of Nebraska-Lincoln, 1978
Agricultural Finance;
Agricultural Policy

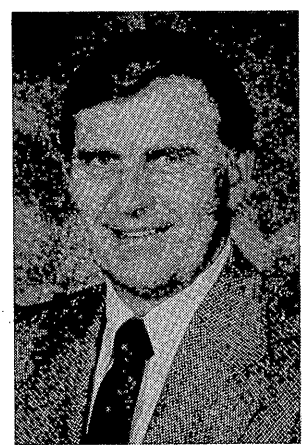
Han J. Kim
Professor
Ph.D., Oregon State University, 1969
Econometrics, Operations Research

Charles Lamberton
Professor
Ph.D., Iowa State University of Science and Technology, 1975
Microeconomic Theory;
Mathematical Economics;
Finance

Burton Pflueger
Professor
Ph.D., University of Illinois, 1985
Financial and Farm Management

Richard Shane
Professor
Ph.D., Washington State University, 1978
Grain Marketing

John Sondey
Associate Professor
Ph.D., Washington State University, 1989
Marketing



Charles Lamberton
Graduate Coordinator
Economics - Curriculum

Key to Course Descriptions

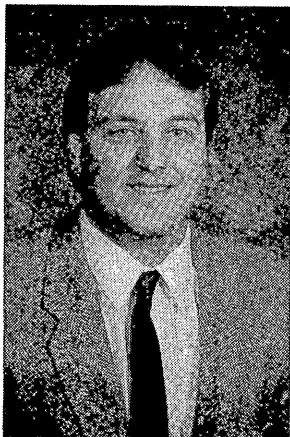
Course Number & Name Credits
 F = Fall
 S = Spring
 Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Econ 660 Operations Management	3
Product planning, demand forecasting and management, capacity planning, scheduling, inventory planning and timing, materials management, quality, work standards and measurement. P, BAdm 360, Econ 301 and Stat 341 or Math 381.	
Econ 690 Special Problems	1-3 FS
Advanced work in special problems in economics. Open to graduate students by consent.	
Econ 701 Research Methods	2 S
Planning and conducting empirical research in economics; the organization of research; the philosophy and aim of science. P, two statistics courses or consent.	
Econ 703 Advanced Macroeconomics	3 S
Comparative statics analysis of aggregate income determination; comparison of alternative stabilization policies; modeling of investment and consumption behavior, dynamic analysis of optimal growth. P, Econ 428 or consent.	
Econ 704 Advanced Microeconomics	3 F
Rigorous analysis of topics in microeconomics including: methodology of economic science, economic choice, production, resource allocation, distribution, welfare economics, and general equilibrium. P, Econ 428 or consent.	
Econ 705 Econometrics	3 S
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. P, Econ 423, Econ 428.	
Econ 782 Personnel and Labor Relations.....	3
Labor relations, negotiation and arbitration; pay and benefits; hiring, promotion and termination policies; use of testing in the workplace. P, BAdm 360 or consent.	
Econ 790 Thesis	1-7 (as arranged)
Econ 791 Thesis Sustaining	0
Econ 792 Research Paper	2
Econ 793 Graduate Special Topics.....	1-4
Organized by an instructor in consultation with the department head and a group of students. The course will provide a medium through which a specific topic can be pursued. The course will normally be experimental and may be a one time only effort for a particular semester and the unique group of students. Maximum: 4 credit hours per semester, 7 credit hours per degree.	



Scott Fausti
Graduate Coordinator
Economics — Recruitment

Department of Educational Leadership

Department Head: Professor R.L. Erion
Graduate Coordinator: Professor R.L. Erion

For additional information contact

Mailing address: SDSU Box 507

Wenona Hall — WEN

WWW: <http://www.sdstate.edu/wedc/http/EDAD.htm>

E-mail: erionr@ur.sdstate.edu

Phone: 605/688-6365

Fax: 605/688-6074

Program Descriptions

Curriculum and Instruction

This major is appropriate for K-12 classroom teachers, recreation program staff, adult and community educators, Cooperative Extension Service personnel, and junior and 4-year college instructors. Within this major, the following emphases are available:

- A. Adult and Higher Education
- B. Computer Education
- C. Content Areas (English, mathematics, social studies, etc.)
- D. Gifted Education
- E. Middle School Education
- F. Reading Education
- G. Instructional Enhancement
- H. Vocational/Technical Education
- I. Agricultural Education

Educational Administration

This major is designed to provide the basic professional preparation for those who expect to become qualified administrators in schools where certification is required, and for other institutions, businesses, industries and service-orientated agencies where an administrative program is of value. The South Dakota State Board of Education requires four years of teaching experience for administrator certification. The following emphases are presently available:

- A. Elementary Administration
- B. Secondary Administration
- C. Vocational/Technical Administration*
- D. Adult and Higher Education*

*May not lead to certification (see advisor)

Major Degrees Offered

Master of Education: Curriculum and Instruction
Educational Administration

Doctor of Philosophy: Not available

Available Options for Graduate Degrees

Master of Education: Option B
Option C

See page 113 for descriptions of available options.

Core Requirements

Curriculum and Instruction, see sidebar on page 44.

Educational Administration, see sidebar on page 44.

Graduate Faculty

Carl E. Edeburn

Professor

Ph.D., University of North Dakota, 1973

Leadership, Foundations, Assessment

Peggy Gordon Elliott

President/Professor

Ed.D., Indiana University, 1975

Leadership, Teaching, Reading

R. L. Erion

Professor

Ph.D., Texas A & M University, 1985

Research, Computers

Clark W. Hanson

Professor

Ph.D., Iowa State University of Science & Technology, 1972

Agricultural Education, VTE

Dee Hopkins

Professor

Ed.D., Indiana University, 1982

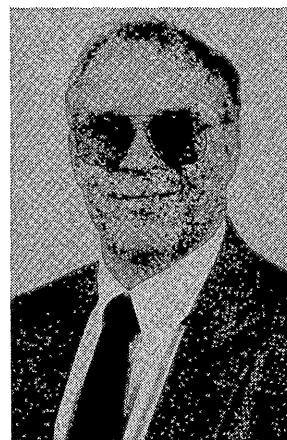
Leadership, Library Science, Storytelling

Dann Husmann

Assistant Professor

Ph.D., University of Nebraska-Lincoln, 1991

Vocational Technical Education, Distance Learning



R.L. Erion

Department Head

Graduate Coordinator

Educational Leadership

Michael N. Johnson
Associate Professor
Ph.D., University of Illinois-
Urbana, 1981
Leadership, Foundations,
Elementary/Middle

Charles Lingren
Professor
Ph.D., University of Iowa, 1975
Leadership, Effective Schools,
Teaching

William Lockwood
Assistant Professor
Ed.D., University of South
Dakota, 1984
Leadership

Jon Marshall
Professor
Ed.D., University of Kansas,
1966
Research, Assessment

Lonell Moeller
Professor
Ph.D., Iowa State University of
Science & Technology, 1981
Agricultural Education, VTE,
Computers

Kathryn Penrod
Associate Professor
Ph.D., Cornell University, 1984
Adolescence, Teaching

Lawrence Rogers
Assistant Professor
Ph.D., University of Nebraska,
1975
Foundations, Curriculum, Social
Studies

Loye Romereim-Holmes
Professor
Ed.D., University of South
Dakota, 1987
Special Needs, Reading

Gary Steinley
Professor
Ph.D., University of Utah, 1970
Reading, Teaching

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 550

Applicants must provide a resumé, goal statement, and two letters of professional reference to the Graduate School. Once all material is received, it is reviewed by the Department. Students are assigned an admission status of "unconditional," "conditional" or "not admitted."

General Requirements begin on page 111 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

Agricultural Education (AgEd) Course Offerings

AgEd 506 Problems1-3 FSSu

Directed reading and research in selected agricultural education topics.

AgEd 605 Seminar1-2 FSSu

Selected areas of Agricultural Education including special investigation, reports, and discussion.

AgEd 706 Adult Ed in Ag2 Su

Selected areas of Agricultural Education including special investigation, reports, and discussion.

AgEd 707 Supervised Occupational Experiences & Student Groups in2 Su

Emphasizes relationships of occupational experience and vocational student organization in agriculture to instructional programs; needs, scope, techniques and materials in developing and improving these programs. P, graduate student in Agricultural Education.

AgEd 776 Curriculum in AgEd2 Su

For teachers, administrators and supervisors of vocational agriculture/agribusiness programs at secondary, post secondary and adult levels; principles and procedures in course building, courses of study, and curriculum. P, graduate student in Agricultural Education. Cross-listed with VTE 776.

AgEd 792 Research Problems in AgEd2 FSSu

A problem is selected, analyzed, and reported in form approved by the research advisor. *Required* of all graduate students in education qualifying for the degree under Option B. Can be *elected* under Option C, if desired. P, consent.

Adult Higher Education (AHed) Course Offerings

AHed 600 Special Problems in Extension.....2-6

Individually assigned investigative problems in Extension. Individual conference with laboratory and/or field work. Arrangements with Extension staff must be made prior to registration.

AHed 681 Workshop in Adult & Continuing Education1-3 FSSu

Special areas in adult and continuing education are comprehensively explored in an intensive time framework. Designed to increase specific skills and understanding in a current area.

AHed 691 Problems1-3 FSSu

Directed reading and research in selected individual adult and continuing education topics.

AHed 710 Adult Curriculum and Instruction3 F

Adult learning theory and instructional methods. Principles of adult curriculum design. Social and cultural factors and their effects on the learning process.

AHed 711 Organization and Administration of Adult Education3 S

Organization and implementation of adult education programs. Particular emphasis on curriculum development, financing, staffing, marketing, and evaluation of adult programs.

AHed 751 Principles of College Teaching3 S

An analysis of teaching methodologies, planning procedures, evaluation techniques, and professional relationships. Emphasis will be on learning and using strategies suitable for teaching.

AHed 772 Administration and Leadership in Student Affairs3

Provides an overview of administrative and leadership practice in Student Affairs work. The course focuses on the theoretical foundations of Student Affairs administration and the utilization of those foundations in the daily management of Student Affairs units. Student will gain both knowledge and experience in applying theory to the administration of Student Affairs operations. Cross-listed with CHR 772.

- AHEd 782 Seminar**1-3 FSSu
Study in selected areas of adult and continuing education including special investigation, reports and discussion.
- AHEd 789 Internship in Education**1-6 FSSu
On the job participation in teaching or related fields in schools under the supervision of local school personnel and a staff member from the College of Education and Counseling.
- AHEd 792 Research Problems in Adult Ed**2 FSSu
A problem is selected, analyzed, and reported in form approved by the research advisor. *Required* of all graduate students in education qualifying for the degree under Option B. Can be *elected* under Option C if desired. P, consent.

Educational Administration (EdAd) Course Offerings

- EdAd 700 Public School Administration**3 FSu
A broad overview of administration. Will examine administration as an applied science and analyze the organizational, political, and human relations systems as forces affecting administration. Specific topics will include conflict resolution, crisis management, planning, staff development, evaluation, and communications theory.
- EdAd 710 Elementary School Administration**3 Su
Emphasis is on the elementary principal as an instructional leader. Major topics focusing on staff recruitment, supervision and evaluation of Student Services, rights and responsibilities, research on effective schools, parent and community relationships and the principal's role in dealing with current issues facing our schools.
- EdAd 711 Secondary School Administration**3 SSu
Emphasis is on the secondary principal as an instructional leader with major topics focusing on staff recruitment, supervision, and evaluation, student services, rights and responsibilities, research on effective schools, parent community relationships and the principal's role in dealing with current issues facing our schools.
- EdAd 715 Supervision**.....3 SSu
A study of leadership styles and the effects different styles have on motivating people. Emphasis on utilizing and developing human potential.
- EdAd 730 School Finance**2
Develop an understanding and a working knowledge of school finance theory and practice. Emphasis will be placed on the school finance reform movement in recent years.
- EdAd 732 School Buildings & Grounds**2
Management, care and operation of school plant. Needs and evaluation of existing facilities, new buildings and remodeling. Emphasis on facility planning at school system and building levels. Not a technical course in design and materials.
- EdAd 735 School Law**.....3 SSu
Legal foundations of elementary and secondary education in our society; legal powers and relationships of school boards, administrators, teachers, parents (guardians) and students. Emphasis will be placed upon the values underlying these foundations, powers and relationships.
- EdAd 781 Workshop**.....1-3 FSSu
Special areas in education administration are comprehensively explored in an intensive time framework. Designed to increase specific skills and understanding in a current area.
- EdAd 782 Seminar**.....1-3 FSSu
Study in selected areas of education administration including special investigation, reports, and discussion.
- EdAd 789 Internship in Education**1-6 FS
On-the-job participation in administration or working with administrative tasks in public schools under supervision of local school administrator and a staff member from the College of Education and Counseling.
- EdAd 792 Research Problems in Ed Administration**2 FSSu
A problem is selected, analyzed, and reported in form approved by the research advisor. *Required* of all graduate students in education qualifying for the degree under Option B. Can be *elected* under Option C if desired. P, consent.

Adult & Higher Education Program Specialization*

- AHEd 710
Adult Curriculum and Instruction.....3
- AHEd 711
Organization and Administration of Adult Education.....3
- CHRD 771
Student Personnel Services.....3
- OR
- EdAd 735
School Law3
- HDCF 614
Adult Development3
- OR
- CHRD 770
Student Development: Theory and Practice3
- AHEd 789
Internship.....2

**Will not lead to Elementary/Secondary Principal Certification*

Adult and Higher Education Additional Requirements*

- AHEd 710
Adult Curriculum and Instruction.....3
- AHEd 711
Organization and Administration of Adult Education.....3
- AHEd 751
Principles of College Teaching.....3
- HDCF 614
Adult Development Theory3
- EdFn 720
History and Philosophy of Education3
- EdFn 727
Group Processes3
- EdER 711
Educational Assessment..3
- EdFn 782
Seminar: Capstone.....1

**Will not lead to Elementary/Secondary Principal Certification*

**Curriculum and Instruction
Core Requirements**

- EdER 761
Research and Writing3
- EdFn 725
Education in a Pluralistic
Society3

**Educational Administration
Core Requirements**

- EdAd 700
Public School
Administration.....3
- EdAd 715
Supervision.....3
- EdFn 725
Education in a Pluralistic
Society3
- EdFn 727
Group Processes3
- EdER 711
Educational Assessment..3
- EdER 761
Research and Writing3
- EdFn 782
Seminar: Capstone1

EdAd 793 Problems1-3 FSSu
Directed reading and research in selected education administration topics.

EdAd 795 Special Topics1-3
Advanced study covering topics not regularly taught within the regular program. Topics may include the administrator and special education rural schools, managing change. These advanced courses would be taught upon demand and when sufficient enrollment would warrant them.

Education Evaluation and Research (EdER) Course Offerings

EdER 590 Special Topics1-3 FSSu
Advanced courses will be taught upon sufficient demand covering such topics as Least Restrictive Environment, computers in education, observation techniques for classroom evaluation.

EdER 691 Problems1-3
Directed reading and research in selected education topics.

EdER 711 Educational Assessment3 SSu
Examines the theory and principles of standardized group tests. Aptitude, achievement, career, and personality assessment instruments are also examined. Practice in administration, scoring, and interpretation of results.

EdER 761 Research and Writing3 FSSu
Main objectives are: a) understanding standard and new research procedures in education, b) acquaintance with up-to-date research on present-day educational problems, and c) understanding and using evaluation standards for educational research. Required of most graduate majors in education.

Education Foundations (EdFn) Course Offerings

EdFn 527 Middle School: Affective Applications2 SSu
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. P, admitted to teacher education program, junior standing, an adolescent psychology/development course of 3 credits.

EdFn 528 Middle School Curriculum and Instruction3 SSu
The essential methods and materials of judging high/middle school instruction. Methods and topics included are the middle school concept, team teaching, mastery learning, exploratories, classroom management, and grouping strategies. Representative curriculum materials, appropriate to the transescent learner, are examined and utilized in multi-disciplinary team planning projects. P, admitted to teacher education program, junior standing, adolescent develop-mental/psychology course of 3 credits.

EdFn 551 Curriculum and Instruction in Gifted Education3 Su
Examines curriculum methods and materials for gifted and talented children and youth. Students will be exposed to various programming models, IEP development, differentiated curricular concepts, as well as skills in self-directed learning.

EdFn 590 Special Topics1-3
Advanced study covering such topics as Introduction to Multi-Cultural Education, Introduction to Law Related Education, and Interpretation and Implementation of Individuals with Disabilities Act (IDEA).

EdFn 605 Computers in the Classroom2
Examines the relationship between teaching methods, learning theory and the place of the computer in the classroom; covers such topics as the data processing cycle, an overview of computer hardware and software, computer vocabulary, career opportunities, and some programming. P, EPsy 302 or consent.

EdFn 648 Learning Styles3 (alternate years)
Learning styles deals with research findings about learning styles and teaching styles. It examines learning style inventories, and explores how teachers can adapt instruction to promote student interest and success, based on the students varying approaches to learning. The course is appropriate for all educational personnel. Alternate years.

EdFn 700 Working with Exceptional Children3 S
Assist regular classroom teachers to better understand and more effectively teach students with special learning needs. Focuses on learning disabilities, mental retardation, 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 modifications are included.

EdFn 720 History and Philosophy of Education	3 FSu
An overview of the history of education coupled with the development and application of educational philosophy in contemporary practice.	
EdFn 725 Education in a Pluralistic Society	3 SSu
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	3 SSu
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 744 Research on School Improvement	3 FSu
Addresses the extensive research relating to the effective school movement. Pertinent conceptualizations and research related to school climate, instructional leadership, focus, and the establishment of school/teacher expectations will be discussed. Research based tools and skills will be employed.	
EdFn 745 Effective Teaching: Theory Into Practice	3 SSu
Approaches instruction from the perspective of Effective Teaching Research integrated with a focus on thinking skills. Students study various instructional models, focus on selection and implementation of appropriate strategies and consider other classroom issues related to effective teaching.	
EdFn 751 Teaching Reading Across Disciplines	3 (alternate years)
Examines the latest research on how readers comprehend and learn from written texts, 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 752 Foundations of Reading	3
Description of normal process of development in reading skills and techniques which may be used in remedying deviations which hinder readers in speed or comprehension. Recommended for graduate students in Language Skills and Communications programs.	
EdFn 753 Diagnosis and Remediation of Reading Problems	3
General nature of causes of reading disability; principles of diagnosis and use of instruments; basic principles of individual remediation; case studies; evaluation of progress of the disabled reader; adaptation of techniques to classroom. P, EPsy 302.	
EdFn 754 Clinical Practice in Reading	2 (on demand)
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. P, EdFn 753 or concurrent. Written permission.	
EdFn 782 Seminar	1-3
Study in selected areas of Curriculum and Instruction which may include special investigations, student reports, student writing and discussion.	
EdFn 789 Internship	1-6
On-the-job participation in teaching in the public schools under the supervision of local school instructor and a staff member from the College of Education and Counseling.	

Key to Course Descriptions

Course Number & Name	Credits
	F = Fall
	S = Spring
	Su = Summer
	(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Elementary and Secondary Program Specialization

EdAd 735	School Law	3
EdFn 744	Research on School Improvement.....	3
EdFn 745	Effective Teaching: Theory into Practice.....	3
EIEd 773	Elementary School Curriculum	3
	OR	
SEED 740	Secondary School Curriculum.....	3
EdAd 711	Secondary School Administration.....	3
	OR	
EdAd 710	Elementary School Administration.....	3
EdAd 789	Internship	2-6

Elementary and Secondary Program Additional Requirements

EdFn 720	History and Philosophy Education.....	3
EdFn 745	Effective Teaching: Theory into Practice.....	3
EIEd 773	Elementary School Curriculum	3
	OR	
SeEd 740	Secondary School Curriculum	3
EPsy 740	Advanced Ed Psychology	3
EdFn 744	Research on School Improvement.....	3
EdFn 727	Group Processes	3
EdER 711	Educational Assessment..	3
EdFn 782	Seminar: Capstone.....	1

Elementary Education (EIEd) Course Offerings

- EIEd 581 Workshop**1-3 FSSu
Special areas in elementary education are comprehensively explored in an intensive time framework. Designed to increase specific skills and understanding in a current area.
- EIEd 773 Elementary School Curriculum**3 Su
A study of the nature and principles of curriculum development in the elementary schools. Processes of curriculum change, development and evaluation will be examined. Roles of teachers, administrators, students and the public in curriculum change will be studied.

Educational Psychology (EPsy) Course Offerings

- EPsy 526 Psychology of the Early Adolescent Learner**3 FSu
To guide students in the personal construction and application of an early adolescent development knowledge base. The learning environment of the early adolescent/ middle school student will be the context of study in this course. A theoretical base related to intellectual development, identity development, and social development will be used as a basis for exploring the benefits and needed changes in current educational settings of the 10-15 year old. Students will study the impact of various influences on the healthy and positive development of the learner. Students will apply the knowledge base to evaluate and critique personal experiences, issues, and programs designed for early adolescent learners. P, admitted to education program, junior standing (426) or graduate student (526).
- EPsy 550 Gifted and Talented**3
Overview of the Gifted and Talented field; explores the development of gifted/talented children as well as identification and curriculum adaptations for meeting the needs of these children; also focuses on issues surrounding the parents and families of gifted and talented as well as program development and evaluation.
- EPsy 552 Enhancing Creativity**3
Explores the various dimensions of creativity, including what it is, how it develops, how to teach creative students, and how to evaluate creative works. Emphasis will be on how to work with students who already exhibit significant creative abilities as well as how to foster creativity with all students.
- EPsy 630 Learning Disabilities**3
Examines the identification and assessment of learning disabilities in students. Provides a variety of teaching and learning strategies. Includes both federal and state laws, rules, and guidelines.
- EPsy 740 Advanced Ed Psychology**3 FSu
A study of theories of learning. The goal of the course is for each student to gain insight into their own beliefs about how learning occurs.
- EPsy 761 Testing Practicum: Intellectual Assessment**2
A psychological testing practicum that focuses on intellectual assessment. The student learns to select, administer, score, and interpret the Wechsler scales as well as write a psychological report. P, CHRD 736, CHRD 755, and consent of instructor.
- EPsy 762 Testing Practicum: Personality Assessment**3 FSu
A psychological testing practicum that focuses on objective personality assessment. The student learns to select, administer, score, and interpret the MMPI and the PIC as well as write a psychological report. P, CHRD 736, CHRD 755, and consent of instructor.
- EPsy 763 Testing Practicum: Projective Techniques**.....2
A psychological testing practicum that focuses on projective techniques. The student learns to select, administer, score, and interpret the TAT, H-T-P and various other projective techniques as well as write a psychological report. P, CHRD 736, CHRD 755, and consent of instructor.

Secondary Education (SeEd) Course Offerings

- SeEd 581 Workshop** 1-3 FSSu
Special areas in secondary education are comprehensively explored in an intensive time framework. Designed to increase specific skills and understanding in a current area.
- SeEd 590 Special Topics**1-3 FSSu
Advanced courses taught on demand covering such topics as questioning techniques, classroom management, systematic observations of teaching, school policy making, changing roles in education, computer applications, etc.

- SeEd 672 Motivation and Discipline**3 FSu
Theories of motivation and discipline and their application in the classroom. Stresses techniques for preventing discipline problems, with emphasis upon ways to provide success experiences and positive reinforcement for students. Emphasizes effective procedures of group management as applied to the classroom situation. The course is appropriate for teachers, counselors, and administrative personnel.
- SeEd 682 Seminar** 1-3 FSSu
Study in selected areas of education including special investigation, reports, and discussion.
- SeEd 691 Problems** 1-3 FSSu
Directed reading and research in selected individual education topics.
- SeEd 740 Secondary School Curriculum**..... 3 FSu
A study of the nature and principles of curriculum and curriculum development in the secondary schools. Process of curriculum change, development and evaluation will be examined. Roles of teachers, administrators, students and the public in curriculum change will be studied.
- SeEd 792 Research Problems in Education**2 FSSu
A problem is selected, analyzed, and reported in a form approved by the research advisor. *Required* of all graduate students in education qualifying for the degree under Option B. Can be *elected* under Option C if desired. P, consent.

Vocational Technical Education (VTE) Course Offerings

- VTE 573 Special Problems**1-4
Directed reading and research in selected individual topics.
- VTE 590 Special Topics** 1-3
Advanced courses taught on demand covering such topics as computer applications, state and federal rules and regulations, new curriculum development, etc.
- VTE 599 Methods of Teaching**2-3
- VTE 625 Development of Vocational Education Thought & Practice** 3 Su
Philosophy, origins, and development of vocational, technical and practical arts, education programs at adult, post-secondary, secondary, and pre-vocational levels. Current and emerging principles, practices, and issues are stressed.
- VTE 700 Technology in Vocational Education** 3
Presents technology-based alternatives to traditional standard delivery group instruction practices. Emphasizes computer-assisted and computer-managed instructional concepts, interactive video, interactive telecommunications, and other distance learning methods. Also addresses individualized learning approaches to education. P, Baccalaureate degree or consent. Computer background.
- VTE 710 Curriculum Design in Vocational Education** 3
This course addresses principles in developing vocational education curriculum research, development, implementation and evaluation at the secondary, post-secondary and adult levels. Concepts include: coordination and organization of vocational education curriculum; curriculum design models (including competency based education and applied academics); trends in state and national programs; long-range planning; articulation between secondary, post-secondary and 4-year programs.
- VTE 720 Entrepreneurship in Vocational Education** 3
This course is designed to help educators in all areas of vocational education to incorporate basic concepts of entrepreneurship into the curriculum. Topics include: small business plan, government regulations, site locations, record keeping, financing, legal consideration, business promotion, managing human resource, small business contributions to the economy and economic development, educational resources for entrepreneurship, placement of the entrepreneurship concept in vocational education programs and review of basic concepts related to entrepreneurship such as business ownership options and entrepreneur characteristics.
- VTE 730 Cooperative Education Coordination Techniques**3
This course emphasizes the organization and coordination of cooperative work experience in vocational education programs: agriculture, marketing education, health occupational, family consumer sciences education, business education and trade and industrial. Emphasizes strategies and techniques for coordinating classroom instruction with on-the-job work experience. Topics include: program organization, coordinator responsibilities, student selection, placement, advisory councils, public relations, training stations, training plans, legal aspects, and program and student evaluation.

Vocational Technical Education Additional Requirements*

- EPsy 740
Advanced Ed
Psychology.....3
OR
HDCF 614
Adult Development
Theory3
VTE 625
Development of Vocational
Education Thought and
Practice3
VTE 700
Technology in Vocational
Education.....3
VTE 710
Curriculum Design and
Evaluation.....3
VTE 730
Cooperative Education
Coordination
Techniques.....3

**Will not lead to Elementary/
Secondary Principal Certification*

Vocational/Technical Education Program Specialization*

- VTE 710
Curriculum Design in
Vocational Education.....3
VTE 731
Administration and
Supervision of Vocational
Education.....3
VTE 789
Internship2-6

**Will not lead to Elementary/
Secondary Principal Certification*

Department of Electrical Engineering

Department Head: Associate Professor Lewis F. Brown

Graduate Coordinator: Professor Robert G. Finch

For additional information contact:

Mailing address: SDSU Box 2220

Harding Hall — HH

WWW: <http://www.engineering.sdstate.edu/~eeweb/>

E-mail: finchr@mg.sdstate.edu

Phone: 605/688-4526

Fax: 605/688-5880

Program Description

The Department of Electrical Engineering offers a variety of courses which can be used to fulfill the requirements for the Master of Science in Engineering degree. The courses encompass a broad range of studies including signal/image processing, biomedical engineering, power engineering, materials science, communications, and RF electronics. Each of these areas of study is strengthened by ongoing research work conducted by the department's faculty. Additional courses are offered through EE 693 and EE 793 Special Topics in Electrical Engineering, and individualized instruction is available through EE 690 Special Electrical Problems.

Major Degrees Offered

Master of Science: Engineering, with coursework in Electrical Engineering

Doctor of Philosophy: Not available

Additional Admission Requirements

GRE: Required

TOEFL: Department requirement of 550

Refer to College of Engineering section, pages 51-53, for specific details.

Core Requirements

EE 615	Linear Systems Theory	3
EE 660	Electrical Properties of Materials	3
EE 670	Information and Signal Processing	3
EE 685	Microwave Theory	3
EE 700	Seminar	0
EE 701	Seminar	1

General Requirements begin on page 111 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

Electrical Engineering (EE) Course Offerings

EE 515 Microprocessor Controls	3
Analysis and Design of control systems based on microprocessors. Both linear and non-linear systems are considered. P, EE 347.	
EE 515A Microprocessor Controls Lab	0
EE 516 Passive and Active Filters	3
The analysis and design of passive and active filters for electrical signals. Topics include Butterworth, Chebyshev, Bessel-Thompson response characteristics, biquad and Sallen-Key circuits, frequency and impedance transformations, sensitivity, gyrators, negative impedance elements, leap-frog filters and switched capacitor filters. P, 321 or consent.	
EE 524 RF Electronics	3
Performance analysis and design methods for the functional blocks of radio frequency systems operating below the microwave bands. P, 321, 316.	
EE 533 Computer Analysis of Power Systems	3
Concepts used in formulating load flow and fault study problems for computer solution. P, 430, FORTRAN, or consent.	
EE 540 VLSI Circuit Design	2 F
An introduction to custom VLSI design in Complementary MOS (CMOS) technologies. Extensive use of computer software for VLSI circuit layout and simulation. P, 320, 345, 360.	

Graduate Faculty

Alfred S. Andrawis
Associate Professor
Ph.D., Virginia Polytechnic
Institute and State University,
1991
Communications,
Microprocessors

Madeleine Andrawis
Associate Professor
Ph.D., Virginia Polytechnic
Institute and State University,
1991
Electromagnetics, VLSI

Lewis F. Brown
Associate Professor
Ph.D., Iowa State University,
1988
Electronic Materials, Biomedical
Engineering

Virgil G. Ellerbruch
Professor
Ph.D., University of Wyoming,
1969
Circuits, Electronics

Robert G. Finch
Professor
Ph.D., Purdue University, 1974
Digital Signal Processing, Data
Compression

David W. Galipeau
Associate Professor
Ph.D., University of Maine, 1992
Electronic Devices, Materials,
Microsensors



Lewis F. Brown
Department Head
Electrical Engineering

Dennis Helder
Associate Professor
Ph.D., North Dakota State
University, 1991
Image and Signal Processing

Steven Hietpas
Associate Professor
Ph.D., Montana State
University, 1994
Controls, Power
Electronics/Systems

Duane E. Sander
Professor
Ph.D., Iowa State University,
1964
Biomedical Engineering,
Industrial Management



Robert G. Finch
Graduate Coordinator
Electrical Engineering

EE 540A VLSI Circuit Design Studio	1
EE 550 Biomedical Signal Processing	3
Methods and techniques for the analysis and processing of physiological signals. Off-line and real-time digital signal processing using time and frequency domain techniques. Emphasis on signal processing of electrocardiographic signals. P, 317.	
EE 554 Biomedical Instrumentation & Electrical Safety	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 health care facilities. P, 321.	
EE 560 Sensor Theory and Design	2 S
Introduction to the operation, design, testing and applications of modern sensors in use and under development. Signal conditioning and system integration are also reviewed. P, 360.	
EE 560A Sensor Theory and Design Lab	1
EE 570 Digital Communication Systems	3
Random signals, base-band transmissions, band-pass transmission, multiplexing, filtering, optimum detection, and information theory. P, EE 470 or consent.	
EE 571 Optical Fiber Communications	3
Theory and application of optical fibers and communication systems. Topics include fundamentals of optical fiber waveguides, electroluminescent sources, single-mode and multimode, propagation, coupling consideration, photo-detectors, signal degradation, fabrication and cabling, and transmission linked analysis. P, 316 or consent.	
EE 575 Digital Image Processing	3
Introduction to the fundamentals of digital image processing. Topics include image formation, transforms, enhancement, restoration, compression, and analysis. P, 317 or consent.	
EE 593 Special Topics in EE	1-3
Current topics in selected areas of engineering.	
EE 615 Linear Systems Theory	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. P, consent.	
EE 620 Advanced Digital Hardware	3
Topics may include a deeper examination of fundamentals of combinational and sequential circuits, design for testability, advanced function implementation, design with current programmable technologies.	
EE 660 Electrical Properties of Materials	3
Topics covered will be concerned with electromigration, diffusion, theory of rate processes, relaxation effects, phase transformations, physics of dielectrics, and other topics associated with the physics of failure in electrical circuit applications. P, Math 331, Phys 331, EE 360 or consent.	
EE 670 Information & Signal Processing	3
Foundations 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. P, EE 310, EE 316, or consent.	
EE 685 Microwave Theory	3
Transmission lines, resonant cavities, waveguide junctions, and components. Active devices, lasers, masers. P, EE 385.	
EE 690 Special Electrical Problems	1-3
P, consent.	
EE 693 Special Topics in Electrical Engineering	1-3
P, consent.	
EE 700-701 Seminar	0-1
EE 790 Thesis	1-7
EE 791 Thesis Sustaining	0
EE 792 Engineering Research or Design Paper	1-2 FSSu
EE 793 Special Topics in Electrical Engineering	1-3
EE 795 Engineering Research or Design Paper Sustaining	0
EE 797 Research	1-9 (repeatable P/F)

College of Engineering

Dean: Professor Duane E. Sander
Assistant Dean: Professor Virgil G. Ellerbruch

For additional information contact:

Mailing address: SDSU Box 2219
Crothers Engineering Hall — CEH
WWW: <http://www.engineering.sdstate.edu/>
E-mail: sanderd@mg.sdstate.edu
ellerbrv@mg.sdstate.edu

Phone: 605/688-4161
Fax: 605/688-5878

Master of Science in Engineering

The purpose of the Graduate Program in engineering is to provide the opportunity for an interdisciplinary education for engineers and scientists who will become leaders and experts in:

1. development and control of land, water and energy resources;
2. development and promotion of industrialization;
3. application of engineering principles to technological problems;
4. control of pollution and preservation of the environment.

Master of Science in Industrial Management

The purpose of this program is to provide the knowledge, skills, techniques, and analytical tools necessary to effectively manage and understand the financial and technical aspects of a complex operation. Participants in this program will be those who have recently assumed positions of management responsibility or those experienced managers who want to develop new management styles and techniques. Studies may concentrate in manufacturing areas such as quality control, inventory management, materials handling, reliability, testing or production equipment design. Human resource management, product planning and design, safety, liability and product promotion, management leadership styles, motivation, etc., could also be areas of special emphasis.

Doctor of Philosophy in Atmospheric, Environmental and Water Resources

The purpose of this program is to develop the student's capacity to make significant contributions in understanding the physical processes taking place in the atmosphere and at the land surface, and the complex issues associated with the development, use, and protection of precious water resources. The program is a joint effort with the South Dakota School of Mines and Technology (SDSM&T) in Rapid City, South Dakota, in the three fields of atmospheric, environmental, and water resources.

Major Degrees Offered

Master of Science: Engineering
Areas of course work concentration include:
Agricultural and Biosystems Engineering
Civil and Environmental Engineering
Computer Science
Electrical Engineering
Mechanical Engineering
Physics
Industrial Management
Doctor of Philosophy: Atmospheric, Environmental and Water Resources

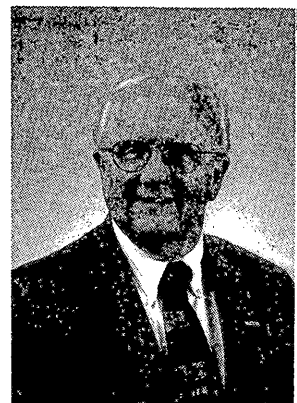
Key to Course Descriptions

Course Number & Name Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite



Duane E. Sander
Dean
College of Engineering

Key to Course Descriptions

Course Number & Name Credits
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 S = Spring
 Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Available Options for Graduate Degrees

Master of Science: Option A
 Option B
 Option C (*not available in Agricultural and Biosystems Engineering*)
Doctor of Philosophy: 60-Credit Plan
 90-Credit Plan

See pages 113 (M.S.) and 116 (Ph.D.) for descriptions of available options.

Core Requirements for M.S. in Engineering

The formal course offerings for Master of Science in Engineering are divided into four groups:

1. Primary core
2. Secondary core
3. Supporting courses
4. Thesis or design/research paper

The **primary core** shall consist of at least seven (7) credits of graduate level courses chosen from subjects within the following areas: mathematics, physics, statistics, operations research, instrumentation, computer science, and seminar. These courses shall be chosen after consultation with the departmental advisor to give the students an advanced technical background to pursue research and advanced design. See each particular department section concerning the primary core courses.

The **secondary core** courses should be taken from those listed on page 53. These courses shall be taken to broaden the student's interdisciplinary background or to strengthen the student's background and ability to pursue research or advanced design. A minimum of 15 hours of course work must be taken from the primary and secondary core. These courses shall be determined by consultation with a departmental advisor.

The **supporting courses** can be chosen from a number of departments and colleges at SDSU to allow the student further specialization within a primary professional area in engineering or further developments of interdisciplinary interests.

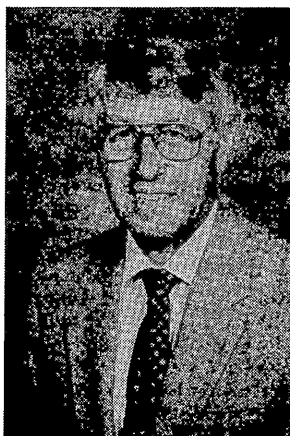
The **thesis** provides research experience and a degree of specialization. This experience will help the student apply information learned in course work to the solution of practical problems which are of importance to South Dakota and the world.

The **design or research paper** will provide experience in searching the literature, applying theory to practice, considering economic factors, and considering the consequences of alternate solutions.

Core Requirements for M.S.I.M.

This twelve (12) credit core consists of at least three (3) semester credit hours of work chosen from four (4) out of the five (5) following topic areas: Finance; Management; Manufacturing; Quantitative Analysis Tools and Management Information Systems.

General Requirements begin on page 111 (Master's Degree) and 116 (Ph.D.). Graduate students should consult with their advisor before registering for graduate work.



Virgil G. Ellerbruch
Assistant Dean
Coordinator of Master of
Science in Industrial
Management
College of Engineering

Secondary Core Courses

AE 512	Advanced Agricultural Tractors and Machines
AE 522	Bio-Environmental Engineering
AE 533	Advanced Irrigation Engineering
AE 554	Advanced Unit Operations in Food/Biomaterials Processing
AE 733	Ground Water Engineering in Ag
AE 772	Similitude
CEE 511	Bituminous Materials
CEE 524	Industrial Waste Treatment
CEE 536	Foundation Engineering
CEE 543	Matrix Analysis of Structures
CEE 547	Advanced Soils Engineering
CEE 552	Prestressed Concrete
CEE 632	Advanced Foundation Engineering
CEE 654	Advanced Design of Steel Structures
CEE 656	Advanced Reinforced Concrete Design
CEE 722	Hazardous/Toxic Waste Disposal
CEE 725	Biological Principles of Environmental Engineering
CEE 726	Physical/Chemical Principles in Environmental Engineering
CEE 728	Waste Water Treatment Plant Design
CEE 734	Surface Water Quality Modeling
CEE 765	Pavement Design
CEE 769	Design of Steel and Concrete Bridges
CSc 572	Artificial Intelligence
CSc 630	Principles of Data Base System Design
CSc 643	System Analysis and Design
CSc 705	Design and Analysis of Computer Algorithms
CSc 710	Structure and Design of Programming Languages
CSc 720	Theory of Computation
CSc 740	Management Information Systems
CSc 750	Recent Advances in Parallel Processing
CSc 770	Software Engineering Management
EE 615	Linear Systems Theory
EE 660	Electrical Properties of Materials
EE 670	Information and Signal Processing
EE 685	Microwave Theory
ME 514	Air Pollution Control
ME 527	Gas Dynamics I
ME 540	Computer-Aided Design
ME 603	Thermo-Fluid Energy Systems
ME 611	Advanced Heat Transfer I
ME 612	Convection Heat Transfer
ME 621	Viscous Flow I
ME 628	Gas Dynamics II
ME 631	Advanced Analytical Methods
ME 635	Modeling and Simulation
ME 639	Advanced Metallurgy
ME 641	Advanced Stress Analysis in Mechanical Design
ME 645	Advanced Machine Design
ME 662	Quality Control
ME 663	Topics in Reliability Engineering
ME 665	System Analysis
ME 667	Decision Theory
Phys 541	Science of Solids
Phys 743	Statistical Mechanics
Phys 751	Theoretical Mechanics

Key to Course Descriptions

Course Number & Name	Credits
	F = Fall
	S = Spring
	Su = Summer
	(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Department of English

Graduate Faculty

Bruce Brandt
Professor
Ph.D., Harvard University, 1977
English Renaissance Literature

Kathleen Danker
Associate Professor
Ph.D., University of Nebraska-
Lincoln, 1985
American, Native American
Literature

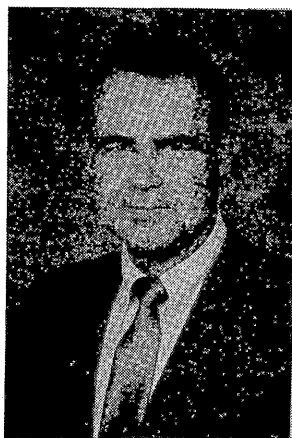
Kathleen Donovan
Assistant Professor
Ph.D., University of Arizona,
1994
Minority Literature

Margaret Duggan
Professor
Ph.D., Columbia University,
1972
English 18th Century Literature

David Evans
Professor and Writer in
Residence
M.F.A., University of Arkansas,
1976
Creative Writing

M.L. Flynn
Associate Professor
Ph.D., University of Missouri-
Columbia, 1985
English Romantic Literature

Michael Keller
Associate Professor
Ph.D., University of Illinois-
Chicago, 1993
Rhetoric



George West
Department Head
English

Department Head: Professor George West
Graduate Coordinator: Professor Mary Ryder

For additional information contact:

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Scobey Hall — SCO
E-mail: westg@mg.sdstate.edu

Phone: 605/688-5191

Program Description

To be admitted 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 department head. A full-time student can complete the course requirements in one academic year. Graduate assistants should be able to complete these requirements in four semesters. Students may choose either Option A (thesis) or Option C (non-thesis).

Under Option A (thesis), the candidate is required to present a minimum of 30 hours of graduate work in one of the emphases listed, including 6 hours of thesis (Engl 790); at least 20 hours must be taken in residence. The candidate will present a thesis which reports the results of research directed by a member of the faculty in English. In an oral examination the candidate will be required to defend the thesis and to demonstrate knowledge relative to course work in the chosen emphasis.

The two areas of study for the M.A. degree in English are:

Studies in Literature: 24 semester credits mostly in literature with at least two courses in English literature and two in American literature, plus six hours of thesis. This emphasis is well suited to those who plan to continue toward the Ph.D. degree in literature or to enter college or community college teaching.

Studies in Language and Rhetoric: 24 semester credits mostly in composition, rhetoric, criticism, and linguistics, plus six hours of thesis. This emphasis is well suited to those who plan to teach in a community college or to pursue a Ph.D. degree in rhetoric or linguistics.

Either the literature emphasis or the language/rhetoric emphasis would offer appropriate advanced work for continuing secondary school teachers.

Under Option C, the candidate is required to complete **36 hours** of coursework in English followed by successful completion of written examinations under the direction of the Graduate Coordinator.

Major Degrees Offered

Master of Arts: English
Doctor of Philosophy: Not available

Available Options for Graduate Degrees

Master of Arts: Option A
Option C

See page 113 for descriptions of available options.

Core Requirements

Engl 704, Introduction to Graduate Studies
Reading knowledge of a modern foreign language or two years of undergraduate credit on the transcript.

Additional Admission Requirements

GRE: Required
TOEFL: Department requirement of 600

General Requirements begin on page 111 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

English (Engl) Course Offerings

- Engl 522 Chaucer**3 (alternate years)
Major works of Chaucer, with some attention to his sources and his language.
- Engl 523 Old & Middle English Literature**3 (alternate years)
Emphasizing pre-Norman heroic and Christian literature, the work of Chaucer and his contemporaries, and folk literature such as the ballads.
- Engl 524 English Renaissance Literature**3 (alternate years)
Major writers of the 16th and early 17th centuries excluding Shakespeare.
- Engl 527 Advanced Shakespeare**3 (alternate years)
Selected plays of Shakespeare and significant Shakespearean criticism.
- Engl 528 Milton**3 (alternate years)
Selected works of Milton, particularly *Paradise Lost*.
- Engl 531 English 18th Century Literature**3 (alternate years)
Literature of the later 17th and 18th centuries (1660-1800), including major works and developments in literature and thought.
- Engl 532 English Romantic Literature**3 (alternate years)
English literature of the romantic movement (1789-1832).
- Engl 536 English Victorian Literature**3 (alternate years)
English literature of the Victorian Period (1840-1900).
- Engl 539 Modern English Literature to WWII**3 (alternate years)
English literature from 1900 to WWII.
- Engl 540 Contemporary English Literature**3 (alternate years)
English literature since WWII.
- Engl 553 American Renaissance Literature**3 (alternate years)
American literature of the mid nineteenth-century, including the Transcendentalists and Romantics.
- Engl 554 American Realist & Naturalist Literature**3 (alternate years)
American literature of the realist and naturalist movements of the late 19th and early 20th centuries.
- Engl 559 American Literature Between the Wars**3 (alternate years)
American literature of the modernist movement from 1917 to 1945.
- Engl 560 Contemporary American Literature**3 (alternate years)
American literature since WWII.
- Engl 585 Advanced Creative Writing**3 (alternate years)
A course allowing students with experience in creative writing to specialize in a particular genre (poetry, fiction, etc.). P, 383 or consent of instructor.
- Engl 704 Introduction to Graduate Studies**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 705 Seminar in Teaching Composition**3
Study of the methods, theories, and history of writing instruction. A course for English GTAs and required of them.
- Engl 707 Speech/English/Drama for Teachers**1-3
Workshop sessions in various areas of English: linguistics, composition or literature. This is a concentrated course; it may not be taken concurrently with any other course. P, teaching experience or consent.
- Engl 710 Seminar in Rhetoric**3
Intensive study of selected periods or topics in rhetoric, with special emphasis on their relation to issues in criticism and composition.
- Engl 724 Seminar in English Literature to 1660**3 (alternate years)
Intensive study of a selected type, theme, author, or period of English Literature from the beginning to 1660.

Karen A. Kildahl
Professor
Ph.D., University of Washington,
1974
English Contemporary Literature

Mary O'Connor
Associate Professor
Ph.D., University of California-
Los Angeles, 1992
English Contemporary Literature

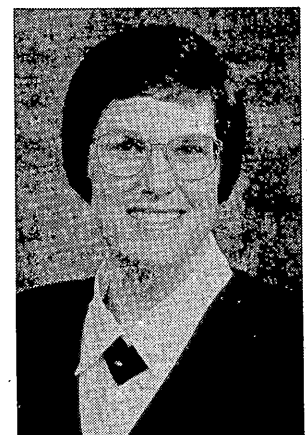
Mary Ryder
Professor
Ph.D., University of Illinois-
Urbana, 1987
American Literature

John Taylor
Professor
Ph.D., Indiana University-
Bloomington, 1973
Linguistics

George A. West
Professor
Ph.D., University of Nebraska-
Lincoln, 1972
English Medieval Literature

Louis P. Williams
Professor
Ph.D., University of Minnesota,
1976
American Literature

Charles Woodard
Distinguished Professor
Ph.D., University of Oklahoma-
Norman, 1975
American, Native American
Literature



Mary Ryder
Graduate Coordinator
English

Key to Course Descriptions

Course Number & Name

Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Engl 725 Seminar in English Literature since 16603 (alternate years)
Intensive study of a selected type, theme, author, or period of English literature since 1660.

Engl 728 Seminar in American Literature to 19003 (alternate years)
Intensive study of a selected type, theme, author, or period of American literature to 1900.

Engl 729 Seminar in American Literature since 19003 (alternate years)
Intensive study of a selected type, theme, author, or period of American literature since 1900.

Engl 742 Seminar in American Indian Literature3 (alternate years)
Intensive study of American Indian literature of the past or present with concentration on the Plains Indians.

Engl 755 Seminar in Minority Literature.....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 790 Thesis1-7 (Pass/Fail)

Engl 791 Thesis Sustaining0 (Pass/Fail)

Engl 795 Independent Research & Study1-3
Directed independent research. May be repeated to a total of 6 credits. P, consent of instructor and graduate advisor.

Engl 797 Special Topics in Composition & Literature1-3
Special Studies in various areas of writing, grammar, and literature. May be repeated to a total 6 credits. Given only with the permission of the Head of the Department of English.

Linguistics (Ling) Course Offerings

Ling 520 The New English3 (alternate years)
Diverse new theories and applications in English linguistics: lexicography, pragmatics, stylistics, socio-semantics, semiotics, and discourse theory.

Ling 543 Development of the English Language3 (alternate years)
Historical survey of phonology, grammar, syntax, and lexicon of English leading to an understanding of the present state of the language and future developments.

Ling 552 General Semantics3 (alternate years)
Relations between symbols; human behavior in reaction to symbols including unconscious attitudes, linguistics assumptions, and the objective systematization of language. Cross-listed with SpCm 552.

College of Family and Consumer Sciences

Dean: Professor Laurie Stenberg Nichols

For additional information contact:

Mailing address: SDSU Box 2275A

Nursing/Family/A&S — NFA

WWW: <http://www.abs.sdstate.edu/fcs/>

E-mail: nicholsl@mg.sdstate.edu

Phone: 605/688-6181

Fax: 605/688-4439

Program Description

The mission of the graduate program in Family and Consumer Sciences is to provide an in-depth, specialized program of study in Human Development, Consumer and Family Sciences or Nutrition and Food Science. Graduate courses are occasionally offered in Apparel Merchandising and Interior Design to support the FCS graduate program. The degree granted is the Master of Science in Family and Consumer Sciences. An understanding of the research process is developed throughout graduate courses and other research requirements.

Major Degrees Offered

Master of Science: Family and Consumer Sciences

Areas of study include:

Human Development, Consumer and Family Sciences

Nutrition and Food Science

Doctor of Philosophy: Not available

Available Options for Graduate Degrees

Master of Science: Option A

Option B

Option C

See page 113 for descriptions of available options.

Additional Admission Requirements

GRE: Not required

TOEFL: Department Requirements of 525

Core Requirements

FCS 700 Research Methods in Family and Consumer Science.....4

FCS 601 Seminar in Family and Consumer Science.....1

*FCS 790 Thesis in Family and Consumer Science.....5

OR

FCS 795 Individual Research and Study: Area of Concentration.....2

Additional Requirements

STAT 341 Statistical Methods I (or equivalent).....3

*STAT 541 Statistical Methods II is strongly recommended if student is completing Option A, Thesis.

General Requirements begin on page 111 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

Family and Consumer Sciences (FCS) Course Offerings

FCS 500 Practicum in Family Consumer Sciences2-6
Provides an opportunity for students to gain experience in a job or career related to their subject specialization. A learning plan is developed by the student and faculty member prior to the practicum. Consent of department and instructor is required.

Key to Course Descriptions

Course Number & Name Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite



*Laurie Stenberg Nichols
Dean
College of Family and
Consumer Sciences*

Key to Course Descriptions

Course Number & Name Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

FCS 592 Special Problems	1-3
Individual research and study in family and consumer sciences. May be repeated for a total of 3 credits. Consent of instructor and department is required.	
FCS 593 Current Topics	1-3
For students needing additional study of a topic or experience not offered as part of a regular class.	
FCS 601 Seminar in Family/Consumer Science.....	0.5-2
Reports and discussion of research in various areas of Family and Consumer Sciences. Required of graduate majors.	
FCS 611 History and Philosophy of Family/Consumer Science	2
Analysis of historical developments impacting on the profession and field of family and consumer sciences; critical investigation of various concepts of family and consumer sciences.	
FCS 700 Research Methods in Family/Consumer Science.....	4
Empirical methods of solving problems in Family and Consumer Sciences. Formulation of a research problem and plan. Evaluation of research reports. P, Stat course and consent.	
FCS 700A Research Methods in Family/Consumer Science Studio.....	0
FCS 761 Evaluation in Family/Consumer Science.....	2
Methods and techniques used in evaluating programs in family and consumer sciences. Cross-listed with VTE 761.	
FCS 790 Thesis	1-7
FCS 791 Thesis Sustaining	0
FCS 792 Special Problems	1-3
Individual research and study in Family and Consumer Sciences. P, consent of instructor.	
FCS 793 Current Topics	1-3
Study of contemporary issues and concerns in the Family and Consumer Sciences profession. Focus on topics related to FCS as an integrated profession and not included within the departments of the college. P, consent.	
FCS 794 Graduate Internship	1-7
FCS 795 Individual Research and Study	1-7
FCS 796 Individual Research Paper Sustaining	0
This course designation allows students to remain enrolled at SDSU while finishing reports associated with work completed for a Research Paper in Family and Consumer Sciences. P, FCS 795.	

Family and Consumer Sciences Education (FCSE) Course Offerings

FCSE 592 Special Problems	1-3
Individual research and study in home ec onomics education. May be repeated for a total of 4 credits. Consent of instructor and department is required.	
FCSE 593 Current Topics	1-3
For students needing additional study of a topic or experience not offered as part of a regular class.	
FCSE 601 Trends in Family and Consumer Sciences Education	2
FCSE 741 Supervision in Family and Consumer Sciences Education.....	2
FCSE 751 Curriculum in Family and Consumer Sciences Education	2
Cross-listed with VTE 751.	
FCSE 792 Special Problems	1-3
FCSE 793 Current Topics	1-3

Department of General Engineering and Technology

Acting Department Head: Professor Jerry Sorensen
Graduate Coordinator: Professor Virgil Ellerbruch

For additional information contact:

Mailing address: SDSU Box 507
 Wenona Hall — WEN
WWW: <http://www.engineering.sdstate.edu>
E-mail: ellerbrv@mg.sdstate.edu

Phone: 605/688-6417
Fax: 605/688-5041

Graduate Faculty

Jerry Sorensen
 Professor
 M.Ed., University of Illinois,
 1967
 Electronics Engineering
 Technology

Program Description

The Master of Science in Industrial Management degree is offered through the College of Engineering as an integrated but multidisciplinary program designed to provide knowledge, skills, techniques and analytical tools necessary to effectively manage and understand the human, financial and technical aspects of complex operations within today's manufacturing and industrial organizations.

Studies may concentrate in manufacturing areas such as quality control, inventory management, materials handling, reliability, testing or production equipment design. Human resource management, product planning and design, safety, liability and product promotion, management leadership styles, motivation, etc., could be areas of special emphasis.

Major Degrees Offered

Master of Science: Industrial Management
Doctor of Philosophy: Not available

Core Requirements

Required courses for the major area of study must contain at least three (3) semester credit hours of work from four (4) of the five (5) following topic areas:

- Finance
- Manufacturing
- Quantitative Analysis Tools
- Management
- Management Information Systems

Suggested courses for each specific core topic area:

Management

Soc	533	Leadership and Group Organization.....	3
GE	543	Project Management	3
Econ	653	Advanced Market Research	3
Econ	782	Personnel and Labor Relations	3
EdAd	715	Supervision.....	3
CHRD	716	Human Resource Management in Business and Industry	3

Finance

Econ	610	Financial Management.....	3
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Manufacturing

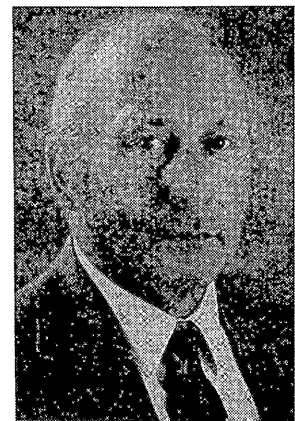
GE	525	Risk/Loss Control Management	2
GE	610	Human Factors in Engineering and Design.....	3
GE	620	Industrial Safety	3
Econ	660	Operations Management	3
ME	662	Quality Control	3
HSc	533	Industrial Health.....	3

Quantitative Analysis Tools

Stat	581	Statistics for the Physical Sciences.....	3
ME	661	Operations Research	3
Econ	705	Econometrics.....	3

Management Information Systems

CSc	572	Artificial Intelligence	3
CSc	576	Computer Graphics	3
CSc	630	Principles of Data Base System Design	3
CSc	710	Structure and Design of Programming Languages.....	3
CSc	740	Management Information Systems	3



Jerry Sorensen
 Acting Department Head
 General Engineering and
 Technology

Key to Course Descriptions

Course Number & Name Credits
 F = Fall
 S = Spring
 Su = Summer
 (Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Additional Admission Requirements

GRE: Not required
 TOEFL: Industrial Management requirement of 550
 Refer to College of Engineering section, pages 51-53, for specific details.

General Engineering (GE) Course Offerings

- GE 525 Risk/Loss Control Management2 F**
 Industrial accidents are caused by error-making human beings. Safety results achieved only through "safety engineering" and OSHA compliance are limited. Optimum levels of accident prevention can only be achieved through a coordinated program of both safety engineering and safety management. The focus on modern safety management includes: management's direction of safety, measuring safety performance, behavior modification, motivating safety performance, profiling, program organization, products safety, and safety in the adjunct fleet.
- GE 543 Project Management3 S**
 Topics to be covered will include: Organization, Management Functions, Time Management, Scheduling, Trade-Off Analysis, Planning, Information Systems, Cost Controls, and International PM.
- GE 592 Special Engineering Problems1-3 FSSu**
 This course will provide individual students the opportunity to pursue technical design problems, extensive literature searches, and individual study of new and timely subjects within the fields of Physical Science and Engineering. P, junior or senior standing in Engineering and consent of instructor.
- GE 593 Special Topics in General Engineering1-3 FSSu**
 Timely topics relating to Physical Science and Engineering. P, junior or senior standing in Engineering and consent of instructor.
- GE 601 Technical Studies in Industrial Management3 F**
 An overview of the technical aspects of Industrial Management. Limits and derivatives of algebraic functions, definite integrals. Statistical methods and probability relating to engineering applications. Spread sheets and data base management systems as applied to the technical operating aspects in an industrial setting. P, consent of instructor.
- GE 603 Designing the Workplace for Production3**
 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.
- GE 610 Human Factors in Engineering and Design3**
 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. P, Math 102, junior standing or consent of instructor.
- GE 620 Industrial Safety3**
 Safety requirements and standards common to all industries and processes are reviewed. Attention is focused on legal safety requirements, particularly the Occupational Safety and Health Administration (OSHA) Standards. Emphasis is placed on how to recognize, evaluate, and control safety hazards associated with common industrial methods and technologies.
- GE 692 Special Problems in Engineering1-3 FS**
 Problems in engineering of mutual interest to graduate students and faculty. P, consent.
- GE 693 Special Topics in Engineering1-3 FS**
 Current topics in selected engineering areas. P, consent.
- GE 790 Thesis1-7**
- GE 791 Thesis Sustaining0**
- GE 792 Research Report/Design Paper1-2**
- GE 793 Special Topics in Engineering1-3**
- GE 795 Research or Design Paper Sustaining0**
- GE 797 Research1-9**



Virgil Ellerbruch
 Graduate Coordinator
 General Engineering and
 Technology

Department of Geography

Department Head: Professor Roger Sandness
Graduate Coordinator: Distinguished Professor Charles F. Gritzner

For additional information contact:

Mailing address: SDSU Box 504
Scobey Hall — SCO
WWW: <http://www.geography.sdstate.edu/>
E-mail: sandnesr@mg.sdstate.edu

Phone: 605/688-4511
Fax: 605/688-4030

Program Description

The Department of Geography 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 systems, government service, research, business and teaching. The program is also designed to provide students with the training 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 by courses outside the department. Areas outside the department beneficial to the student include History, Economics, Education, Biology, Engineering, Plant Science, Sociology, Wildlife and Fisheries, and others.

Special programs are offered for students interested in unique educational experiences; among them are interdisciplinary minors in Planning and Geographic Information Systems. Other special programs can be taken through educational experiences provided for in the Alternatives and Options Programs of the College of Arts and Science, and a cooperative program with the EROS Data Center. Internships generally are available with planning districts, governmental agencies, business, and industry.

Major Degrees Offered

Master of Science: Geography
Doctor of Philosophy: Not available

Available Options for Graduate Degrees

Master of Science: Option A
Option B

See page 113 for descriptions of available options.

Core Requirements

Students are expected to take the following courses:

Geog 710	Evolution of Geographic Thought	3
Geog 714	Research and Writing	3

Geographic Information Systems Core Requirements

Geog 506	Seminar in Systematic Geography: (Topical)	3
Geog 700	Seminar in Geography: (Topical)	3
CSc 630	Principles of Data Base System Design	3

Graduate Faculty

Donald J. Berg
Associate Professor
Ph.D., University of California,
Berkeley, 1976
Physical and Human Geography

Charles F. Gritzner
Distinguished Professor
Ph.D., Louisiana State
University, 1969
Cultural Geography

Janet Gritzner
Professor
Ph.D., Louisiana State
University, 1978
Geographic Information System

Edward P. Hogan
Professor
Ph.D., St. Louis University, 1969
Social Geography

Darrell Napton
Professor
Ph.D., University of Minnesota,
1987
Environmental Geography

Lee A. Ophem
Professor
Ph.D., St. Louis University, 1971
Physical Geography

Roger Sandness
Professor
Ph.D., University of Iowa, 1986
Quantitative and Physical
Geography



Roger Sandness
Department Head
Geography

Key to Course Descriptions

Course Number & Name Credits
 F = Fall
 S = Spring
 Su = Summer
 (Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Additional Admission Requirements

GRE: Not required
 TOEFL: Department requirement of 525

General Requirements begin on page 111 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

Geography (Geog) Course Offerings

Geog 506 Seminar in Systematic Geography: (Topical)1-4 FS
 Will deal with one or more aspects of human, economic, physical, population and historical geography or techniques. May be repeated for credit. The specific topic to be studied will change each semester.

Geog 610 Topics in Geography Education1-4
 Studies in selected fields of geography with emphasis on elementary and secondary classroom applications. Course may be repeated for credit.

Geog 620 Advanced Regional Studies in Geography: (Topical)1-4 FS
 Selected topics in the regional geography of continents, nations, or states. May be repeated for credit. Specific topic to be studied will change each semester.

Geog 700 Seminar in Geography: (Topical)1-4
 Studies in selected geography fields. This course may be repeated for credit. The specific topic to be studied will change each semester.

Geog 710 Evolution of Geographic Thought3 (every third semester)
 The history and development of geography and its theories, schools of thought, and current ideas.

Geog 712 Introduction to Graduate Study2 (every third semester)
 Introduction to the nature, scope, and applications of geography as a discipline and to numerous practical concerns including geographic literature, schools of thought, and vocational opportunities.

Geog 714 Research and Writing3 S (alternate semesters, alternate years)
 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 732 Geomorphology3
 Basic concepts of origin and development of land forms. Basic principles underlying the study of land forms; emphasis on processes shaping the natural landscape. Study of erosional and depositional processes operating at the earth's surface and land form resulting from these processes.

Geog 734 Climatology3 S (odd years)
 Consideration of the exchange of energy and moisture and significance in human's utilization of the earth's surface. Climactic history of the earth. Hypotheses on climactic change. Inadvertent modification of climate.

Geog 742 Cultural Geography3
 Consideration of culture in a geographic context including such concepts as cultural origins and diffusion, ecology, landscapes, and regions.

Geog 752 Urban Geography3 (every third semester)
 Theoretical explanations of urban spatial patterns. Examination and application of contemporary theories, concepts, and methods to study urban geography problems. Theoretical explanations of urban spatial structure and spatial organization.

Geog 765 Advanced Studies in Land Utilization: (Topical)1-4 F (even years)
 The physical and cultural factors affecting the nature and pattern of land utilization. Local and/or regional utilization, planning, and problems will be studied in detail in relation to the topic.

Geog 770 Advanced Geographic Techniques: (Topical)1-4 FS
 Selected geographic techniques such as cartography, aerial photograph interpretation, remote sensing, information systems and map interpretation.

Geog 785 Quantitative Methods in Geography3 F
 Descriptive and Inferential Statistics will be studied in this course. The traditional regression and correlation routines will be addressed as well as probabilities. Statistical routines on the mainframe computer will be utilized in problem solving involving real-world geographic-sociological situations.



Charles F. Gritzner
 Graduate Coordinator
 Geography

Geog 786 Geographic Information Systems	3 S
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 790 Thesis	1-7
Geog 791 Thesis (Sustaining)	0
Geog 792 Special Problems in Geography: (Topical)	1-4
Selected studies in geography to meet the needs of advanced students. Written permission of department head.	
Geog 793 Internship	1-3
Internship activity which promises to contribute significantly to the education of the student. Student will intern with various agencies such as the EROS Data Center, various planning agencies, etc. P, availability of internship openings.	
Geog 794 Research Paper in Geography	1-3
P, written permission of department head.	

Planning (Plan) Course Offerings

Plan 571 Principles of State, Regional and Community Planning	3 F
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. P, Enrollment within a minor in planning at the Master's level or consent.	
Plan 572 Techniques of State, Regional and Community Planning.....	3 S
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. P, 691.	

See also specialized courses in planning within departmental listings in Economics; Education; Engineering; Geography; Horticulture, Forestry, Landscape and Parks; Political Science; and Sociology.

Key to Course Descriptions

Course Number & Name	Credits
	F = Fall
	S = Spring
	Su = Summer
	(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Gerontology

Key to Course Descriptions

Course Number & Name Credits
 F = Fall
 S = Spring
 Su = Summer
 (Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite



Laurie Stenberg Nichols
 Dean
 College of Family and
 Consumer Sciences



Renee Oscarson
 Coordinator
 Gerontology

Dean of Family and Consumer Sciences: Professor Laurie Stenberg Nichols
Coordinator: Assistant Professor Renee Oscarson

For additional information contact:

Mailing address: SDSU Box 2275A

Phone: 605/688-6418

Nursing/Family/A&S — NFA

Fax: 605/688-4888

WWW: <http://www.abs.sdstate.edu/fcs/hdcf/gerontol.htm>

E-mail: oscarson@ur.sdstate.edu

Program Description

An interdisciplinary gerontology minor is available which requires a total of 10 credit hours. The 10 credits include 6 credits selected from the gerontology core listing plus 4 additional credits selected from courses having content related to elderly persons or the study of human beings. The plan of study for the gerontology minor must be approved by the gerontology coordinator. Seminars, current topics or special problems topics and credits vary by semester and must be approved by the Gerontology Committee.

Major Degrees Offered

Master of Science: Not available

Doctor of Philosophy: Not available

Minors offered: Gerontology

Core Requirements

Bio 525	Biology of Aging	3
HDCF 614	Adult Development	3
NFS 761	Nutrition of the Aged	3
Nurs 655	Health and the Older Adult	2
CHRD 571	Gerontology Issues in Counseling	3
AHEd 710	Adult Curriculum and Instruction	3

OR

AHEd 711	Organization and Administration of Adult Education	3
GERO 592	Independent Study in Gerontology	1-3
GERO 593	Current Topics in Gerontology	1-3

Gerontology (Gero) Course Offerings

Gero 592 Independent Study in Gerontology1-3 FSSu
 Individual study for quality students. May be repeated for a total of 4 credits. P, consent of instructor.

Gero 593 Current Topics in Gerontology1-3
 Selected topics of current interest and concern in gerontology.

Department of Health, Physical Education and Recreation

Department Head: Professor Fred Oien
Graduate Coordinator: Associate Professor Patty Hacker

For additional information contact:

Mailing address: SDSU Box 2820
Health/Physical Ed./Rec.Ctr. — PEC
WWW: <http://www.sdstate.edu/hp09/http/hper/hperhp.html>
E-mail: hackerp@ur.sdstate.edu

Phone: 605/688-5625
Fax: 605/688-5999

Program Description

The HPER Graduate Program exists to provide post-baccalaureate study opportunities leading to a Master of Science degree in Health, Physical Education, and Recreation. The department philosophy is that graduate study at the master's level should be somewhat general with all students taking a common core of courses. However, in keeping with the guidelines of our national accrediting agencies (the National Association for Sport and Physical Education, and the National Council for the Accreditation of Teacher Education), students are afforded the opportunity to concentrate their studies in one of two areas of emphasis: 1) sports science or 2) sport pedagogy (administration/ management or teaching/coaching). Our goal is to provide students with knowledge and experiences which will make them better professionals or which will prepare them for advanced study at the doctoral level.

Major Degrees Offered

Master of Science: Health, Physical Education and Recreation
Doctor of Philosophy: Not available

Available Options for Graduate Degrees

Master of Science: Option A
Option B
Option C

See page 113 for descriptions of available options.

Core Requirements

HPER 783	Research Methods in HPER.....	3
STAT 541	Statistical Methods II	3
HPER 780	Seminar in HPER I and II	2

Additional Admission Requirements

GRE: Required—Department requirement of 900 combined scores (verbal & quantitative)
TOEFL: Department requirement of 525

General Requirements begin on page 111 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

Health, Physical Education and Recreation (HPER) Course Offerings

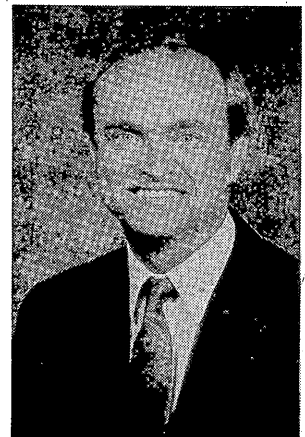
- HPER 581 Workshops in HPER1-3**
Lectures, conferences, and outside assignments to increase understanding of a specific area.
- HPER 682 Seminar in HPER..... 2 FSSu**
Courses designed to address current topics or issues in the discipline.
- HPER 742 Psychological Aspects of Sport and Exercise3 F (alternate years)**
Psychological theories and principles applied to physical education, sport, and exercise. Interpretation and analysis of human behavior. Topics include personality, arousal and anxiety, motivation, self-efficacy and self-esteem, attentional focus, audience effects, aggression, leadership, as well as intervention strategies. P, consent.

Graduate Faculty

James Booher
Professor
Ph.D., University of Utah, 1976
Athletic Training, Sports
Medicine, Health

Patty Hacker
Associate Professor
Ph.D., University of Wyoming,
1988
Teacher Education, Coaching,
Research

Fred Oien
Professor
Ed.D., University of
Massachusetts-Amherst, 1979
Athletic Administration, Teacher
Education



Fred Oien
Department Head
Health, Physical Education
and Recreation

Key to Course Descriptions

Course Number & Name Credits
 F = Fall
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 (Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

- HPER 745 Sports Medicine** 2 SSu (alternate years)
 A review of the basic fundamentals of athletic training and exposure to recent developments in the sports medicine field. P, undergraduate Prevention and Care of Athletic Injuries or consent.
- HPER 760 Motor Learning & Development** 3 FS (alternate years)
 The study of human behavior as it relates to the learning and performance of motor skills. The understanding of motor learning as an essential foundation underlying the development of successful instruction and training strategies critical for skill acquisition. Laboratory work. P, consent.
- HPER 765 Athlete Profiling**..... 2 S (alternate years)
 Application of current assessment techniques to understand the physiological, psychological, sociological, and motor dimensions of elite athletes. Case study approach. Laboratory work.
- HPER 780 Seminar in HPER**1 FS (Pass/Fail)
 Two credits are required. Exploration of current research in HPER. Development of research ideas/proposals. Sharing and critiquing of proposals and findings. Development of critical thinking skills will be emphasized.
- HPER 783 Research Methods in HPER**..... 3 F
 By studying prevalent quantitative and qualitative research techniques, students will become critical consumers and potential producers of research relevant to Health, Physical Education and Recreation. Computer work, development of problems and hypotheses, writing professional papers. P, consent.
- HPER 790 Thesis**1-5 FSSu
- HPER 791 Thesis Sustaining**..... 0 FSSu
- HPER 792 Individual Research & Study in HPER**1-3 FSSu
 Directed independent research. May be taken for up to 3 credits. P/F grading, for Plan B students.
- HPER 793 Special Problems in HPER**1-3 FSSu
 Opportunity for students to investigate specific problems or areas not covered by coursework. Written report and oral examination required. P, consent.

Physical Education (PE) Course Offerings

- PE 550 Clinical Exercise Physiology**2 SSu (alternate years)
 This course is designed to provide the clinical exercise physiology student with assessment and prescription techniques appropriate to special populations. P, consent.
- PE 730 Physical Education Teacher Education**3 SSu (alternate years)
 Readings, lectures, and discussions designed to analyze the process of preparing physical educators for the teaching profession. Includes discussion of external influences, problems and possible solutions, socialization and effective teaching in the field. P, consent.
- PE 732 Analysis and Strategies of Teaching and Supervising Physical Education and Sport**3 SSu (alternate years)
 Study and application of theoretical and practical knowledge of effective teaching/coaching, designed to improve teaching and coaching in physical education, including techniques of analysis and supervision. P, consent.
- PE 750 Applied Exercise Physiology**3 F
 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. P, undergraduate Exercise Physiology.
- PE 751 Laboratory Techniques in Exercise Physiology**2 (every 4th semester; alternate years)
- PE 751A Laboratory Techniques in Exercise Physiology Lab**0
- PE 770 Advanced Administration of Interscholastic Athletics**2 SSu (alternate years)
 Budgets, public relations problems, subsidization, objectives of athletics, staff organization, control of athletics, both interscholastic and intercollegiate, and general policies of athletics. P, consent.
- PE 771 Current Trends in HPER & Athletics** 3 SSu (alternate years)
 The study of trends in athletics that affect the performance, safety, and attitude of athletes; administrative practices; and public perception and support of athletics.
- PE 772 Financial Aspects of Sports Management**..... 2 F (alternate years)
 A seminar-type course that gives the student interested in sports administration an opportunity to take an in-depth look into various areas of financial management. Examples of some of these areas, but not a complete list, are: Fund Raising, Guarantees, Budgeting, Scholarship Programs, TV and Radio Receipts, and Marketing.



*Patty Hacker
 Graduate Coordinator
 Health, Physical Education
 and Recreation*

Department of History

Department Head: Professor Rodney Bell
Graduate Coordinator: Professor Rodney Bell

For additional information contact:

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Scobey Hall — SCO

E-mail: BellR@mgmail.sdstate.edu

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Fax:: 605/688-6754

Major Degrees Offered

Master of Science: Not available

Doctor of Philosophy: Not available

Minors offered: History

History (Hist) Course Offerings

Hist 560 Topics in History1-4

An intensive examination of significant historical themes, issues, or problems.

Hist 592 Special Problems in History1-3 FSSu

Selected studies for advanced students. Department consent required.

Graduate Faculty

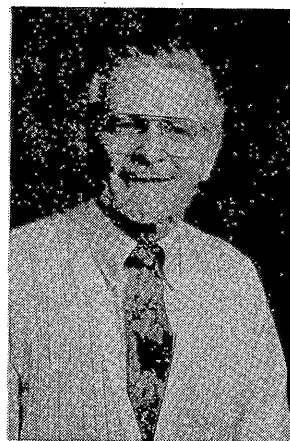
Rodney Bell
Professor
Ph.D., University of Michigan-
Ann Arbor, 1975
Ancient, Medieval

David Crain
Professor
Ph.D., Indiana University-
Bloomington, 1972
Latin America, Germany

Michael Function
Professor
Ph.D., Loyola University-
Chicago, 1973
England, Immigration

John Miller
Professor
Ph.D., University of Wisconsin-
Madison, 1973
Recent United States

Jerry Sweeney
Professor
Ph.D., Kent State University,
1970
Diplomatic, Military



Rodney Bell
Department Head
Graduate Coordinator
History

Department of Human Development, Consumer and Family Sciences

Graduate Faculty

DeAnna Gilkerson
Associate Professor
Ph.D., Iowa State University,
1993
Early Childhood Education

Linda Good
Associate Professor
Ph.D., University of Minnesota,
1990
Early Childhood Education

Mary Kay Helling
Associate Professor
Ph.D., Purdue University, 1992
Early Childhood Education,
Family Support, Human
Development

Laurie Stenberg Nichols
Professor
Ph.D., The Ohio State
University, 1988
Family and Consumer Sciences
Education, Family Studies



Mary Kay Helling
Department Head
Human Development,
Consumer and Family
Sciences

Department Head: Associate Professor Mary Kay Helling
Graduate Coordinator: Associate Professor Mary Kay Helling

For additional information contact:

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Nursing/Family/A&S — NFA
WWW: <http://www.abs.sdstate.edu/fcs/hdcf/index.htm>
E-mail: GroomS@ur.sdstate.edu

Phone: 605/688-6418
Fax: 605/688-4888

Program Description

Courses offered in Human Development, Consumer and Family Sciences support the Master of Science in Family and Consumer Sciences degree program. Students may emphasize Early Childhood Education, Family and Consumer Sciences Education or Human Development and Family Studies as their area of emphasis or a general departmental emphasis.

Major Degrees Offered

Master of Science: Family and Consumer Sciences, with an area of study in Human Development, Consumer and Family Sciences
Doctor of Philosophy: Not available

Additional Admission Requirements

The Department requires all applicants to submit a statement indicating professional goals and how completion of a master's degree will assist in meeting these goals. This statement will be used for two purposes: first, to assess the fit between the student's educational/career goals and the academic program; and second, to assess the students' written communication skills. Refer to College of Family and Consumer Sciences section, pages 57-58, for specific details.

General Requirements begin on page 111 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

Consumer Affairs (CA) Course Offerings

CA 593 Current Topics1-3
For students needing additional study of a topic or experience not offered as part of a regular class.
CA 792 Special Problems1-3
CA 793 Current Topics1-3

Human Development, Consumer and Family Sciences (HDCF) Course Offerings

HDCF 592 Special Problems1-3 FSSu
Individual study for quality students. P, consent of instructor.
HDCF 593 Current Topics 1-3
Study of current issues and concerns in human development, family therapy, and family studies. Focus on topics not included in other graduate courses in the department. P, consent. Can be repeated.
HDCF 614 Adult Development3 F
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.

HDCF 665 Parent Education: Theory and Issues..... 3 (alternate years)
 Study of various approaches in parent education to become acquainted with programs and resources available, and to apply the knowledge in working with parents. Will involve the analysis of goals, trends, methods, and models of parent involvement and parent education.

HDCF 676 Early Childhood Education, Administration and Practicum1-4
 Field experience with early childhood education (teaching, supervising, and administration). P, HDCF 327, 361, 362, 364, departmental consent.

HDCF 702 Seminar 1-3 (on sufficient demand)
 Report and discussions of current literature, including research methodology in human development, family studies, and family therapy. Maximum of 4 credits may be applied to advanced degree. P, consent.

HDCF 711 Child Development Theory and Application3 Su
 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.

HDCF 742 Family Relations 3 F
 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 family problems are also studied.

HDCF 753 Family Public Policy 3 S (alternate years)
 The impact of the professional in shaping family policy and effecting positive family policy formation; study of family policy priority issues and alternative strategies.

HDCF 777 Child and Family Counseling3Su (alternate years)
 Theory and philosophy of counseling and therapy with children and families using a family systems approach. P, instructor consent.

HDCF 792 Special Problems 1-3
 Individual study for qualified students. P, consent.

HDCF 793 Current Topics 1-3
 Study of current issues and concerns in human development, family therapy, and family studies. Focus on topics not included in other graduate courses in the department. P, consent. Can be repeated.

Key to Course Descriptions

Course Number & Name Credits
 F = Fall
 S = Spring
 Su = Summer
 (Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Department of Journalism and Mass Communication

Graduate Faculty

Richard W. Lee
Professor
Ph.D., University of Iowa, 1972
Media Law, Media History,
Community Newspapers

Lyle D. Olson
Professor
Ed.D., Oklahoma State
University, 1988
Scholastic Press, Technical
Writing, Graphics and Design

Department Head: Professor Richard W. Lee
Graduate Coordinator: Professor Lyle D. Olson

For additional information contact:

Mailing address: SDSU Box 2235

Printing and Journalism — PJ

E-mail: leer@ur.sdstate.edu

olson/@ur.sdstate.edu

Phone: 605/688-4171

Fax: 605/688-5034

Program Description

The graduate major in journalism is designed to provide for 1) professional journalists who wish to broaden their education in communications and social sciences; 2) for individuals with undergraduate degrees in non-journalism specialties who wish to develop their knowledge in mass communication.

Major Degrees Offered

Master of Science: Communication Studies and Journalism
(see also Communication Studies and Theatre)

Doctor of Philosophy: Not available

Available Options for Graduate Degrees

Master of Science: Option A: Communication Studies
OR
Journalism

Option Descriptions

Communication Studies — Designed to provide advanced studies in the areas of public address, rhetorical theory, radio/television studies, and theatre arts. This option provides further professional preparation and competencies in the area of communication.

Journalism — Designed to provide for professional journalists who wish to broaden their education in communications and social sciences; and for individuals with undergraduate degrees in non-journalism specialties who wish to develop their knowledge in mass communication.

See page 113 for descriptions of available options.

Core Requirements

MCom 792 Research Methods in Communications

GCom 605 Current Approaches to Communication

SPCM 700 Instructional Methods in Communication (for teaching assistants)

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 550

General Requirements begin on page 111 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

General Communication (GCom) Course Offerings

GCom 605 Current Approaches to Communication3 S
Major theories of communication, including media and interpersonal communication.

GCom 793 Special Topics in Communication1-3 FSSu



Richard W. Lee
Department Head
Journalism and Mass
Communication

Journalism and Mass Communication (MCom) Course Offerings

MCom 505 Theories of Communications	3 S
Major theories of communication, including media and interpersonal communication.	
MCom 506 Public Opinion and Propaganda	3 S
Formation and measurement of public opinion; role of the media; propaganda techniques, agencies, theories. P, Senior standing, consent.	
MCom 514 Mass Communication Law	3 FS
Libel, privacy, news gathering rights, and press freedom in America.	
MCom 515 Editorial Writing & Policy	2 F
Opinion function of periodicals; great editorials and editorial writers; writing editorials; shaping policy.	
MCom 516 Mass Media in Society	3 S
Rights and responsibilities of the press; relation of the media to individuals and society; role of media in a free society.	
MCom 517 History of Journalism	3 F
Development, impact, and importance of individual journalists and media in U.S.	
MCom 518 Women in Media	3 F
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.	
MCom 537 Educational Radio & TV	3
Preparation, presentation of educational and instructional materials for radio, TV, and film and classroom use. Cross-listed with RTVF 437-537.	
MCom 575 Public Relations	3 S
Interpreting institutional and industrial policies and programs to the public.	
MCom 576 International and Ethnic Advertising	3
This course develops an understanding of international and ethnic advertising and marketing. Students gain experience in marketing decisions that reflect an understanding of intercultural and international markets and explore the social and ethical issues in such marketing.	
MCom 581 Media Administration & Management	3 F
Business practices, newspaper, magazine, and broadcast management.	
MCom 653 Workshop in Communications	1-4 Su
Understanding and using media in the classroom; supervising school publications. For high school or college instructors and publication advisors.	
MCom 751 Special Problems in Communications	1-3 FSSu
Individual research and study in communication. May be repeated to a total of four credits in problems courses. P, consent.	
MCom 762 Special Problems in Radio, TV or Film	1-2
MCom 790 Thesis	1-7 FSSu
MCom 791 Thesis Sustaining	0 FSSu
MCom 792 Research Methods in Communications	3 S
Application of social science research methods and techniques to the study of interpersonal and mass communication. Elementary statistical procedures.	

Key to Course Descriptions

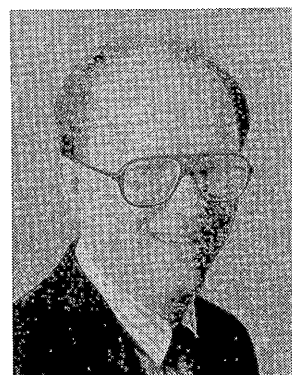
Course Number & Name

Credits
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(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite



*Lyle D. Olson
Graduate Coordinator
Journalism and Mass
Communication*

Department of Mathematics and Statistics

Graduate Faculty

Ross Kindermann
 Professor
 Ph.D., University of Illinois-
 Urbana, 1978
 Probability, Stochastic Processes

Robert J. Lacher
 Professor
 D.A., University of Northern
 Colorado, 1971
 Topology, Statistics, Quality

Jan Vandaveer
 Professor
 Ph.D., University of North
 Dakota, 1976
 Measurement and Statistics

Kenneth Yocom
 Professor
 Ph.D., University of Wyoming,
 1972
 Number Theory, Abstract
 Algebra



Kenneth Yocom
 Department Head
 Mathematics and Statistics

Department Head: Professor Kenneth Yocom
Graduate Coordinator: Professor Robert Lacher

For additional information contact:

Mailing address: SDSU Box 2220
 Harding Hall— HH
WWW: <http://www.sdstate.edu/ma17http/mathstat.htm>
E-mail: lacherr@mg.sdstate.edu

Phone: 605/688-6196
Fax: 605/688-5880

Program Description

The Master of Science in Mathematics prepares graduates for positions in industry, teaching, or doctoral programs.

Major Degrees Offered

Master of Science: Mathematics
Doctor of Philosophy: Not available

Available Options for Graduate Degrees

Master of Science: Option A
 Option B
 Option C

See page 113 for descriptions of available options.

Core Requirements

All M.S. students must complete at least two of the following sequences:

Math 521, 522	Advanced Calculus I, II.....	3, 3
Math 571, 672	Numerical Analysis I, II.....	3, 3
Math 716, 717	Theory of Algebraic Structures I, II.....	3, 3
Math 726, 727	Real Variables I, II.....	3, 3
Math 728, 729	Complex Variables I, II.....	3, 3

Additional Admission Requirements

GRE: Not required
 TOEFL: Department requirement of 550

General Requirements begin on page 111 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

Mathematics (Math) Course Offerings

Math 521 Advanced Calculus I3 F (on demand)
 Elementary topology of \mathbb{R} and \mathbb{R}^n , continuity, differentiation and integration in \mathbb{R} and \mathbb{R}^n , infinite series of real numbers, uniform convergence. P, Math 225.

Math 522 Advanced Calculus II3 S (on demand)
 Power series, improper integrals, calculus of transformations from \mathbb{R}^n to \mathbb{R}^n , differential forms, vector analysis. P, Math 521.

Math 561 Intro to Topology3 S (on demand)
 A first course in point-set topology, covering the elementary concepts of metric and general topological spaces; closure, interior, boundary, connectedness, compactness, and separation. Special attention is given to continuity of functions.

Math 566 Projective Geometry3 S (on demand)
 A synthetic and/or analytic approach to geometric properties invariant under projective transformations: Theorems of Desargues, Pascal, Brianchon and applications. P, Math 224 or consent of instructor.

Math 571 Numerical Analysis	3 FSu
A survey of numerical methods including methods of interpolation, curve fitting, integration, solving equations (including differential equations with initial or boundary values). Errors of the methods are analyzed and the digital computer is used to apply the methods. P, Math 321.	
Math 593 Special Topics	1-3
Topics of current interest not included in regular course offerings.	
Math 672 Numerical Analysis	3 S
Continuation of Math 571 including approximation theory, matrix iterative methods and boundary value problems for ordinary and partial differential equations. P, Math 571.	
Math 700 Seminar	1 FS (Pass/Fail)
Current Topics in Mathematical Research. Pass/Fail grading.	
Math 716 Theory of Algebraic Structures I	3 F (alternate years)
Abelian Groups, homomorphisms, permutation groups, Sylow theorems, group representations and characters. P, Math 313.	
Math 717 Theory of Algebraic Structures II	3 S (alternate years)
Rings, Modules, Fields, Galois theory, solvable groups, commutative rings and modules. P, Math 716.	
Math 726 Real Variables I	3 F (alternate years)
Set Theory, The Real Number System, Theory of Functions of a Real Variable, Lebesgue Measure, the Lebesgue Integral, Differentiation and Integration, Metric Spaces, Topological Spaces, Compact Spaces, Banach Spaces, Measure and Integration, The Daniell Integral, Topology, and Mappings of Measure Spaces.	
Math 727 Real Variables II	3 S (alternate years)
Math 728 Complex Variables I	3 F
Algebra of complex numbers, classifications of functions, differentiation, integration, mapping, transformations, infinite series. P, Math 225.	
Math 729 Complex Variables II	3 S
Continuation of Math 728, Laurent series, calculus of residues, conformal mapping, analytic continuation, Riemann surfaces, infinite products, special functions. P, Math 728.	
Math 731 Ordinary Differential Equations	3 S (on demand)
Existence theorems for solutions of ordinary differential equations, theory of linear differential equations and systems of linear differential equations oscillation theory. P, Math 321.	
Math 732 Partial Differential Equations	3 F
Series, solutions, total differential equations, simultaneous equations, approximate solutions, partial differential equations of first and second orders, application. P, Math 321.	
Math 770 Numerical Linear Algebra	3 S (alternate years)
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. P, knowledge of a programming language and of matrix algebra.	
Math 784 Applied Probability Theory	3 S (on demand)
Topics in probability including an introduction to the axiomatic development of probability, random variables and distributions with emphasis on the exponential, binomial and Poisson distributions. Applications to discrete stochastic processes such as Markov chains and queuing theory are covered in some detail. P, Math 381 or consent.	
Math 790 Thesis	1-7 FSSu (Pass/Fail)
Math 791 Thesis Sustaining	0 FSSu (Pass/Fail)
Math 792 Research Paper	1-2 FSSu
Math 793 Advanced Topics	1-3 FSSu
Math 794 Research Paper Sustaining	0
Math 795 Special Problems	1-3 FSSu
Math 797 Research	1-9

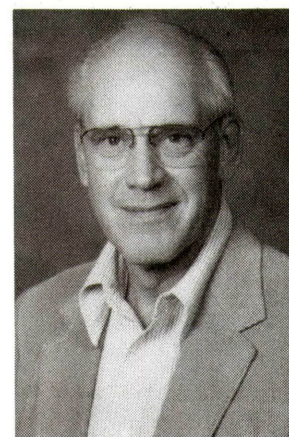
Key to Course Descriptions

Course Number & Name	Credits
	F = Fall
	S = Spring
	Su = Summer
	(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite



Robert Lacher
Graduate Coordinator
Mathematics and Statistics

Key to Course Descriptions

Course Number & Name

Credits

F = Fall

S = Spring

Su = Summer

(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Statistics (Stat) Course Offerings

- Stat 541 Statistical Methods II3 FSSu**
 Analysis of variance, various types of regression, and other statistical techniques and distributions. Sections offered in the areas of Biological Science and Social Science. P, Stat 341 or Math 381. Credit not given for both Stat 541 and Stat 581.
- Stat 545 Nonparametric Statistics..... 3 F**
 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. P, Stat 341 or Math 381.
- Stat 581 Statistics for the Physical Sciences 3 FS**
 Analysis of variance, various types of regression, and other statistical techniques and distributions. P, Math 381. Credit not given for both Stat 541 and Stat 581.
- Stat 662 Quality Control..... 3 FS**
 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. P, Stat 341 or Math 381. Cross-listed with ME 662.
- Stat 751 Interpretation of Statistical Software Output2 S**
 Interpretation of statistical software package(s) include statistics such as correlation, means, standard deviation, standard error, t-test, chi-square, simple and multiple linear and curvilinear regression, and balanced and unbalanced analysis of variance. P, Stat 541 or Stat 581, CSc 210 or 410 or consent of instructor.
- Stat 761 Experimental Design3 S**
 Experimental designs involving confounding, factorial experiments, incomplete block, lattice, incomplete latin square designs, combining experiments, and discriminant analysis. P, Stat 541 or Stat 581.
- Stat 792 Special Topics in Statistics..... 1-3**
 Advanced study of one or more selected topics as student need justifies; for example, sampling, statistical genetics, multivariate statistics. P, Stat 541 or Stat 581.

Department of Mechanical Engineering

Department Head: Professor Don Froehlich
Graduate Coordinator: Professor Alex Moutsoglou

For additional information contact:

Mailing address: SDSU Box 2219
Crothers Engineering Hall — CEH
WWW: <http://www.sdstate.edu/~mezo/http/mecheng.htm>
E-mail: moutsoga@mgdsdstate.edu

Phone: 605/688-5426
Fax: 605/688-5878

Program Description

The Mechanical Engineering Department offers courses for the degree Master of Science in Engineering. Also, course offerings can be used in co-major or minor programs for students of other departments. The graduate program in engineering with a study area of M.E. emphasizes 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.

Major Degrees Offered

Master of Science: Engineering, with coursework in Mechanical Engineering
Doctor of Philosophy: Not available

Additional Admission Requirements

GRE: Not required
TOEFL: Department requirement of 525
 Refer to College of Engineering section, pages 51-53, for specific details.

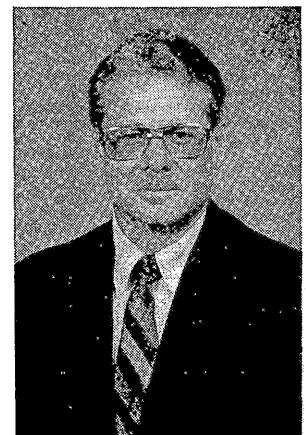
General Requirements begin on page 111 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

Mechanical Engineering (ME) Course Offerings

- ME 514 Air Pollution Control3**
 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. P, 311 or consent.
- ME 527 Gas Dynamics I3**
 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. P, EM 331, Math 331.
- ME 540 Computer-Aided Design3**
 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. P, competence in FORTRAN programming and consent.
- ME 593 Special Topics1-3**
- ME 603 Thermo-Fluid Energy Systems3**
 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.

Graduate Faculty

- Kurt Bassett**
 Associate Professor
 Ph.D., North Dakota State University, 1995
 Mechanical Systems, Energy Analysis
- Fereidoon Delfanian**
 Associate Professor
 Ph.D., North Dakota State University, 1995
 Computational Fluid Dynamics, Indoor Air Quality, HVAC
- Donell Froehlich**
 Professor
 Ph.D., Cornell University, 1976
 Industrial, Mechanical Design
- Hassan Ghazi**
 Professor
 Ph.D., The Ohio State University, 1962
 Thermodynamics, Heat Transfer
- Hamid Hamidzadeh**
 Professor
 Ph.D., Imperial College, 1978
 Mechanics, Dynamic Systems
- Alexandros Moutsoglou**
 Professor
 Ph.D., University of Missouri-Rolla, 1977
 Thermofluid Energy Systems
- Charles Remund**
 Professor
 Ph.D., University of Nebraska-Lincoln, 1988
 Thermofluids, Systems



Don Froehlich
 Department Head
 Mechanical Engineering

Key to Course Descriptions

Course Number & Name Credits
 F = Fall
 S = Spring
 Su = Summer
 (Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

- ME 606 Statistical Thermodynamics3**
 Review of classical thermodynamics. Principles of kinetic theory and classical statistical mechanics. Principles of quantum mechanics, quantum statistics, partition functions, and thermodynamic properties.
- ME 611 Advanced Heat Transfer I3**
 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 612 Convection Heat Transfer3**
 Scale Analysis. Laminar Boundary Layer flow. Laminar duct flow. Laminar natural convection. Natural convection in enclosures. Turbulent boundary layer flow. Turbulent duct flow.
- ME 621 Viscous Flow I3**
 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. Logarithmic law of the wall. Mixing length model.
- ME 628 Gas Dynamics II3**
 Flow with mass addition. Combustion Waves. Generalized one-dimensional flow. Flow with small perturbations. Multidimensional flow. Method of characteristics applied to steady and unsteady flows.
- ME 631 Advanced Analytical Methods3**
 Differential systems related to practical engineering problems. Linear ordinary differential equations. Series solutions; Fourier series. Partial differential equations: parabolic, elliptic, hyperbolic. Integral equations.
- ME 635 Modeling & Simulation3**
 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 635A Modeling & Simulation Lab0**
- ME 639 Advanced Metallurgy 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 641 Advanced Stress Analysis in Mechanical Design3**
 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 method.
- ME 645 Advanced Machine Design3**
 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 661 Operations Research 3**
 History and organization of operations research, mathematical and statistical models in industrial decisions. The evaluation of alternatives by means of linear programming, queuing theory, deterministic and stochastic inventory models, game theory and simulation.
- ME 662 Quality Control3**
 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. Cross-listed with Stat 662.
- ME 663 Topics in Reliability Engineering3**
 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 665 System Analysis 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.



Alex Moutsoglou
 Graduate Coordinator
 Mechanical Engineering

ME 667 Decision Theory	3
Examination and evaluation of modern techniques of decision making. Mathematical models and measurement theory. Certainty, risk, and uncertainty.	
ME 690 Special Problems	1-5
Provides an opportunity for study or investigation of special problems or project at graduate level. P, or consent.	
ME 695 Special Topics	1-3
ME 700-701 Seminar	0-1
ME 790 Thesis	1-7 (as arranged)
ME 791 Thesis Sustaining	0
ME 792 Research or Design Paper	1-2
ME 793 Engineering Research or Design Paper Sustaining	0
ME 794 Special Problems	1-3
ME 795 Special Topics	1-3
ME 797 Research	1-9

Key to Course Descriptions

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(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Department of Music

Graduate Faculty

Corliss Johnson
Professor
D.M.A., University of Colorado-
Boulder, 1972
Music Literature and History,
Clarinet, Saxophone

Department Head: Professor Corliss Johnson
Graduate Coordinator: Professor Corliss Johnson

For additional information contact:

Mailing address: SDSU Box 2212
Lincoln Music Hall — LMH
WWW: <http://www.sdstate.edu/music>
E-mail: johnsoc@ur.sdstate.edu

Phone: 605/688-5188
Fax: 605/688-4307

Major Degrees Offered

Master of Science: Not available
Doctor of Philosophy: Not available
Minors offered: Music

Music (Mus) Course Offerings

Mus 592 Independent Studies1-3
Consent. May be used as substitute for music requirement.
Mus 593 Course Specials1-5



Corliss Johnson
Department Head
Graduate Coordinator
Music

College of Nursing

Dean: Professor Roberta K. Olson
Acting Graduate Nursing Department Head: Professor Roberta K. Olson

For additional information contact:

Mailing address: SDSU Box 2275

Nursing/Family/A&S — NFA

WWW: <http://www.sdstate.edu/~http/http/sdsuinfo/colleges/nursing.html>

E-mail: stotzs@ur.sdstate.edu

Phone: 605/688-4114

Fax: 605/688-6073

Program Description

The purpose of graduate education in nursing is to prepare professional leaders with specialized knowledge and skills to meet the nation's needs in clinical practice, nursing administration, and nursing education. The aim of the program is to prepare nurses to practice at an advanced level in nursing in the functional roles of either nurse educator, administrator, or clinician which includes clinical nurse specialist or family nurse practitioner. Achievement of this aim includes study in related fields and the use of research in the examination of nursing problems. Students focus on the clinical tracks of adult/gerontology or family/parent-child.

Program Objectives

The graduate of the Master of Science in Nursing program will:

1. Incorporate knowledge and theories from nursing and other supportive disciplines into advanced nursing practice.
2. Practice at an advanced level in the role of clinical nurse specialist, educator, family nurse practitioner or administrator.
3. Evidence competency in evaluation, conduct and utilization of research in advanced nursing practice.
4. Use leadership, administrative, and teaching strategies to change nursing practice and health care.
5. Assume accountability to influence health policy, improve health care delivery, and advance the nursing profession.

Available Options for Graduate Degrees

Master of Science: Option A
 Option B

See page 113 for descriptions of available options.

Core Requirements

See sidebar on page 80 for required core courses for all students.

Functional Role Courses

See sidebar on page 81 for a list of these courses.

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 525

In addition to meeting basic requirements for admission to the Graduate School, applicants for graduate study in nursing must have:

1. Applicants for the M.S. in Nursing must also submit an additional application to the Nursing program and the Immunization and Physical Examination Form. These documents may be requested from the College of Nursing, SDSU Box 2275, (605) 688-4114.
2. Bachelor's degree in nursing from an NLN accredited program with an upper division major in nursing with a "B" average (3.0 or higher on a 4.0 point grading system).
3. Current licensure as an RN in South Dakota or eligibility for licensure.
4. Professional nursing liability insurance.
5. One year of nursing practice experience.
6. A course in physical assessment or documented skills in this area (evidenced by test or transcript).
7. A course in statistics, including descriptive and inferential statistics.

Total enrollment in the Master of Science in Nursing program may vary depending upon available clinical facilities and qualified faculty and funds. Applicants are selected competitively from those

Graduate Faculty

Kay Foland
Associate Professor
Ph.D., University of Texas-
Austin, 1989

Barbara S. Heater
Professor
Ph.D., St. Louis University, 1984

Margaret Hegge
Distinguished Professor
Ed.D., University of South
Dakota, 1983

Marylou Mylant
Associate Professor
Ph.D., University of Texas-
Austin, 1988

Roberta K. Olson
Professor
Ph.D., St. Louis University, 1984

Carol J. Peterson
Professor
Ph.D., University of Minnesota-
Minneapolis/St. Paul, 1969

Penny Powers
Assistant Professor
Ph.D., University of Washington,
1994

Dianna Sorenson
Associate Professor
Ph.D., University of Arizona,
1990



Roberta K. Olson
Dean
Acting Department Head
Graduate Nursing
College of Nursing

Required Core Courses for All Students

- Nurs 610 *Advanced Practice: Nursing Introduction to Roles and Issues*
- Nurs 623 *Pathophysiology Applied to Advanced Practice Nursing*
- Nurs 626 *Advanced Nursing Research*
- Nurs 631 *Advanced Assessment Across the Lifespan*
- Nurs 670 *Health Policy, Legislation, Economics and Ethics*
- Nurs 760 *Health and Communication in Advanced Practice Nursing*
- Nurs 765 *Complex Health Problems in Advanced Practice Nursing*

best qualified for the master's program. Applicants should check with the Nursing office for application deadlines.

General Requirements begin on page 111 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

Health Science (HSc) Course Offerings

HSc 533 Industrial Health3 (odd years)
 Industrial hygiene deals with the scope, objectives, and functions of occupational health programs, examines work related diseases, harmful exposure to chemicals and physical agents which may cause discomfort, stress, inefficiency or disease; emphasis on preventive measures to assure a reasonably healthful work environment.

Nursing (Nurs) Course Offerings

Nurs 610 Advanced Practice Nursing: Introduction Roles and Issues3
 Introduction to advanced nursing practice. Theoretical bases for education, administration, clinical practice roles and research as a basis for advanced nursing practice will be emphasized. Health care delivery systems, economic impacts, work management, ethics and leadership will be addressed. Philosophical principles of biomedical ethics will be introduced for advanced nursing practice. Change theory and application, and communication skills with professionals and consumers (individuals and groups) will be included.

Nurs 623 Pathophysiology Applied to Advanced Practice Nursing4
 Pathophysiological concepts relevant to the mechanisms of disease that provide the foundation for clinical assessment, decision-making, and management. P or concurrent, Nurs 610.

Nurs 624 Neonatal Pathophysiology4
 Embryology of the major organ systems as well as specific physiologic and pathophysiologic processes relevant to the neonate and convalescing infant will be studied. Emphasis placed on the relationship among pathophysiology, clinical nursing problems, and decision-making. P, Nurs 610.

Nurs 625 Human Sexuality in Health Care3
 Provides the opportunity to identify, study and discuss those areas in human sexuality which concern human interaction and in particular the work with clients and their families in health care. P, graduate student in nursing; graduate student in other disciplines with consent of instructor.

Nurs 626 Advanced Nursing Research3
 The primary focus of this course is the development of knowledge and skills to conduct research. Specific emphases are: research methods, critique of studies for scientific merit, development and conduct of research, interpretation, dissemination and application of research findings to advanced nursing practice. P, Nurs 610.

Nurs 630 Advanced Assessment of Neonate2
 Development of systematic assessment skills to evaluate the critically ill neonate and family from physical, physiologic, developmental, behavioral and psychosocial perspective. Assessment, laboratory, and other data will be correlated in the environmental context. P, Nurs 610.

Nurs 630A Advanced Assessment of Neonate Clinical Lab0

Nurs 631 Advanced Assessment Across the Lifespan2
 This course builds upon basic skills of individual health assessment. It includes assessment of physiological and psychosocial processes relevant to all age groups.

Nurs 631A Advanced Assessment Across the Lifespan Clinical Lab0

Nurs 635 Dying, Death, and Bereavement3
 Provides an overview of dying, death, and bereavement. Self-examination of these issues will be encouraged. An understanding of the specific needs of both dying and bereaved children and adults and appropriate interventions will be covered. This course will also provide students with an overview of some of the most current research and literature in the areas of dying, death, and bereavement. P, graduate students in nursing, other graduate students with instructor's consent.

Nurs 640 Legal & Ethical Accountability in Health Care2
 Study of the ethical positions and legal factors influencing behavior and decision making in health care. Emphasis on developing a justifiable ethical framework with consequent rights, responsibilities and conflicts. P, graduate students in nursing and other health professionals with instructor's consent.

Nurs 645 Management of Acute and Chronic Pain3
 Provides opportunity to identify and discuss management principles of acute and chronic pain with noninvasive and invasive measures. P, graduate nursing student, other graduate students with instructor's consent.

Nurs 655 Health and the Older Adult2
 Based on a multidisciplinary perspective, issues and topics affecting the health care of the older adult will be analyzed. P, senior or graduate nursing student, graduate or senior student of other health disciplines, or consent of the instructor. Required for Gerontology Emphasis.

Nurs 670 Health Policy, Legislation, Economics and Ethics3
 Legislative, legal, ethical, economic, and political issues related to health policy that impact advanced nursing practice will be studied. Current and projected health care issues will be featured. Following an analysis of political viewpoints, change agent and leadership strategies designed to impact current state and national legislation will be applied. The effect of national economics on health care delivery systems will be addressed. Utilization of professional associations to impact health policy and legislation will be included. Economic justification of the Advanced Practice Nursing Role will be emphasized with attention to collaboration, resource procurement, and conflict resolution. Philosophical principles of biomedical ethics and decision-making will be integrated into all topical discussion. P, Nurs 610.

Nurs 690 Seminar: Guided Study in Nursing1-4
 Investigation of a selected problem in nursing theory or practice. May be repeated for two semesters for variable credit.

Nurs 692 Special Problems1-3 (theory or lab or combination of these)
 Directed study, analysis and/or research of selected problems related to clinical practice in nursing. May be a combination of discussion/conference and clinical experience. Open to qualified nursing graduate students by consent. Limit of 4 credits of special problems Nurs 692/792 can be applied to a degree.

Nurs 695 Special Topics1-3
 Review and discussion of special concerns, issues or trends in the nursing profession, such as, but not limited to, legislation, ethics, administration, education. Topics will be of a non-clinical nature. Open to qualified nursing graduate students by consent. Limit of 3 credits can be applied to a degree.

Nurs 710 Curriculum Development in Nursing2
 Principles of curriculum development and their application to nursing curricula. Selection, organization and evaluation of learning experiences. P, or concurrent, Nurs 610, or consent of instructor.

Nurs 725 Patient Care Management3
 Identification and analysis of management theories influencing middle management nursing roles in a variety of patient care situations. P, or concurrent, Nurs 765, Nurs 782, or consent of instructor.

Nurs 760 Health and Communication in Advanced Practice Nursing4
 Advanced nursing concepts centered on health promotion and therapeutic communication applied to individuals, families, and groups in community-based environments of care will be the focus of this course. Impact of national, state, and local community resources and directives for health policy, disease prevention, and health maintenance among individuals, families and community groups will be addressed. Students will implement and evaluate a variety of strategies to promote the health of individuals, families, and community groups. Advanced family assessments and health appraisals will be central to the clinical experiences with an emphasis on the development of individual counseling techniques and skills and family process interpretation. P or concurrent, Nurs 610.

Nurs 760A Health and Communication in Advanced Practice Nursing Clinical Lab0

Nurs 765 Complex Health Problems in Advanced Practice Nursing4
 The effect of complex acute and chronic health problems on patients is examined in light of systematic assessment and literature. Interventions based on differential diagnosis are designed, modified, implemented, and evaluated to foster successful patient outcomes. P or concurrent, Nurs 610.

Nurs 765A Complex Health Problems in Advanced Practice Nursing Clinical Lab0

Nurs 770 Clinical Nurse Specialist Practicum6
 Extension and refinement of advanced nursing practice core competencies and the development of expertise in a clinical specialist role are the foci of this course. Researcher, consultant, leadership, educator, and clinical subrole functions will be used to influence the health care environment and advance the nursing profession. Student goals specific to selected specialty area(s) will be the basis for clinical experiences. Students will plan, implement, and evaluate theoretically and research-based interventions to directly and indirectly manage the health of clients and systems in selected specific specialty area(s) through the actualization of synthesized role components. P, completion of core requirements.

Nurs 770A Clinical Nursing Specialization-Practicum Clinical Lab0

Nurs 771 Family Nurse Practitioner: Primary Care 6
 This is the first of three courses designed for the family nurse practitioner. The emphasis of the course is on the application of knowledge to clinical practice in primary care settings. Students will strengthen their health history and physical examination skills in the formulation of differential diagnoses and clinical decision-making relative to acute conditions and developmental variations such as pregnancy. This course provides the basis for integrating clinical data with knowledge of pathophysiology to formulate diagnostic hypotheses for clients across the lifespan. The clinical practicum provides opportunities to develop competency in incorporating health promotion

Functional Role Courses

For Educator

- Nurs 710 Curriculum Development in Nursing**
- Nurs 778 Nurse Educator: Practicum**
- Nurs 774 Nurse Administrator: Practicum**
- Nurs 645 Management of Acute and Chronic Pain**
- Nurs 770 Clinical Nurse Specialist: Practicum**

For Family Nurse Practitioner

- Pha 645 Pharmacotherapeutics: Application to Advanced Practice**
- Nurs 771 Family Nurse Practitioner: Primary Care**
- Nurs 776 Family Nurse Practitioner: Small Group**
- Nurs 777 Family Nurse Practitioner: Practicum**

For Neonatal Nurse Practitioner

- Nurs 630. Advanced Assessment: Neonate**
- Nurs 624 Neonatal Pathophysiology**
- Nurs 772 Neonatal Nurse Practitioner: Practicum I**
- Nurs 779 Neonatal Nurse Practitioner: Practicum II**

Required Courses, 2 Research Options

- Nurs 790 Thesis**
 or
Nurs 792 Problems in Nursing Research
- Nurs 791 Thesis Sustaining**
 or
Nurs 795 Problems in Nursing Research Sustaining

Elective Support Courses

- Nurs 625 *Human Sexuality in Health Care*
- Nurs 635 *Dying, Death & Bereavement*
- Nurs 640 *Legal and Ethical Accountability in Health Care*
- Nurs 645 *Management of Acute and Chronic Pain*
- Nurs 655 *Health and the Older Adult*
- Nurs 692 *Special Problems*
- Nurs 695 *Special Topics*
- Nurs 710 *Curriculum Development in Nursing*
- Nurs 725 *Patient Care Management*
- Nurs 780 *Seminar in Advanced Nursing*
- Nurs 785 *Self Care of the Older Adult*

and illness management strategies into practice under the guidance of clinical faculty and preceptors. P, completion of core requirements.

Nurs 771A Family Nurse Practitioner: Primary Care Clinical Lab.....0

Nurs 772 Neonatal Nurse Practitioner: Practicum I.....6

Integration of principles of prevention, epidemiology, pharmacology, physiology, and pathophysiology in a supervised practicum with neonates and their families. Emphasis placed on the role of clinician with attention to consultant, collaborator, educator, research utilizer, and advocate roles. Procedural, diagnostic reasoning, patient management, and organizational skill development stressed. P, completion of core requirements.

Nurs 772A Neonatal Nurse Practitioner: Practicum I Clinical Lab.....0

Nurs 774 Nurse Administrator: Practicum.....6

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 placed on selected concepts of nursing practice needed to administer the work of nursing management. Supervised administrative practicum focused on broad participation in the administrative process in a health care organization. P, completion of core requirements.

Nurs 774A Nurse Administrator: Practicum Clinical Lab.....0

Nurs 776 Family Nurse Practitioner: Small Group.....3

This is the second of three primary care courses designed for the family nurse practitioner. Emphasis is placed on the integration of pathophysiology and specific disease and symptom complexes in the formulation of differential diagnoses and clinical management of chronic and/or complex health problems. Collaboration, consultation, and referral to multidisciplinary healthcare team members are emphasized in the development of appropriate interventions for the achievement and maintenance of development of appropriate interventions for the achievement and maintenance of optimal health. Anticipatory guidance and health promotion strategies are addressed in the context of the client's personal and cultural environment. P, Nurs 771; Concurrent, Nurs 777.

Nurs 777 Family Nurse Practitioner: Practicum.....1-9

This is the third of three courses designed for the family nurse practitioner. This course is taken concurrently with Nurs 776. The clinical practicum offers the advanced practice nursing student the opportunity to synthesize and apply theoretical concepts derived from nursing and other health-related disciplines to the clinical practice setting for the provision of primary care to clients across the lifespan. Independent and interdependent clinical decision-making is expected and interdisciplinary collaboration and referral are emphasized. Clients are viewed in a personal, cultural, and environmental context. Advanced practice nursing issues are addressed in weekly seminars. P, Nurs 771; Concurrent, Nurs 776.

Nurs 778 Nurse Educator: Practicum.....6

Supervised experience in nursing role. Nursing Education Section: Teaching in classroom and/or clinical services. P, completion of core requirements.

Nurs 778A Nurse Educator: Practicum Clinical Lab.....0

Nurs 779 Neonatal Nurse Practitioner: Practicum II.....12

Integrates and synthesizes knowledge from foundation and core courses in a longitudinal clinical experience in the neonatal population. Supervised practice will include following a diverse caseload of infants and families providing daily assessment, diagnosis, and medical management from admission through discharge. Additional experiences include parent education, discharge planning, and post-discharge follow-up. P, Nurs 772.

Nurs 779A Neonatal Nurse Practitioner: Practicum II Clinical Lab.....0

Nurs 780 Seminar in Advanced Nursing.....1-3

Discussion and reports of current literature, practices, or research in nursing. P, consent. Limit of 3 credits applied to Master's degree.

Nurs 785 Self Care of the Older Adult.....3

Analysis from a nursing perspective of various factors which alter the self-care of the older adult. A guided study approach to a conventional course. P, or concurrent, Bio 525. P, Nurs 626, Nurs 760, Nurs 655 (Required for Gerontology Emphasis).

Nurs 790 Thesis in Nursing.....1-7

P, Nurs 610, Nurs 626.

Nurs 791 Thesis Sustaining, M.S.....0

Thesis Sustaining must be taken each semester (including Summers) after the student completes five credits of Thesis.

Nurs 792 Problems in Nursing Research.....1-2

Application of the nursing research process with particular emphasis on problems of inquiry in the health care system (Project or non-thesis option). P, Nurs 695, Advanced Nursing Research, regular admission status. P, Nurs 610, Nurs 626, regular admission status. Requires five additional credits of electives.

Nurs 795 Problems in Nursing Research Sustaining.....0

Must be taken each semester (including Summers) after the student completes two credits of Nurs 792.

Department of Nutrition and Food Science

Department Head: Professor Marilyn A. Swanson
Graduate Coordinator: Professor Marilyn A. Swanson

For additional information contact:

Mailing address: SDSU Box 2275A

Nursing/Family/A&S — NFA

WWW: <http://www.abs.sdstate.edu/fcs/nfs/index.htm>

E-mail: reeterm@ur.sdstate.edu

Phone: 605/688-5161

Fax: 605/688-5603

Program Description

Courses offered in Nutrition and Food Science support the Master of Science in Family and Consumer Sciences degree program. Students may select courses in Nutrition and Food Science as their area of study.

Major Degrees Offered

Master of Science: Family and Consumer Sciences, with an area of study in Nutrition and Food Science

Doctor of Philosophy: Not available

Additional Admission Requirements

GRE: Not required

TOEFL: Department Requirements of 525

Refer to College of Family and Consumer Sciences section, pages 57-58, for specific details.

General Requirements begin on page 111 (Master's Degree). Graduate students should consult with their advisor before registering for graduate work.

Nutrition and Food Science (NFS) Course Offerings

NFS 590 Seminar in Food & Nutrition1-2 F

This seminar is designed to explore in depth topics related to the role of nutrition in health promotion and disease prevention in the community.

NFS 592 Special Problems1-3

Special study in food and nutrition. P, consent.

NFS 593 Current Topics1-3

Special course offerings on a topical basis stressing current state of knowledge on various topics. May be repeated for credit.

NFS 634 Techniques in Food and Nutrition Research3

Laboratory experience using methods, measurements and instruments for obtaining nutritional data. Topics covered will include methods of conducting field, applied and metabolic studies in food and human nutrition. P, Chem 361 or consent.

NFS 634A Techniques in Food and Nutrition Research Lab0

NFS 660 Maternal and Infant Nutrition3

Fundamental principles of nutrition during pregnancy, lactation, infancy, and early childhood. Topics include stages of fetal development, maternal physiological and anatomical alterations, nutritional guidance in prenatal care, normal growth and development, food intake and its regulations. P, NFS 321 or consent.

NFS 662 Sociocultural Aspects of Nutrition2 Su (alternate years)

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. P, NFS 221 or NFS 321 or consent.

Graduate Faculty

Helen Chipman
Associate Professor
Ph.D., Colorado State University,
1992
Food Science and Human
Nutrition

Michael G. Crews
Professor
Ph.D., Virginia Polytechnical
Institute and State University,
1978
Nutrition

Padmanaban G. Krishnan
Associate Professor
Ph.D., North Dakota State
University, 1989
Food Science

Bonny L. Specker
Professor
Ph.D., University of Cincinnati,
1983
Epidemiology

Marilyn A. Swanson
Professor
Ph.D., Washington State
University, 1987
Nutrition Education

Chunyang Wang
Associate Professor
Ph.D., Iowa State University,
1993
Food Science



Marilyn A. Swanson
Department Head
Graduate Coordinator
Nutrition and Food Science

Key to Course Descriptions

Course Number & Name
Credits
F = Fall
S = Spring
Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

NFS 725 Nutrition and Human Performance	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.	
NFS 760 Child Nutrition	3
An intensive study of the nutrition of the human organism, beginning with prenatal nutrition and extending through adolescence. An evaluation of the factors affecting height and weight for age, muscular development, and the nutritional status. P, NFS 321 or consent.	
NFS 761 Nutrition of the Aged	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. P, NFS 321 or consent.	
NFS 792 Special Problems	1-3
Special studies in Nutrition and Food Science. Consent.	
793 Current Topics	1-3
Special course offerings on current issues in the fields of Nutrition and Food Science. Consent.	

College of Pharmacy

Dean: Professor Danny L. Lattin
Pharmaceutical Sciences Department Head: Professor Gary Chappell
Clinical Pharmacy Department Head: Professor Brian Kaatz

For additional information contact:

Mailing address: SDSU Box 2202C

Pharmacy — PHA

WWW: <http://www.sdstate.edu/wpha/http/college.html>

E-mail: eighmy@mg.sdstate.edu

Phone: 605/688-6197

Fax: 605/688-6232

Master of Science in Pharmaceutical Sciences

The purpose of the Graduate Program in Pharmaceutical Sciences is to provide the student an opportunity to gain high quality graduate and research experience in preparation for doctoral studies. For those students who choose not to continue further graduate studies, there are opportunities in pharmaceutical industry and government and research laboratories. Inactive status as of January 1, 1996.

Doctor of Pharmacy

Six-Year Program: The Professional Degree in Pharmacy. Students interested in this program should consult the undergraduate catalog for information.

Major Degrees Offered

Master of Science: Pharmaceutical Sciences (currently inactive)

Doctor of Philosophy: Not available

Pharmacy (Pha) Course Offerings

- Pha 645 Pharmacotherapeutics: Application to Advanced Practice**4
Current drug therapy principles with emphasis on drugs and pharmacotherapeutics used in Family Nurse Practitioner practice. P, FNP program enrollment.
- Pha 720 Advanced Medicinal Chemistry**3
Qualitative and quantitative aspects of the design of therapeutic agents. P, Pha 341 or consent.
- Pha 725 Topics in Medicinal Chemistry**3
Selected areas covering more advanced concepts in medicinal chemistry, new research techniques. P, Pha 341 or consent.
- Pha 740 Advanced Pharmacology**3
An advanced and comprehensive study of the therapeutic and toxicological effects of drugs including the mechanism of action. Emphasis will be placed on their rational application to the treatment of disease. P, Pha 443 or consent.
- Pha 745 Topics in Pharmacology** 3
A study of current advanced theories in pharmacology. P, Pha 443 or consent.
- Pha 759 Advanced Pharmaceutics** 3
Theory and application of compartmental models for the study of the time course of drugs in the body. P, Pha 415 or consent.
- Pha 765 Topics in Pharmaceutics**..... 3
Selected areas covering more advanced concepts in pharmaceutics, new research techniques. P, Pha 415 or consent.
- Pha 780 Seminar**..... 1
Contemporary topics in the pharmaceutical sciences. Required of all graduate students in pharmaceutical sciences. Maximum of two credits.
- Pha 790 Thesis in Pharmaceutical Sciences**..... 1-7

Graduate Faculty

Joye Billow
Professor
Ph.D., Temple University, 1972
Communications

Gary Chappell
Professor
Ph.D., University of Kansas,
1968
Medicinal Chemistry

Chandradhar Dwivedi
Professor
Ph.D., Lucknow University, 1972
Pharmacology

Xiangming Guan
Assistant Professor
Ph.D., University of Kansas,
1991
Medicinal Chemistry

Joel Houghlum
Professor
Ph.D., University of Wisconsin-
Madison, 1979
Analytical Methods

Brian Kaatz
Professor
Pharm.D., University of
Minnesota, 1977
Clinical Pharmacy

Danny L. Lattin
Professor
Ph.D., University of Minnesota,
1970
Medicinal Chemistry



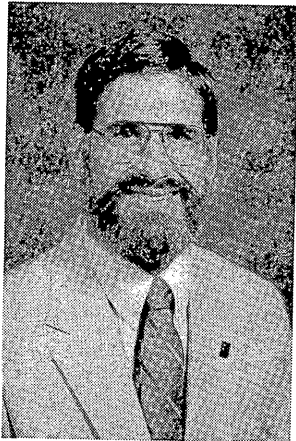
Danny L. Lattin
Dean
College of Pharmacy

Jane Mort
 Professor
 Pharm.D., University of
 Nebraska-Medical Center, 1985
 Geriatrics

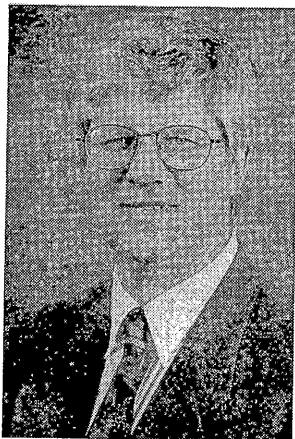
James Powers
 Professor
 Pharm.D., University of
 Minnesota, 1983
 Internal Medicine

Yadhu Singh
 Professor
 Ph.D., University of Strathclyde,
 1979
 Pharmacology

Michael W. Smar
 Associate Professor
 Ph.D., The Ohio State
 University, 1988
 Medicinal Chemistry



Gary Chappell
 Department Head
 Pharmaceutical Sciences
 College of Pharmacy



Brian Kaatz
 Department Head
 Clinical Pharmacy
 College of Pharmacy

**Pharmacy (Pha) Graduate Courses
 offered and applied to the Doctor of Pharmacy program**

700	Directed Studies Clerkship	4	732	Therapeutics-Renal/Fluid and Electrolytes	3
701	Home Health Care/Hospice Clerkship	4	733	Therapeutics-Gastrointestinal and Nutrition	3
702	Indian Health Service Clerkship	4	734	Therapeutics-Endocrine/Reproduction	3
703	Pharmacy Administration Clerkship	4	735	Therapeutics-Infectious Disease	2
704	Nutrition Clerkship	4	736	Therapeutics-Neurology/Psychiatry	3
705	Clinical Research Clerkship	4	737	Therapeutics-Cardiopulmonary	4
706	Critical Care Clerkship	4	738	Therapeutics-Hematology/Oncology	3
707	Infectious Disease Clerkship	4	739	Therapeutics-Rheumatology/Skin/Skeletal	2
708	Surgery Clerkship	4	741	Drug Utilization and Quality Assurance	1
709	Nephrology Clerkship	4	742	Adverse Drug Reactions	2
710	Pharmacokinetics Clerkship	4	750	Critical Care Therapeutics	2
711	Oncology Clerkship	4	751	Immunotherapeutics	2
712	Nuclear Pharmacy Clerkship	4	752	Drugs of Abuse	2
713	Managed Care Clerkship	4	753	Women and Children's Health	2
714	Community Pharmacy	6	754	Alternative Medicines	2
715	Pharmacy Physical Assessment	2	755	Research Design and Drug Information	4
715A	Pharmacy Physical Assessment Lab	0	755A	Research Design and Drug Information Lab	0
716	Institutional Pharmacy	6	760	Clinical Pharmacokinetics	3
717	Community Pharmaceutical Care Clerkship	4	770	Pediatrics Clerkship	4
718	Advanced Clinical Lab Monitoring	3	771	Geriatrics Clerkship	4
718A	Advanced Clinical Monitoring Lab	0	772	Internal Medicine I Clerkship	4
719	Physical Assessment Lab	1	773	Internal Medicine II Clerkship	4
722	Therapeutics: The Geriatric Patient	2	774	Ambulatory Care Clerkship	4
723	Ethics in Healthcare Practice	2	775	Psychiatry Clerkship	4
724	Pharmacoeconomics	2	784	Seminar I	1
728	Current Issues in Pharmacy Practice	3	785	Seminar II	1
729	Pharmaceutical Marketing	2	791	Directed Studies	1-3
730	Advanced Pharmacotherapeutics I	6			
730A	Advanced Pharmacotherapeutics Lab I	0			
731	Advanced Pharmacotherapeutics II	6			
731A	Advanced Pharmacotherapeutics II Lab	0			

Department of Physics

Department Head: Professor Oren Quist
Graduate Coordinator: Professor Oren Quist

For additional information contact:

Mailing address: SDSU Box 2219
 Crothers Engineering Hall — CEH
 WWW: <http://www.engineering.sdstate.edu/~physics/physics.htm>
 E-mail: quisto@mg.sdstate.edu
 Phone: 605/688-5428
 Fax: 605/688-5878

Program Description

The Physics Department at South Dakota State University offers a program leading to the Master of Science in Engineering with an area of emphasis in Physics. Required course work in physics along with elective courses selected from the Departments of Mathematics and Statistics, Computer Science, General Engineering, Electrical Engineering and Mechanical Engineering support a number of career options in industry and applied research. Graduates with this degree may also pursue a Ph.D. degree in physics or an engineering discipline. Areas of research concentration include astrophysics, remote sensing, image processing, condensed matter, materials science, and nuclear physics.

Major Degrees Offered

Master of Science: Engineering, with coursework in Physics
Doctor of Philosophy: Not available

Additional Admission Requirements

GRE: Not required
 TOEFL: Department requirement of 550
 Refer to College of Engineering section, pages 51-53, for specific details.

Physics Core Requirements

Phys 721 Electrodynamics I	3
Phys 723 Electrodynamics II	3
Phys 743 Statistical Mechanics	3
Phys 751 Theoretical Mechanics	3
Phys 771 Quantum Mechanics I	3
Phys 773 Quantum Mechanics II	3
Phys 700 Seminar	1

Physics (Phys) Course Offerings

- Phys 533 Nuclear and Elementary Particle Physics**3 F
 Radioactivity, nuclear spectra and structure, nuclear models, elementary particle theories and high energy physics. P, Phys 471 or consent.
- Phys 541 Science of Solids** 3 F
 Topics covered to satisfy student interests in areas such as magnetism, semi-conductors, superconductors, ferroelectrics, and devices based on these aspects of solids. The role of defects in solids and strength of materials may also be included. P, Phys 439 or consent.
- Phys 693 Special Topics**1-3 FSSu
- Phys 700 Seminar** 0-1 FS
 Current, state-of-the-art, topics in engineering and physics. All graduate students are required to take this course each semester in residence and no more than twice for credit. Students registering for zero credit will be required to attend all sessions. Students who register for one credit will be required to write a paper and make a presentation on a subject related to their research or design paper.

Graduate Faculty

- John Kitterman**
 Associate Professor
 Ph.D., Colorado State University,
 1970
 Condensed Matter
- O. W. Leisure**
 Professor
 M.S., South Dakota State
 University, 1966
 Nuclear Physics
- Oren Quist**
 Professor
 Ph.D., University of Denver,
 1973
 Condensed Matter
- Joel Rauber**
 Professor
 Ph.D., University of North
 Carolina-Chapel Hill, 1985
 General Relativity,
 Computational Physics
- Stephen J. Schiller**
 Associate Professor
 Ph.D., University of Calgary,
 1986
 Astrophysics



Oren Quist
 Department Head
 Graduate Coordinator
 Physics

Key to Course Descriptions

Course Number & Name Credits
 F = Fall
 S = Spring
 Su = Summer
(Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Phys 721 Electrodynamics I.....	3 F
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. P, Phys 421.	
Phys 723 Electrodynamics II	3 S
The electrodynamics of time varying fields and radiating processes. This will include topics chosen from plane and spherical waves, wave guides, multipole radiation, radiation from moving charges, plasma physics and magnetohydrodynamics. P, Phys 721.	
Phys 743 Statistical Mechanics	3 S
Derivations of Boltzmann distribution law, Bose Einstein statistics, Fermi-Dirac statistics, basic theory of gas and liquid states, order-disorder phenomena, the partition function. P, Phys 341.	
Phys 751 Theoretical Mechanics	3 S
Further development of Lagrangian and Hamiltonian methods, canonical transformations, rigid body motion, relativistic mechanics. P, Phys 351.	
Phys 771 Quantum Mechanics I	3 F
Basic quantum theory, the Schrodinger equation, matrix mechanics and operator methods as applied to the simple harmonic oscillator, hydrogen atom and other simple potentials. A study of angular momentum operators and the central force problem will be included. P, Phys 471.	
Phys 773 Quantum Mechanics II	3 S
A quantum mechanical treatment of scattering, spin, stationary and time dependent perturbation theory. Other advanced topics such as applications of group theory to quantum mechanics, identical particles and creation and annihilation operators as applied to many particle systems will be studied. P, Phys 771.	
Phys 775 Tensors & General Relativity	3 F
Covariance in physics, basic tensor algebra and calculus, affine connections, the Riemann tensor, field equations, linear approximations. The Schwarzschild solution. P, Phys 421 or consent.	
Phys 779 Group Theory in Quantum Mechanics.....	3 F
Symmetry transformations, continuous groups, finite groups, applications to valence theory, Lorentz group, fundamental particles. P, Phys 471.	
Phys 790 Thesis	1-7 FSSu
Phys 791 Thesis Sustaining.....	0
Phys 792 Research or Design Paper	1- 2 FSSu
Phys 793 Special Topics	1-3 FSSu
Phys 795 Research or Design Paper Sustaining.....	0
Phys 797 Research	1-9 FSSu

Department of Plant Science

Department Head: Professor Dale Gallenberg
Graduate Coordinator: Professor Paul Evenson

For additional information contact:

Mailing address: SDSU Box 2207A

Agricultural Hall — AGH

WWW: <http://www.sdstate.edu/~wpls/http/pscihome.html>

E-mail: evensonp@mg.sdstate.edu

Phone: 605/688-5123

Fax: 605/688-4602

Program Description

The Plant Science Department is an integrated department that includes crops, entomology, plant pathology, soils, water management and weed science. The primary goals of the department are to conduct research in the above areas, to transmit the results to the public, and to help prepare students for a quality life which includes preparation for an occupation in one or more of the above-mentioned disciplines.

Major Degrees Offered

Master of Science: Agronomy
Entomology
Plant Pathology

Doctor of Philosophy: Agronomy
Biological Sciences, with an area of study in Plant Science

Available Options for Graduate Degrees

Master of Science: Option A (Agronomy, Entomology, Plant Pathology)
Option B (Agronomy, non thesis)

Doctor of Philosophy: 60-Credit Plan
90-Credit Plan

See pages 113 (M.S.) and 116 (Ph.D.) for descriptions of available options.

Core Requirements

M.S. students required to have 2 credits of Graduate Seminar, one oral and one in poster format. All students are required to have teaching experience.

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.

Additional Admission Requirements

GRE: Required

TOEFL: University requirement of 525

Students must be accepted by an advisor before admission is granted.

General Requirements begin on page 111 (Master's Degree) and 116 (Ph.D.). Graduate students should consult with their advisor before registering for graduate work.

Plant Science (PS) Course Offerings

PS 512 Environmental Soil Chemistry3 S (odd years)
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. P, Chem 120 or 111, PS 213, or consent from instructor.

PS 515 Mycology2 F (odd years)
Comprehensive taxonomic survey of the Kingdom Fungi; reproductive biology, physiology, genetics, and ecology of fungal organisms; relationship of fungi to human affairs. Cross-listed with Bio 415-515.

Graduate Faculty

W. Eugene Arnold
Professor
Ph.D., North Dakota State
University, 1970
Weed Control

Aroid Boe
Professor
Ph.D., South Dakota State
University, 1979
Breeding - Forages

C. Gregg Carlson
Professor
Ph.D., South Dakota State
University, 1978
Soil Salinity/Irrigation

Catherine Carter
Associate Professor
Ph.D., University of Kentucky,
1982
Molecular Biology

Tom Chase
Associate Professor
Ph.D., University of Vermont,
1986
Pathology - Row Crops

Fred Cholick
Professor
Ph.D., Colorado State University,
1977
Breeding - Spring Wheat

David Clay
Associate Professor
Ph.D., University of Minnesota-
Minneapolis/St. Paul, 1988
Soil Biochemistry/Nutrient
Movement



Dale Gallenberg
Department Head
Plant Science

Sharon Clay
Associate Professor
Ph.D., University of Minnesota-
Minneapolis/St. Paul, 1986
Weed Research

James Doolittle
Associate Professor
Ph.D., Texas A & M University,
1991
Soil Chemistry

Paul Evenson
Professor
M.S., University of Nebraska-
Lincoln, 1959
Statistics

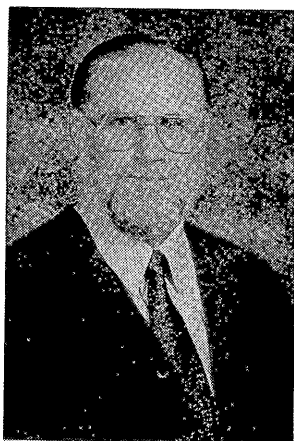
Billy Fuller
Associate Professor
Ph.D., Louisiana State
University, 1987
Entomology - Field Crops

Dale Gallenberg
Professor
Ph.D., Cornell University, 1984
Pathology - Extension

Ron Gelderman
Associate Professor
Ph.D., North Dakota State
University, 1987
Soil /Plant Analysis

Scott Haley
Associate Professor
Ph.D., Colorado State University,
1992
Breeding - Winter Wheat

Yue Jin
Assistant Professor
Ph.D., North Dakota State
University, 1990
Pathology - Small Grains



Paul Evenson
Graduate Coordinator
Plant Science

- PS 515A Mycology Lab**.....1
- PS 520 Biological Control of Arthropods**.....2 F (odd years)
Introduction to the principles of biological control of arthropod pest populations through the use of natural enemies, including parasites, parasitoids and predators. Topics will include the history, theory, and practice of biological control, and relevant aspects of the genetics, ecology and behavior of natural enemies. P, 305 or equivalent, or consent of instructor.
- PS 520A Biological Control of Arthropods Lab**.....1
- PS 531 Applied Insect Ecology**2 S (odd years)
An introduction to the principles of insect ecology and their application to pest management tactics. Ecological factors that affect pest and beneficial insects in agricultural environments will be examined. Topics include trophic relationship, population dynamics, sampling and life-table analysis, environmental heterogeneity and dispersal. P, 305 or equivalent, or consent of instructor.
- PS 531A Applied Insect Ecology Lab**.....1
- PS 546 Agroecology** 3 S (odd years)
Agroecology uses the science of ecology to study agricultural systems and solve agricultural problems using comparisons between altered and unaltered ecosystems. Including: nutrient cycling, energy flow, hydrology, climatology, species diversity, and population dynamics. Field trips required. P, 213 and Bio 101 or consent.
- PS 550 Field Studies in Plant Disease Diagnosis**.....1 (alternate years)
Diagnoses of diseases in field and horticultural crops; observing and studying the relationships among hosts, pathogens, and their environments. Emphasis on field disease recognition and laboratory diagnostic techniques. P, consent.
- PS 550A Field Studies in Plant Disease Diagnosis Lab**1
- PS 553 Advanced Genetics**3 F (even years)
Procedures in genetic studies as they relate to molecular and classical genetic applications. P, Bio 371. Cross-listed with Bio 453-553.
- PS 562 Molecular Biology I**2 F
Charge, Partitioning Migration of Molecules; Protein Structure, Enzymes; DNA Structure and Properties, Prokaryotic and Eucaryotic Conjugation, Transduction and Transformation; DNA Replication and Repair; Genetic Recombination; RNA Structure and Properties; RNA Replication and Repair; mRNA Synthesis and Processing; Kinetics; Chromosomes and Chromosome Replication. P, Micr 436, Chem 361, or consent. Cross-listed with Bio 462-562.
- PS 564 Molecular Biology II**2 S
Structure of the nucleus; endocytosis; genome of mitochondria and chloroplasts; cell growth and division; cancer; immune system; pattern formation; homeoboxes; intracellular transport; gene expression and regulation. P, 562-662 or consent of instructor. Cross-listed with Bio 464-564.
- PS 565 Molecular Biology II Laboratory**2 S
Screening recombinant DNA libraries; DNA sequencing; analysis of proteins; detection of proteins; RNA transfer and hybridization analyses; use of nucleic acid and protein databases. P, 562-662, 563-663, or consent of the instructor. Cross-listed with Bio 465-565.
- PS 580 Environmental Stress Physiology**.....3 S (even years)
Physiology and cellular response of plants to environmental stresses. P, Bot 327. Cross-listed with HO 480/580.
- PS 593 Special Topics**1-6(1-3 per credit) FSSu
Concentrated study, work, or discussion of a particular field in the plant science disciplines. Subject areas vary from semester to semester. Based on interest of students and professionals needing additional study and investigation of topics for which there is a current need but which are not part of a regular class. Offered on sufficient demand. P, consent of instructor.
- PS 700 Special Topics** 1-6(1-3 per credit) FSSu
Advanced study of one or more selected topics. P, consent.
- | | | |
|-------------------------|------------------------|---------------------|
| Advanced Plant Breeding | Saline and Sodic Soils | Soil-Plant Modeling |
| Entomology | Soil Chemistry | Teaching Experience |
| Mycology | Soil Genesis | Virology |
| Phytobacteriology | Soil Mineralogy | Weed Science |
| Quantitative Genetics | Soil Physics | |

PS 704 Virus & Bacterial Diseases of Plants2 F (even years)
 Plant diseases caused by viroids, viruses, bacteria and mycoplasma-like organisms including identification, development, symptoms, and control. Advanced laboratory research methods used in isolation, transmission, culture, purification, microscopy, serology and investigation of the nature and properties of important plant pathogens. P, consent. Alternate years.

PS 704A Virus & Bacterial Diseases of Plants Lab2

PS 714 Genetics of Disease Resistance and Host-Plant Pathogen Interaction....3 (alternate years)
 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. P, consent.

PS 714A Genetics of Disease Resistance and Host-Plant Pathogen Interaction Lab1

PS 720 Insect Anatomy and Physiology2 S (odd years)
 Introduction to the internal anatomy of insects, and the principles of the physiology of insect cells, tissues, organs and systems. P, PS305, or equivalent or consent of instructor.

PS 720A Insect Anatomy and Physiology Lab 1

PS 721 Integrated Crop Pest Management.....3 S (odd years)
 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 722 Behavioral Management of Insects2 F (even years)
 Principles of insect behavior stressing the role of behavior in designing management tactics. Topics include direct exploitation of behavior for control, sub-lethal behavioral effects of pesticides, and the use of semiochemicals for population monitoring and mating disruption. Methods for sampling, measuring and evaluating insect behaviors will be examined. P, PS305, or equivalent or consent of instructor.

PS 722A Behavioral Management of Insects Lab1

PS 732 Field Studies in Pedology.....2 Su (even years)
 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. P, PS/Geog 310 or PS 733 or consent of instructor.

PS 733 Advanced Soil Genesis3 S (even years)
 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. P, consent.

PS 741 Crop Breeding Techniques1 Su (even years)
 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 Physical Properties of Soils3 F (even years)
 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. P, consent.

PS 744 Soil N, P, & K.....3 S (odd years)
 Plant-soil nutrient relationships including nutrient sink development, uptake, transport to roots, labile soil sources, nutrient deficiencies, and their correction. Emphasis on nitrogen, phosphorus and potassium. P, consent.

PS 745 Soil/Plant Secondary Macronutrients and Micronutrients.....2 S (even years)
 Forms and reactions of secondary and micronutrients in soils, their plant functions and requirements, as well as deficiency correction. P, consent.

PS 746 Plant Breeding3 S
 Plant Breeding applied to field crops and horticultural varieties with particular emphasis on the relationship of genetics and allied subjects. Cross-listed with HO 746. P, PS 103, Bio 371, or consent.

PS 754 Chemical Properties of Soils.....3 F (odd years)
 Chemical considerations of the dynamic interactions of soil-water-gas phases as affected by climate, soil age, kinds of minerals or organic matter, added fertilizer elements, and plants. P, consent of instructor.

Paul Johnson
 Associate Professor
 Ph.D., University of Wisconsin-Madison, 1992
 Entomology - Systematics

Kevin Kephart
 Associate Professor
 Ph.D., Iowa State University of Science and Technology, 1986
 Forage Physiology

Robert Kohl
 Professor
 Ph.D., Utah State University, 1962
 Soil Irrigation and Physics

Marie Langham
 Associate Professor
 Ph.D., Texas A&M University, 1986
 Plant Pathology - Viruses

Douglas Malo
 Distinguished Professor
 Ph.D., North Dakota State University, 1975
 Soil Genesis/Classification

Dale Reeves
 Professor
 Ph.D., Colorado State University, 1969
 Breeding - Oats

Diane Rickerl
 Professor
 Ph.D., Auburn University, 1986
 Agroecology

Jackie Rudd
 Associate Professor
 Ph.D., Kansas State University, 1992
 Breeding - Spring Wheat

Tom Schumacher
 Professor
 Ph.D., Michigan State University, 1982
 Soil Physics and Conservation

Roy Scott
 Associate Professor
 Ph.D., Kansas State University of Agriculture and Applied Science, 1987
 Breeding - Soybeans

James Smolik
 Professor
 Ph.D., South Dakota State University, 1973
 Plant Pathology - Nematodes

Fedora Sutton
 Associate Professor
 Ph.D., Howard University, 1985
 Molecular Biology

Zeno Wicks, III
 Professor
 Ph.D., North Dakota State University, 1979
 Breeding - Corn

Howard Woodard
Associate Professor
Ph.D., Rutgers University, 1985
Soil Fertility

Adjunct Faculty
Laurence Chandler
Professor
Ph.D., Texas A & M University,
1986
Research Entomology

Michael Ellsbury
Associate Professor
Ph.D., University of Arizona,
1979
Research Entomology

Leslie Hammack
Assistant Professor
Ph.D., University of Wisconsin-
Madison, 1974
Research Entomology

Alex Kahler
Professor
Ph.D., University of California,
1973
Molecular Biology

Robert W. Kieckhefer
Professor
Ph.D., University of Wisconsin-
Madison, 1962
Research Entomology

Gary Lemme
Professor
Ph.D., University of Nebraska,
1979
Soils

Walter Riedell
Assistant Professor
Ph.D., Southern Illinois
University, 1984
Plant Physiology

W. David Woodson
Assistant Professor
Ph.D., Oklahoma State
University, 1990
Research Entomology

Joint Appointment
Donald Evenson
Professor of Station Biochemistry
Ph.D., University of Colorado,
1968
Cell Biochemistry

R. Neil Reese
Associate Professor of Biology
and Microbiology
Ph.D., University of Idaho, 1984
Plant Physiology

Peter Schaefer
Professor of Horticulture,
Forestry, Landscape, and Parks
Ph.D., Michigan State
University, 1983
Forest Genetics

92 Plant Science

PS 756 Quantitative Genetics	3 S (even years)
Theory and application of quantitative genetic analysis to applied breeding problems; estimation and partitioning of genetic variances; genetic covariance and regression; heritability and selection response; index selection; linkage and quantitative trait loci (QTL) analysis. P, Bio371 and Stat641, or equivalent, or consent.	
PS 761 Taxonomy of Insects	3 F (odd years)
Collection, identification and classification of insects. Techniques of identifying the groups of economic insect pests that affect the production of feed, food and fiber.	
PS 761A Taxonomy of Insects Lab	1
PS 763 Environmental & Physiological Aspects of Crop Production	2 S (odd years)
Systems analysis of factors which limit or increase crop production and the potential for qualitative and quantitative adjustments. P, Bot 427 and consent of instructor.	
PS 773 Cytogenetics	2 F (odd years)
The nature and behavior of chromosomes in relation to heredity. P, Bio 371 or 343. Cross-listed with Bio 773.	
PS 773A Cytogenetics Lab	1
PS 780 Advanced Special/Research Problems	1-2 FSSu
Advanced study and research in crops, plant pathology, and soils. P, consent.	
PS 781 Plant Science Graduate Seminar	1 FS
Reports and discussions of current investigations in crops, entomology, plant pathology, and soils. (2 credits required for M.S.; 3 credits for Ph.D.)	
PS 783 Crop-Water Relationships	2 F (odd years)
An examination of the role of water on crop productivity with an emphasis on environmental and physiological factors affecting the absorption, movement and use of water in crops. Water associated stresses will be analyzed in terms of agronomic and physiological mechanisms of adaptation. P, Bot 427 and consent.	
PS 790 Thesis, MS.	1-7 FSSu
PS 791 Thesis Sustaining	0 FSSu
PS 797 Soil and Plant Analysis	2 F (odd years)
The analysis of soil and plant material for constituent elements. Topics covered include: Material sampling and preparation, extraction and determination method, theoretical principles of analysis, accuracy and precision. Emphasis on common soil and plant test indices. P, consent.	
PS 797A Soil and Plant Analysis Lab	1
PS 798 Biometrical Genetics	3
PS 799 Advanced Plant Breeding	3
PS 890 Dissertation, Ph.D.	1-7 FSSu
Directed research for the Ph.D. in Agronomy. Course may be repeated for a maximum of 40 credits. A minimum of 20 credits is required for Ph.D. in Agronomy.	
PS 891 Dissertation Sustaining, Ph.D.	0 FSSu

Biological Sciences (BioS) Course Offerings

BioS 890 Dissertation—Ph.D.	1-7 FSSu
BioS 891 Dissertation Sustaining	0 FSSu
BioS 892 Ph.D. Seminar	1 FS

Department of Political Science

Department Head: Distinguished Professor Robert V. Burns
Graduate Coordinator: Distinguished Professor Robert V. Burns

For additional information contact:

Mailing address: SDSU Box 504
Scobey Hall — SCO
E-mail: halls@mg.sdstate.edu

Phone: 605/688-4909
Fax: 605/688-6754

Major Degrees Offered

Master of Science: Not available
Doctor of Philosophy: Not available
Minors offered: Political Science

Political Science (PoS) Course Offerings

PolS 560 Topics in Political Science1-4

An intensive examination of significant political themes, issues, or problems. Topics will include, but are not limited to, the following: Republics and Self-Government; The Constitution and Civil Liberties; Parties, Elections and Campaigns; Presidential-Congressional Relationships.

PolS 592 Special Problems.....1-2-3 FSSu

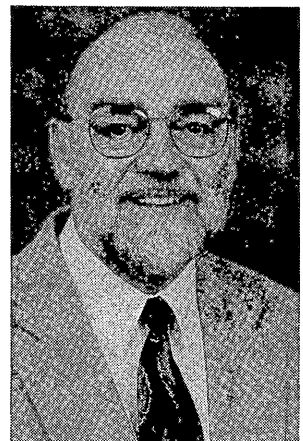
Individual guided research culminating in formal research paper. May be repeated until 6 credits are earned.

Graduate Faculty

Robert V. Burns
Distinguished Professor
Ph.D., University of Missouri-
Columbia, 1973
Public Law

Herbert E. Cheever, Jr.
Professor
Ph.D., University of Iowa, 1967
American Politics and Legislation

Gordon Tolle
Professor
Ph.D., University of Colorado-
Boulder, 1978
Political Philosophy



Robert V. Burns
Department Head
Graduate Coordinator
Political Science

Rural Sociology

Graduate Faculty

Donald Arwood
Associate Professor
Ph.D., South Dakota State
University, 1989
Research Methods, Demography

Donna Hess
Professor
Ph.D., Michigan State
University, 1974
Research Methods, Comparative
Sociology

Diane Kayongo-Male
Professor
Ph.D., Michigan State
University, 1974
Social Theory, Demography

Robert Mendelsohn
Professor
Ph.D., Western Michigan
University, 1973
Social Theory, Social Deviance

James Satterlee
Professor
Ph.D., South Dakota State
University, 1970
Comparative Sociology,
Demography

Ronald Stover
Professor
Ph.D., University of Georgia-
Athens, 1975
Anthropology, Industrial
Sociology



James Satterlee
Department Head
Rural Sociology

Department Head: Professor James Satterlee
Graduate Coordinator: Professor James Satterlee

For additional information contact:

Mailing address: SDSU Box 504
Scobey Hall — SCO
E-mail: satterlj@mg.sdstate.edu

Phone: 605/688-4132

Fax: 605/688-6354

Program Description

The Master of Science program is designed to prepare students to continue their academic careers in advanced doctoral programs, enter such applied fields as planning, demography, criminal justice, and research or enter into the teaching profession.

The Ph.D. program in Sociology is designed to prepare students for professional careers in teaching, research and creative activity in academic, government and related areas. Areas of emphasis for a major in the Ph.D. program include demography, family studies, human ecology, social deviance and social organization.

Major Degrees Offered

Master of Science: Rural Sociology

Doctor of Philosophy: Sociology

Available Options for Graduate Degrees

See Page 97 for Options in the Master of Science degree in Rural Sociology.

Doctor of Philosophy: 60-Credit Plan

90-Credit Plan

See pages 113 (M.S.) and 116 (Ph.D.) for descriptions of available options.

Core Requirements

Master of Science: Social Theory, 6 hrs.
Research Methods, 6 hrs.

Doctor of Philosophy: Social Theory, 9 hrs.
Research Methods, 9 hrs.
Profession of Sociology, 3 hrs.
Graduate Statistics, 3 hrs.

Additional Admission Requirements

GRE: Not required

TOEFL: Department requirement of 550

Both M.S. and Ph.D. candidates need a minimum of 24 credits of social science courses, of which 18 need to be in Sociology.

Master of Science: Courses in Research Methods, Social Theory, and Statistics must be completed as part of the previous work, or made up as deficiencies.

Doctor of Philosophy: Students seeking entrance must have an approved Bachelor's and Master's degree, (thesis option), not necessarily in Sociology.

General Requirements begin on page 111 (Master's Degree) and 116 (Ph.D.). Graduate students should consult with their advisor before registering for graduate work.

Anthropology (Anth) Course Offerings

Anth 590 Special Problems1-3 FSSu
P, open to undergraduate and graduate students with sufficient background and consent of instructor.

Anth 597 Topics in Anthropology1-3 (on demand)
 Selected topics pertaining to theory and methods in cultural, physical anthropology and archaeology. P, undergraduate/graduate and consent of instructor.

Criminal Justice (CJus) Course Offerings

CJus 516 Problems in Criminal Justice3 S
 An examination of selected contemporary problems in the administration of criminal justice. Topic will change each semester. May be repeated for credit. Course descriptions available prior to term course is offered.

Sociology (Soc) Course Offerings

Soc 502 Social Deviance3 F
 This course will examine the nature of negatively evaluated behaviors and the process by which customs, rules and normative structure of society are constructed. A primary goal of the course is the development of a coherent interpretation of contemporary theories and empirical investigations of social deviance. P, undergraduate or graduate and consent of instructor.

Soc 533 Leadership & Group Organization 3
 Emergence of leadership patterns. Emphasis on group dynamics, small groups, and leadership in management. P, undergraduate or graduate and consent of instructor.

Soc 551 Juvenile Delinquency3 FS
 Causes of delinquency; patterns of delinquent behavior; Juvenile and alternative solutions currently in operation throughout the US which attempt to reduce the incidence of juvenile delinquency.

Soc 552 Sociology of Corrections3 F (alternate years)
 An examination of the history of adult and juvenile treatment and punishment. Emphasis is upon contemporary community based treatment as well as traditional prison-based incarceration. The process of sentencing, particularly the role of the PSI is covered. Special attention is devoted to internship and career possibilities in the corrections arena.

Soc 560 Advanced Criminology3 S
 A variable topics course concentrating on the most current trends and issues in the field of Criminology. The class is a lecture-discussion seminar format. Topics regularly covered in past seminars have been: terrorism, middle and upper level drug use and dealing, computer crime, organized crime, crime in corporate America, and ethnic-group criminal activities.

Soc 580 Sociology of Law3 S (alternate years)
 This course focuses on the relationship between law and society. Topics focus on the organization of law in society, law and social control, law as a method of conflict resolution, law as a mechanism of social change, law as a profession, and methods of inquiry in research. The course will also look at alternative dispute resolution techniques, for example mediation. Comparative, and cross-cultural materials will be used throughout the class to emphasize diversity in law. P, 351.

Soc 620 Social Organization3
 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. P, consent.

Soc 621 Social Stratification3
 Theories of social stratification. Relationship between social class and education, occupational choice, political preference religious affiliation and social mobility. P, consent.

Soc 630 Social Change..... 3
 Theories concerning factors and processes in social-cultural change. Consideration of various interpretations of social-cultural change in terms of stages, cycles, and trends. P, consent.

Soc 640 Rural Community Planning3
 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. P, consent of instructor.

Soc 709 Evaluation Research3 (alternate years)
 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.

Master of Science Program*

Option A, Thesis
Traditional masters degree program designed to prepare students to enter post-secondary teaching and/or continuation toward the doctorate.

Option B, Research/Design Paper
Designed to prepare students to enter such applied fields of research, criminal justice, demography, family studies, or planning and development.

Option C, Non-Thesis
Designed for elementary- and secondary-level teachers and social service personnel not in need of the research emphasis offered in Options A and B.

Doctor of Philosophy Program*

- Areas of concentration:**
- Demography*
 - Social Deviance*
 - Social Organization*
 - Family Studies*
 - Human Ecology*

*See department for Graduate Guide for detailed information and course scheduling.

Department of Veterinary Science

Acting Department Head: Professor David H. Zeman
Graduate Coordinator: Associate Professor Chris Chase

For additional information contact:

Mailing address: SDSU Box 2175

Animal Disease Research — ADR

WWW: <http://www.vetsci.sdstate.edu>

E-mail: zemand@ur.sdstate.edu

Phone: 605/688-5172

Fax: 605/688-6003

Program Description

Graduate education in the department of Veterinary Science is focused on animal health science, with major emphasis in infectious diseases of food-producing domestic species. Research projects range from basic (mechanistic) to applied science. Students are usually 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.

Major Degrees Offered

Master of Science: Not available

Doctor of Philosophy: Biological Sciences, with an area of study in Veterinary Science

Available Options for Graduate Degrees

Doctor of Philosophy: 60-Credit Plan

90-Credit Plan

See page 116 for descriptions of available options.

Core Requirements

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: Department requirement of 525

General Requirements begin on page 111 (Master's Degree) and 116 (Ph.D.). Graduate students should consult with their advisor before registering for graduate work.

Veterinary Science (Vet) Course Offerings

Vet 524 Medical and Veterinary Virology4 S (odd years)

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. P, Micr 422 or consent. Cross-listed with Micr 424-524.

Vet 524A Medical and Veterinary Virology Lab0

Vet 590 Problems in Veterinary Science1-3 FS (as arranged)

Consent of department head required.

Vet 723 Systemic Physiology4 F (odd years)

Physiological aspects of tissue cells, hematology, neuroendocrine system, central and autonomic nervous systems, and myology. Discuss various interrelationships to body system functions and maintenance of homeostasis. P, Vet 223 or consent of instructor.

Graduate Faculty

David Benfield
Professor

Ph.D., University of Missouri-Columbia, 1979
Molecular Virology

Chris Chase

Associate Professor

D.V.M., Iowa State University, 1980

Ph. D., University of Wisconsin, 1990

Virology/Immunology

Alan Erickson

Assistant Professor

Ph.D., North Dakota State University, 1989

Biochemistry

David Francis

Professor

Ph.D., University of Missouri-Columbia, 1978

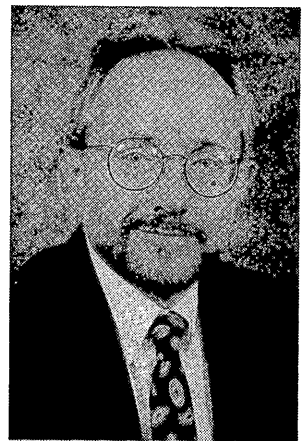
Bacteriology

Eddie Hamilton

Associate Professor

D.V.M., Texas A & M University, 1974

Livestock Production Economics



David H. Zeman
Acting Department Head
Veterinary Science

Eric Nelson
 Assistant Professor
 Ph.D., South Dakota State
 University, 1993
 Molecular Virology

David H. Zeman
 Professor
 D.V.M., Oklahoma State, 1980
 Ph.D., Louisiana State
 University, 1986
 Pathology

Vet 723A Systemic Physiology Lab.....0

Vet 792 Special Problems1-4 FSSu

Independent study in specialized areas of biomedical sciences including bacteriology, virology and pathology. Objectives, scope of work, and plan of study specified by the professor and student(s). P, consent of Department Head.

Vet 793 Special Topics1-3 FSSu

Advanced studies including Techniques of Electron Microscopy and other specific topics in Physiology, Pathology, Serology and other Related Topics and Techniques. Maximum: 1-4 credits per topic (course). 6 credit hours per degree. P, consent of Department Head.

Biological Sciences (BioS) Course Offerings

BioS 890 Dissertation—Ph.D.....1-7 FSSu

BioS 891 Dissertation Sustaining0 FSSu

BioS 892 Ph.D. Seminar1 FS



*Chris Chase
 Graduate Coordinator
 Veterinary Science*

Department of Wildlife and Fisheries Sciences

Department Head: Professor Charles Scalet
Graduate Coordinator: Professor Charles Scalet

For additional information contact:

Mailing address: SDSU Box 2140B
Northern Plains Biostress Laboratory — NPB
WWW: <http://www.sdstate.edu/~wwfs/http/wfsci.htm>
E-mail: longielj@mg.sdstate.edu

Phone: 605/688-6121
Fax: 605/688-4515

Program Description

Department research, and therefore graduate research education, is usually directed toward 1) wildlife-fisheries-agriculture interactions, 2) wetlands, or 3) biostress. The majority of research activity in the Department is of an applied field nature that revolves around habitat, users, and organisms, both game and non-game. The Department houses the S. D. Cooperative Fish and Wildlife Research Unit, which is a cooperative effort among SDSU, the S.D. Department of Game, Fish and Parks, the U.S. Department of the Interior, and the Wildlife Management Institute. In general, students are not accepted into the Department's graduate program unless an assistantship can be provided. The Department cooperates with a variety of internal and external funding entities to support research projects.

Major Degrees Offered

Master of Science: Wildlife and Fisheries Sciences
Wildlife Option
Fisheries Option
Doctor of Philosophy: Biological Sciences, with areas of study in Wildlife or Fisheries Sciences

Available Options for Graduate Degrees

Master of Science: Option A
Doctor of Philosophy: 60-Credit Plan
90-Credit Plan

See pages 113 (M.S.) and 116 (Ph.D.) for descriptions of available options.

Core Requirements

Master of Science: Students are expected to take coursework in statistical methods and graduate seminars.
Doctor of Philosophy: Students must be proficient in statistical methods and computer application. Courses and experience are also required in college-level teaching and graduate and Ph.D. seminars.

Additional Admission Requirements

GRE: Required
TOEFL: Department Requirement of 525

General Requirements begin on page 111 (Master's Degree) and 116 (Ph.D). Graduate students should consult with their advisor before registering for graduate work.

Wildlife and Fisheries Sciences (WL) Course Offerings

WL 513* Advanced Fisheries Management.....3 F (even years)
Principles and techniques of selected practices for reservoir, lake, pond, and lotic fisheries management. P, WL367, WL412, and/or consent of instructor.
WL 513A Advanced Fisheries Management Lab0

Graduate Faculty

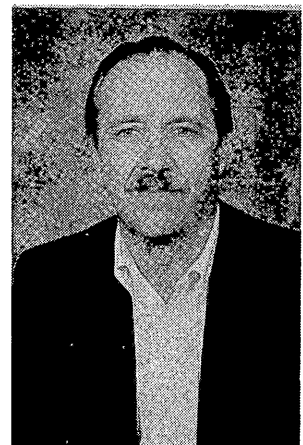
Charles R. Berry
Professor
Ph.D., Virginia Polytechnic
Institute and State University,
1976
Fish Physiology

Michael L. Brown
Associate Professor
Ph.D., Texas A & M University,
1993
Fish Culture, Fisheries
Management

Lester D. Flake
Professor
Ph.D., Washington State
University, 1971
Wildlife Ecology

Kenneth F. Higgins
Professor
Ph.D., North Dakota State
University, 1981
Wildlife Management

Daniel E. Hubbard
Associate Professor
Ph.D., South Dakota State
University, 1988
Wetland Ecology



Charles Scalet
Department Head
Graduate Coordinator
Wildlife and Fisheries
Sciences

Jonathan A. Jenks
Associate Professor
Ph.D., Oklahoma State
University, 1991
Population Dynamics, Wildlife
Ecology

Charles G. Scalet
Professor
Ph.D., University of Oklahoma,
1971
Fisheries Biology

David W. Willis
Professor
Ph.D., Colorado State University,
1980
Fisheries Management

*Philosophy Statement for
Master of Science Degree in
Wildlife and Fisheries
Sciences*

*This degree is intended to
educate students for
management-level positions
with state and federal
agencies, private companies,
and for the pursuit of higher
academic degrees.*

*It is our goal to build on the
foundation that students
obtained during their
undergraduate education,
primarily directing them into
some more specific area of
wildlife or fisheries. By using
specifically identified
coursework areas and
mentoring we will 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.*

*An M.S. degree involves a
full-time commitment
normally requiring two to
three years to complete.*

WL 515* Upland Game Ecology and Management	3 F (even years)
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. P, 411 and/or consent of instructor.	
WL 515A Upland Game Ecology and Management Lab	0
WL 517* Large Mammal Ecology and Management	3 S (even years)
Big game life histories and distributions. Relationships of nutrition, reproduction, interspecific competition, and predation to management of big game habitat and harvest. Techniques for research and management of big game. P, 411 and/or consent of instructor.	
WL 517A Large Mammal Ecology and Management Lab	0
WL 519* Waterfowl Ecology and Management	3 F (odd years)
Analysis of ecological and socio-economic factors affecting waterfowl habitat and waterfowl populations. State and federal programs affecting wetland drainage and wetland preservation. Field inspection of waterfowl production habitat in the north-central states. P, 411 and/or consent of instructor.	
WL 519A Waterfowl Ecology and Management Lab	0
WL 521* Grassland Fire Ecology	3 F (even years)
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 used 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. P, consent of instructor.	
WL 521A Grassland Fire Ecology Lab.....	0
WL 523* Fish Culture	3 F (odd years)
Extent and potential for aquaculture. Emphasis placed on culture methods of important commercial and sport fishes and invertebrates of North America. P, consent of instructor.	
WL 523A Fish Culture Lab	0
WL 593 Special Topics in Wildlife & Fisheries	1-3 FSSu
Students may secure small-group instruction in a variety of special topics. Contact department head concerning planned special topics. P, graduate or senior undergraduate and consent of instructor.	
WL 712* Wetland Ecology and Management.....	3 F (odd years)
Botanical, zoological, hydrological, pedological, and biogeochemical components of wetland systems are studied. Course includes the management of wetlands for various functional values, government jurisdiction in wetland regulation, and wetland classification. North American wetland systems are discussed with emphasis on northern glaciated prairie wetlands. P, consent of instructor.	
WL 712A Wetland Ecology and Management Lab.....	0
WL 713* Animal Population Dynamics	3 F (even years)
Methods of analysis and interpretation of vital statistics of animal populations. Current theories on natural regulation of animal populations. Particular emphasis on vertebrate species of economic and/or recreational importance. Comparison of environmental controls on populations of various animal groups. P, consent of instructor.	
WL 713A Animal Population Dynamics Lab.....	0
WL 714* Fish Structure and Function	3 S (odd years)
Emphasis on anatomy, physiology, and histology of fishes and how these areas relate to fish management, water pollution, and fish culture. Economically important game and cultured species are stressed. P, consent of instructor.	
WL 714A Fish Structure and Function Lab	0
WL 715* Wildlife Research Design	3 S (odd years)
Use of the scientific method for designing wildlife research and developing proposals. Familiarization of field and laboratory methods and instrumentation. Practical experience with computer and statistical models for data analysis. P, consent of instructor.	
WL 715A Wildlife Research Design Lab.....	0
WL 717* Advanced Limnology	3 S (even years)
Analysis of selected biological processes influencing the organization of aquatic communities. Complex tropic interactions and their effects on the life histories and bioenergetics of aquatic organisms are examined. P, consent of instructor.	
WL 717A Advanced Limnology Lab.....	0

WL 718* Ecology of Aquatic Invertebrates	3 F (even years)
Involves the identification of and ecological relationships associated with aquatic invertebrates. Aquatic habitats of the north central states are stressed. P, consent of instructor.	
WL 718A Ecology of Aquatic Invertebrates Lab	0
WL 719* Stream Ecology and Management	3 F (odd years)
Interrelationships of biotic and abiotic components of lotic ecosystems. Hydrologic and geologic influences on lotic habitat and biota will be stressed, as well as watershed management aspects. P, consent of instructor.	
WL 719A Stream Ecology and Management Lab	0
WL 790 Thesis	1-7 FSSu
WL 791 Thesis Sustaining	0 FSSu
WL 792 Graduate Seminar	1 FS
Reports and discussions of current topics in wildlife and fisheries research and management. Not more than 2 credits may be applied toward the graduate degree.	
WL 793 Research Problems	1-3 FSSu
Individualized instruction on specific research problems. P, consent of instructor.	

Biological Sciences (BioS) Course Offerings

BioS 890 Dissertation—Ph.D.	1-7 FSSu
BioS 891 Dissertation Sustaining	0 FSSu
BioS 892 Ph.D. Seminar	1 S

*Field trips required in these courses may result in pro-rata charges to defray transportation costs.

South Dakota has a great diversity of fisheries and wildlife resources. These resources represent an excellent outdoor laboratory for students interested in natural resources.

The eastern portion of the state, referred to as East River because of its location east of the Missouri River, is primarily farmland interspersed with numerous wetlands, shelterbelts, wooded draws and rivers, and glacial lakes. Primary wildlife and fish species include ring-necked pheasants, gray partridge, songbirds, shorebirds, a wide variety of ducks and geese, white-tailed deer, furbearers, walleyes, northern pike, yellow perch, and others.

The western half of the state (West River) is primarily grazing land, but there is some small grain farming along with prairie rivers, badland areas, and the Black Hills. Wildlife and fish species include salmonids, largemouth bass, pronghorns, mule deer, white-tailed deer, turkeys, sharp-tailed grouse, greater prairie-chickens, numerous raptors, and others.

The state is bisected by the Missouri River and its impoundments. Many fish and wildlife species, both game and nongame, occur in this corridor.

Philosophy Statement for the Ph.D. Degree in Biological Sciences (Wildlife and Fisheries Sciences)

This degree is intended to educate students for upper-level management, research, and administrative positions with state and federal agencies, and private companies. It is also intended to prepare students in the teaching, research, and service component responsibilities needed for faculty positions with universities and colleges.

By building on the educational foundation that these students obtained from bachelor's and master's degree work, we will endeavor to raise them to a higher intellectual plateau. While coursework is involved, this is primarily a research and mentoring educational experience.

This degree requires original thought and research contributions, synthesis and development of information, and contributions to the world and its resources. Through mentoring and other educational experiences we desire to bring spirit, enthusiasm, imagination, and optimism to these students. They must develop independence, mature judgement, and a tolerance of differences among people, but an intolerance to inferior products and nonprofessional attitudes. We will strive to help these students become both operationally and conceptually creative.

A Ph.D. degree involves a full-time commitment normally requiring three to five years of effort beyond the M.S. degree.

Miscellaneous Graduate Courses

Graduate Faculty

Art Education

Norman R. Gambill
Professor of Visual Arts
Ph.D., Syracuse University, 1976
American Studies, Art History,
Film History, Popular Culture

Foreign Languages

Anthony H. Richter
Professor of Foreign Languages
Ph.D., Northwestern University,
1971
German Literature, Russian-
German Immigrants

Horticulture

Anne Fennell
Associate Professor of
Horticulture, Forestry,
Landscape and Parks
Ph.D., University of Minnesota-
Minneapolis/ St Paul, 1985
Molecular Biology, Stress
Physiology, Fruit Crop
Research

W. Carter Johnson
Professor of Horticulture,
Forestry, Landscape and Parks
Ph.D., North Dakota State
University 1971
General Ecology with
specialization in Forest and
Wetlands

Peter R. Schaefer
Professor of Horticulture,
Forestry, Landscape and Parks
Ph.D., Michigan State
University, 1983
Forest Genetics

Russell L. Stubbles
Associate Professor of
Horticulture, Forestry,
Landscape and Parks
Ph.D., Texas A & M University,
1979
Forest Recreating Planning

The courses listed are available for graduate credit. No graduate majors or minors are offered in the following programs.

Art Education (ArtE) Course Offerings

ArtE 592 Special Problems in Visual Arts1-3

Engineering Mechanics (EM) Course Offerings

EM 521 Introduction to Mechanics of a Continuous Medium3
General theory of a continuous medium. Kinematics of deformation and flow; stress tensors; conservation of mass, momentum and energy; invariance requirements; constitutive equations for solids and fluids; applications for special problems. P, 331, Math 331.

EM 522 Theory of Elasticity3
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. P, 321, Math 331 or equivalent.

EM 523 Theory of Plasticity3
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. P, 422-522 or consent.

EM 624 Theory of Plates & Shells3
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. P, EM 321, Math 321, Math 331, or consent.

EM 631 Advanced Fluid Mechanics3
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. P, EM 331, Math 331 or equivalent.

EM 641 Finite Element Analysis3 (alternate years)
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. P, Math 321 and consent.

Foreign Languages (FL) Course Offerings

FL 560 Topics in French, German or Spanish Literature1-4
An intensive examination of a significant writer(s), period or theme in French, German, or Spanish literature. This course may be repeated for credit if topic is different.

FL 592 Special Problems1-3

FL 593 Special Topics in Language and Culture1-3

FL 595 Graduate Level Living and Study Abroad1-6

French (Span) Course Offerings

Fren 592 Directed Readings/Independent Study1-3

German (Germ) Course Offerings

Germ 592 Special Problems1-3 FSSu (alternate years)
This course gives graduate students the opportunity to do individualized and/or independent study in German.

Spanish (Fren) Course Offerings

Span 592 Special Problems1-3
This course gives graduate students the opportunity to do individualized, and/or independent study in Spanish.

Horticulture (HO) Course Offerings

Ho 580 Environmental Stress Physiology3 S (even years)
Physiological and cellular response of plants to environmental stresses. P, Bot 327.

Ho 590 Special Topics in Horticulture..... 1-3 FSSu
Students may receive small-group instruction in selected horticultural topics. P, consent.

Ho 746 Plant Breeding 3
Plant Breeding applied to field crops and horticultural varieties with particular emphasis on the relationship of genetics and allied subjects. Cross-listed with PS 746. P, PS 103, Bio 371, or consent.

Landscape Design (La) Course Offerings

La 560 Landscape Ecology.....4
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. P, Bio 211 or equivalent.

La 560A Landscape Ecology Lab.....0

Philosophy (Phil) Course Offerings

Phil 592 Special Problems in Philosophy 1-3
Individual guided research culminating in formal research paper or series of essays. May be repeated until 6 credits are earned.

Psychology (Psyc) Course Offerings

Psyc 560 Topics in Psychology: (Topical)1-4
An intensive examination of significant psychological issues, themes, or problems. May be repeated as topic changes for a total of 8 credits. P, 101 or 102.

Psyc 592 Special Problems in Psychology..... 1-4 FSSu
Selected studies for advanced students. P, Psyc 101 or Psyc 102.

Religion (Rel) Course Offerings

Rel 592 Special Problems in Religion..... 1-3 FSSu
Individual guided research culminating informal research paper or series of essays. May be repeated until 6 credits are earned.

Psychology

Allen R. Branum
Professor of Psychology
Ph.D., University of Montana,
1971
General, Experimental
Psychology

Religion

Matthew Glass
Associate Professor
Ph.D., Graduate Theological
Union, 1989
Religion in American Culture,
Environmental Ethics,
Sociology of Religion

AnnMarie B. Bahr
Associate Professor of Philosophy
and Religion
Ph.D., Temple University, 1989
World Religions

Dennis D. Bielfeldt
Assistant Professor of Philosophy
and Religion
Ph.D., University of Iowa, 1987
Luther and Christian Theology

Atmospheric, Environmental and Water Resources

Key to Course Descriptions

Course Number & Name Credits
 F = Fall
 S = Spring
 Su = Summer
 (Lecture Hours, Lab Hours)

Courses with no FSSu notation are offered either FS or FSSu.

Course Description as written by department and approved by the Board of Regents.

P = Prerequisite

Coordinator: Professor Vernon R. Schaefer

For additional information contact:

Mailing address: SDSU Box 2219

Phone: 605/688-6252

Crothers Engineering Hall — CEH

Fax: 605/688-5878

WWW: <http://www.engineering.sdstate.edu/~civil/aewrprog.htm>

E-mail: NGPWRRRC@mg.sdstate.edu

Program Description

The Doctor of Philosophy degree in Atmospheric, Environmental and Water Resources (AEWR) is a research degree designed to develop the student's capacity to make significant contributions in understanding the physical processes taking place in the atmosphere and at the land surface, and the complex issues associated with the development, use, and protection of precious water resources. The program is a joint effort with the South Dakota School of Mines and Technology (SDSM&T) in Rapid City, South Dakota, in the three fields of atmospheric, environmental, and water resources. The primary departments and disciplines involved in the programs are Civil and Environmental Engineering, Agricultural Engineering, Chemistry, Plant Science, Biology, and Wildlife and Fisheries Sciences. At SDSM&T, the departments and disciplines involved are Civil and Environmental Engineering, Geology and Geological Engineering, Meteorology, Chemical Engineering and Chemistry.

Major Degrees Offered

Doctor of Philosophy: Atmospheric, Environmental and Water Resources

Core Requirements

A common program core will be required of all students, which includes four courses and seminars taken by all students in the joint program. These courses were chosen to give every student in the program some knowledge in all three disciplines and to assure some capability in modeling fluid systems, a basis for much doctoral work in these areas.

The primary core courses consist of:

CEE 721	.....	Environmental Engineering, SDSU
CEE 535	.....	Water Resources Engineering, SDSU/SDSM&T
MTRO 611	.....	Air Pollution, SDSM&T
CEE 784	.....	Modeling and Computations, SDSM&T

In addition, three secondary core courses in the specialty field will be required, selected from an approved list. Each student will be required to take a minimum of three one-credit seminar courses. The residence requirement is two consecutive semesters. The program requires 30 dissertation credits.

The Rural Development Telecommunications Network (RDTN) will be used to provide instruction from one university to the other. Of the four common core courses, the three specialty degree core courses, and the elective courses, five must be taken from the complementary university's faculty if the student starts from the bachelor's degree level, three if he or she starts with a qualifying Master of Science degree.

General Requirements begin on page 116 (Ph.D.). Graduate students should consult with their advisor before registering for graduate work.



Vernon R. Schaefer
 Coordinator
 Atmospheric, Environmental
 and Water Resources

Atmospheric, Environmental and Water Resources (AEWR) Course Offerings

AEWR 793 Research Seminar	.....	1
AEWR 890 Dissertation Ph.D.	.....	1-12
AEWR 891 Dissertation Ph.D. Sustaining	.....	0

Biological Sciences

Coordinator: Professor Doug McFarland

For additional information contact:

Mailing address: SDSU Box 2170

Animal Science Complex — ASC

E-mail: mcfarlad@mg.sdstate.edu

Phone: 605/688-5431

Fax: 605/688-6170

Program Description

This is a cooperative program leading to the Doctor of Philosophy degree in Biological Sciences with emphasis in various areas of either molecular and cellular biology, or natural resources. Departments that cooperate in the program are the Departments of Animal and Range Sciences, Biology and Microbiology, Dairy Science, Plant Science, Veterinary Science and Wildlife and Fisheries Sciences at South Dakota State University, and the Department of Biology at the University of South Dakota.

This program allows for considerable latitude in the education and training of students. The plan of study, including a range of 30-40 hours of dissertation credit, 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-discipline 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 application for program admission substantially before 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.

Major Degrees Offered

Doctor of Philosophy: Biological Sciences

Core Requirements

The Biological Sciences program has only two specific course requirements:

Stat 541 Statistical Methods II.....3

BioS 892 Seminar.....1

(two semesters of 1 credit each)

All students are required to present a seminar on their dissertation project. All other courses submitted in the doctoral candidate's plan of study are approved by the student's advisory committee.

General Requirements begin on page 116 (Ph.D.). Graduate students should consult with their advisor before registering for graduate work.

Biological Sciences (BioS) Course Offerings

BioS 890 Dissertation—Ph.D.1-7 FSSu

BioS 891 Dissertation Sustaining0 FSSu

BioS 892 Ph.D. Seminar1 S

**Current Areas of Study
Department**

Muscle Biology
Animal and Range Sciences

Range Science
Animal and Range Sciences

Biology
Biology and Microbiology

Microbiology
Biology and Microbiology

Dairy Manufacturing
Dairy Science

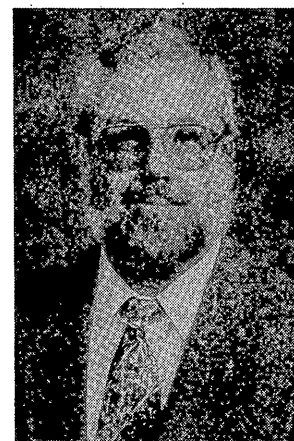
Plant Molecular Biology
Plant Science

Veterinary Microbiology
Veterinary Science

Veterinary Pathobiology
Veterinary Science

Fisheries Science
Wildlife and Fisheries Sciences

Wildlife Science
Wildlife and Fisheries Sciences



*Doug McFarland
Coordinator
Biological Sciences*

Academic Information

Course Numbering System

300-499 series — Advanced undergraduate courses which may be used in meeting part of the requirements for graduate degrees in accordance with the policy on converted credit, page 106.

These courses are not listed in this bulletin, but are listed in the General Catalog.

NOTE: When credits in the 300-499 series are applied to a graduate program, they are entered on the transcript without notation. It is doubtful, therefore, that they could be transferred as graduate credit to another institution.

500-599 series — Entry level graduate courses (may be dual listed with a 400 level undergraduate course and may include limited enrollment by undergraduates). See below.

600-699 series — Graduate level courses.

These courses are open to SDSU senior students for graduate credit if they meet the following requirements:

1. Within 15 credits of completing a Bachelor's degree;
2. Have an overall grade point average of 2.5 or higher, or a Junior-Senior grade point average of 3.0 or higher;
3. Enroll for no more than 18 credits, undergraduate and graduate credits combined (9 credits during Summer Term).
4. The course(s) cannot be required, or included, in the Bachelor's degree.
5. A signed permit is required.

Converted Credits

Courses numbered 300-499 are considered to be advanced undergraduate credits. These credits, may be used in graduate programs with the following provisions:

- a. When applied to a graduate program, total credit for these courses will be valued at 80 percent, discarding all fractions.

After such conversion, these credits are defined as "converted credits," which may be used as graduate credit in meeting the requirements for the various degrees, provided a grade of at least "B" is obtained in each course in this series. For example, if eight credits are earned in this series, they would be equivalent to six graduate credits.

- b. Courses used for converted credit must be SDSU credits and taken during the period the student is enrolled as a graduate student at this institution. These must be entered on the graduate transcript to be eligible for converted credit.
- c. For the Master of Arts, Master of Science or Master of Education degrees, a maximum of seven converted credits may be applied to the graduate program. They may be applied in the major, minor, or supporting course areas.
- d. For the Doctor of Philosophy degree, a maximum of ten converted credits may be applied to the graduate program. They may be applied in the major, minor, or supporting course areas, if applicable.
- e. Transfer credits may not be converted.
- f. Converted credits may be applied to a graduate program only with the permission of the major advisor or Advisory Committee and Dean of the Graduate School.

NOTE: When credits in the 300-400 series are applied to a graduate program, they are entered on the graduate transcript without notation. It is doubtful, therefore, that they could be transferred as graduate credit to another institution.

Course Restrictions for Master's and Doctoral Plans of Study

Correspondence Courses — Correspondence courses are not given at the graduate level at this institution and are not permitted on a student's Plan of Study. Generally courses delivered by television are considered to be correspondence courses, with the exception of two-way interactive television offered by this institution.

Problems Courses — A maximum of four credits in problems courses (Special Problems, independent study, etc.) may be counted toward the Master of Arts, Master of Science, or Master of Education degree. A maximum of six credits of problems courses (beyond the Bachelor's degree) may be counted toward the Doctor of Philosophy degree.

Transfer of Credits — Graduate credits earned while in residence at other institutions may be applied toward an advanced degree if they were awarded a grade of at least "B" (3.0), and if they are approved by the Advisor or Advisory Committee and the Dean of the Graduate School. Transfer credit is limited to Graduate credit as defined by the institution issuing the transcript. Dual-numbered courses offered primarily for upper-level undergraduate credit are (generally) not transferrable as graduate credit. Transfer credits cannot substitute for credits required for minimum residence (see Residence and Credit Requirements). 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 filed with the Graduate School. For the Master's degree, transfer credits are limited to a maximum of 40% of the credits in the program.

Transfer credit is not permitted for courses taken by correspondence. Independent Study, Readings', or Problems courses, Continuing Education, Outreach Programs, or Extension courses may be approved for transfer if they are regularly listed in the graduate bulletin of an accredited institution and were taught by members of the Graduate Faculty of such institution. Subtitles or explanatory information will be required for approval of Independent Study and Readings' Courses. Transfer credit is usually not permitted for work from foreign institutions.

Workshops — While any number of credits may be earned in workshops, a maximum of two such credits may be applied toward an advanced degree. Workshop notation on transcripts will be used for application of this limitation.

Internet Courses — SDSU will consider accepting the transfer of graduate credit for graduate courses delivered and taken over the Internet on the same basis as other transfer courses. The course must be from an accredited institution as recognized by the Board of Regents policy. If credits are to be applied to an accredited SDSU program, the program in which the course was taken at another institution must also be accredited.

Credit Loads

Credits Needed for Full-Time/Part-Time Status, not including graduate assistants:

	<i>Minimum Credits</i>	<i>Maximum Credits without overload</i>
Full-Time M.S., Fall/Spring semesters	9	12
Full-Time Ph.D., Fall/Spring semesters	7	12
Half-Time M.S./Ph.D., Fall/Spring semesters...	4.5	
Full-Time, Summer Term, 4-week session	3.5	5
Full-Time, Summer Term, 8-week session	6	9

Maximum credits **graduate assistants** may carry:

	<i>Academic Year</i>	<i>Summer Term</i>
One-fourth (1/4) time assistant	30	5
One-half (1/2) time assistant	22	3
Three-fourths (3/4) time assistant	15	3

In calculating credit loads, audit courses and undergraduate courses are included at full value for Graduate School but are not allowable for loan deferral, full- and part-time certification, or financial aids disbursement. Graduate assistants must be registered for at least one credit each semester during the academic year to hold a graduate assistantship. For financial aid requirements of a full load, contact the Financial Aid Office.

In general, courses will not be offered to fewer than 7 students for graduate courses, 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 college concerned.

Grades

Cumulative "B" (3.0) average — The student must maintain a "B" average (3.0) in all courses in the graduate program. No credit is given toward a graduate degree for any grade below "C" in 500, 600, 700 or 800 level courses, or below "B" in 300 or 400 level courses. All work in the major must average "B" (3.0), and all work in the minor or supporting courses must average "B" (3.0). Grades for transfer courses are not used in calculating these grade point averages. When courses used on a Plan of Study are repeated the grade point average entered on the Plan of Study will be the average of the grades received.

700-799 series — Graduate level courses open only to graduate students.

800-899 series — Doctoral and post-doctoral level courses open only to doctoral students or those holding an earned doctoral degree.

Experimental Courses — Courses at the 500-800 levels ending in 98 or 99 are experimental and may be active for two years from the date of the first offering, at which time they end or must become permanent courses.

Dissertation/Thesis/Research-Design Paper Credits — Graduate students usually register for dissertation/thesis/research-design paper credit during several semesters. An “in progress” (IP) is given until satisfactory completion of the dissertation/thesis/research-design paper and final oral examination. The advisor, upon satisfactory completion of these credits and final oral, will then assign a satisfactory grade (P) for all dissertation/thesis/research-design paper and sustaining credits by notifying the Registrar through the “Change of Grade” form. If not satisfactory, a grade of unsatisfactory (F) is given. Departments may elect to use Pass/Fail for Thesis and Dissertation providing the Graduate School and Registrar are notified and the policy is applied uniformly to all students in the program.

Seminars — A letter grade or a grade of Satisfactory (P) or Unsatisfactory (F) 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 graduate program, 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. A copy of this information must be filed with the Graduate School. 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. Once the degree is awarded, Incompletes not included in the student’s graduate program can no longer be changed to letter grades.

Graduate Credit for Seniors

Seniors within 15 credits of completing a Bachelor’s degree at South Dakota State University may request permission from the Dean of the Graduate School to take up to 6 credits of 500 or 600 level courses for graduate credit. Permission requires the student to have a grade point average of at least 2.5, or a junior-senior grade point average of 3.0 or higher and to enroll for not more than 18 credits, undergraduate and graduate credits combined (9 credits during Summer Term). Forms for requesting permission to take courses for graduate credit (Senior Permits) may be obtained from the Graduate School. The student must be admitted as a special student and must register for the course at the graduate level.

Graduate Study by University Staff

Faculty members with the rank of Assistant Professor or above may not work toward an advanced degree at South Dakota State University for promotion and tenure purposes. Faculty who already hold a terminal degree required for promotion and tenure may work on an additional degree at South Dakota State University, by special approval of the Vice President for Academic Affairs. All faculty may take graduate courses for credit with the required approvals and authorization. A Graduate application should be completed. An “Authorization For Educational Benefits” form, obtained from the Personnel Office, should be completed and returned to the Personnel Office before registration.

Staff members below the rank of Assistant Professor who intend to work toward a degree at this institution must follow the regular process for admission to the Graduate School.

Full-time members of the research, instructional, or extension staffs may enroll for a maximum of 12 credits during the calendar year, with a maximum of seven in any one semester and two during the Summer Session. Staff must pay the application fee.

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, may pursue study upon approval of the Department Head, Dean and/or Director concerned.

Graduation

Graduation Application — The student must file a graduation application with the Graduate School by the date specified in the university calendar for the term in which completion of the advanced degree is expected. Failure to file this application will result in a delay in graduation.

Commencement Attendance — All students are urged to participate in the Commencement exercises at which their degree is to be granted. However, attendance is optional. Students must notify the Registrar of their intent to attend or not attend on a card mailed to them shortly before Commencement. Diplomas will be mailed approximately three months after Commencement. It should be noted that attendance at Commencement or inclusion in the Commencement Bulletin does not in itself complete the degree requirements since all work on the Plan of Study must be successfully completed for award of the degree.

Cap, Gown and Hood — Caps, gowns and hoods for Commencement may be obtained from the University Bookstore.

Continuing Registration, Sustaining Enrollment 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 follow one of the following each semester during the academic year and Summer term until the degree is awarded:

- a. 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, should continue to use one credit of dissertation/thesis/research-design credit.
- b. Students who have completed the credits and work for the dissertation/thesis/research-design paper, and are no longer utilizing a faculty advisor's time or significant university resources, need to stay in continuous registration until all the requirements are met for graduation. Such students must register for dissertation/thesis/research-design paper sustaining until the degree is awarded. Students registered for sustaining pay a fee rather than the tuition required for credit enrollment.

Registration is the student's responsibility and must be completed and payment made prior to the 10th class day of the semester. Failure to register may delay award of the degree and thereby require additional registrations.

Graduate Academic Standards and Appeals

Graduate students are expected to maintain at least a "B" average (3.0) in all courses in the graduate program. Students who encounter academic difficulty will be warned by the Graduate School and may be discontinued in their degree program or from the university when the situation cannot be resolved. Pharmacy students at the graduate level of the Doctor of Pharmacy program must maintain academic standards of progression as determined by the College of Pharmacy.

The Graduate School has an academic appeal process for resolution of graduate student and faculty grievances such as prejudicial or capricious academic evaluation, cheating, and plagiarism. Procedures for appeals are available from the Graduate School.

Student Responsibility

Before a degree is granted, the student must meet all the requirements of the Advisory Committee, the Major Department 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 department 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.

Master's Degree Requirements

Admission Requirements

Applicants for the Master of Arts, Master of Education, and Master of Science degrees must have an approved Bachelor's degree from an accredited institution.

Advisory (Orals) Committee

As a minimum, the Advisory Committee will be composed of *at least* four faculty members:

- a. *Major Advisor* — acts as chairperson of the committee, must have Graduate Faculty status.
- b. *Major Department Representative* — an additional member of the major department.
- c. *Minor/Supporting Area*, if applicable to the program — must have Graduate Faculty status. If the program does not require a minor/supporting area, an additional member of the Graduate Faculty representing the major area or a related area is required.
- d. *Graduate Faculty Representative* — The Graduate Dean will select this member from a department not closely related to the major/minor/supporting areas. This member ensures the rules and regulations are followed and acts as the student's advocate, if necessary.
- e. *Thesis Advisor* — if different from major advisor.

The major advisor should be chosen or assigned by the head of the major department. Following selection by the student and recommendation of the major advisor, the Advisory Committee should be appointed by the Dean of the Graduate School as soon as practical after starting work on the graduate program and prior to submission of a thesis or arranging for an examination. To pre-assign a Graduate Faculty representative, a memo needs to be sent to the Graduate School from the student's major advisor listing all other Committee Members. After a Representative is assigned, those involved will be contacted.

The Advisory Committee is responsible for assisting the student in developing a suitable graduate program, providing continuing guidance and counsel, and certifying the completion of the degree requirements to the Dean of the Graduate School. The Advisory Committee approves the Plan of Study and any revisions of it, approves the thesis proposal (if applicable), conducts the examinations appropriate to each option, supervises the validation of courses, and ensures that professional standards have been met in completing the degree requirements.

Plan of Study Information

Guidelines — During the first semester of graduate work and no later than the end of the first year, the Plan of Study should be prepared on the appropriate form and approved by the Advisory Committee. After approval by the Advisory Committee, the Plan of Study will be submitted to the Dean of the Graduate School for approval. Courses for the major must be taken in the major department or in related fields. At least 50% of the credits on a Plan of Study must be in courses open only to graduate students (600-series or above). Failure to submit a Plan of Study may result in disapproval of courses taken prior to approval. After approval, changes in the Plan of Study must be requested on a form furnished by the Graduate School and approved by the Advisory Committee and the Dean of the Graduate School. While devising a plan of study, refer to the "Academic Information" section in this Bulletin, beginning on page 106, in addition to the following information.

Minimum Credit Hour Requirements for Master's Degrees, per Option

	Options		
	A	B	C
Minimum total	30	32	35
Minimum major including thesis or research problem (if minor or supporting area required)*	19	19	19
Thesis	5-7	0	0
Research Problem	0	2	0
Minimum minor or supporting courses (from two or more disciplines, if minor or supporting area required)**	8	8	8

*Consult major department for requirements.

**Courses in the major department may be used as supporting courses, providing they are considered sufficiently diverse by the major department.

NOTE:

Some degree programs require additional credits; see program listings.

- Options:* A Thesis
 B Research Paper/Design Paper
 C Coursework

Residence Requirements — Residence is considered an essential component of a graduate program because it offers the student an opportunity to use and become familiar with library resources, a variety of graduate faculty and students, computer analysis, and statistical support.

The minimum residence requirement is 18 semester hours, including at least one semester or two summer sessions of graduate work spent on the Brookings campus or at an approved resident center. A resident center is an academic center recognized by South Dakota State University with an on-site director, at least one staff member who is a member of the graduate faculty, and library support through the PALS network, agreements with other institutions or equivalent accessible library resources.

Residence credit is given only for graduate credit earned in courses offered by South Dakota State University. The approved minimum residence requirement policy does not rule out exceptions for delivery of unique and innovative programs.

Minor/Supporting Area Requirement — Most Masters programs do not require a minor or supporting area of coursework. If required, it is indicated in the listing of degrees and in the department/program section of this Bulletin. Whether required or not, consideration should be given to both depth and breadth of courses on the Plan of Study.

Language Requirement — There is no general language requirement for the Master's degree. However, individual departments may require a speaking or reading knowledge of a foreign language.

Admission to Candidacy

Admission to the Graduate School does not imply admission to candidacy. A student is admitted as a candidate only after 20 graduate credits have been earned (transfer credits may apply), provided:

- a. The grade point average is "B" or better in the major and "B" or better in the minor or supporting courses, *and*
- b. Reasonable progress has been made in the research for the thesis, research report or design paper as applicable, *and*
- c. An approved program of study is on file at the Graduate School, *and*
- d. The major advisor recommends admission.

A student must be admitted to candidacy before taking his/her oral examination.

Examinations

Comprehensive — In those departments and options (academic programs) requiring a comprehensive written examination, the examination will be given by the Advisory Committee at least two weeks prior to the final oral examination, filed in the major department for review, and be present at the final oral examination. A comprehensive written examination is required of all students on non-thesis, Option C, programs.

Final — An oral examination will be administered by the Advisory Committee covering the student's program. This examination should be comprehensive, testing the student's ability to analyze, integrate, and apply knowledge from the discipline. This examination should occur at least ten *working* days before commencement.

Master's Degrees and Options

Major	Degree	Options		
Agronomy	M.S.	A	B	
Animal Science@	M.S.	A		
Biology	M.S.	A	B	
Chemistry	M.S.	A		
Communication Studies and Journalism	M.S.	A		
Counseling and Human Resource Development	M.S.	A	B	C
Curriculum & Instruction	M.Ed.		B	C
Dairy Science	M.S.	A		
Economics	M.S.	A	B	
J.D./M.S.		A	B	
Educational Administration	M.Ed.		B	C
Engineering#	M.S.	A	B	C (option C not available for Agricultural and Biosystems Engineering)
English	M.A.	A		C
Entomology	M.S.	A		
Family and Consumer Sciences^	M.S.	A	B	C
Geography	M.S.	A	B	
Health, Physical Education and Recreation	M.S.	A	B	C
Industrial Management	M.S.	A	B	C
Mathematics	M.S.	A	B	C
Microbiology	M.S.	A		
Nursing	M.S.	A	B	
Pharmaceutical Sciences	M.S.*	A		
Plant Pathology	M.S.	A		
Rural Sociology	M.S.	A	B	C
Wildlife and Fisheries Sciences				
Fisheries Option	M.S.	A		
Wildlife Option	M.S.	A		

@Department requires a minor/supporting area.

#M.S. in Engineering is available with coursework in:

Agricultural and Biosystems
Engineering
Civil Engineering
Computer Science
Electrical Engineering
Mechanical Engineering@
Physics

^M.S. in Family and Consumer Sciences is available with study in:

Human Development, Consumer and
Family Sciences
Nutrition and Food Science

* As of July 1, 1996, the M.S. in
Pharmaceutical Sciences has been put on
hold. No applications will be processed.

The major fields shown (with the exception
of Nursing) may be selected as minor
fields, in addition to:

Agricultural Systems Technology
Botany
Geographic Information Systems
Gerontology
History
Music
Planning
Political Science
Zoology

Research Paper/Design Paper

Students following Option B must complete at least two credits for a Research Problem (or Design Paper in Engineering) in the major field presented as a written report. The content, style, and format of the report must meet the requirements of the major department. The Research Report/Design Paper must be approved by the Advisory Committee and filed in the major department. A copy of the written report should be provided to each committee member, including the Graduate Faculty Representative, and be available at the final oral examination.

Grading — See pages 107-108 for grading policies for Research Paper and Design Paper.

Thesis

A thesis must meet the requirements of the major department and the Graduate School and must be submitted by each student completing a Master's degree in Option A. The thesis must represent a scholarly contribution to research knowledge in the major field.

Credits — 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. A written research plan must be approved by the Advisory Committee not later than the end of the second semester of graduate work. The thesis accounts for 5 to 7 semester hours in the major.

Guidelines — The thesis may be prepared with a view to publication and conform to the style of one of the journals in the major field as required by the major department. It must be prepared in the format required by the Graduate School as shown in "Instructions for Thesis" available from the Graduate School. The thesis should be a single document rather than a compilation of individual manuscripts.

Grading — See pages 107-108 for grading policies for Thesis.

Review — A copy of the thesis must be filed with the Graduate School for review at least ten *working* days before the oral examination. Failure to do so may cause a delay in completing the degree. The student should distribute one copy to each member of the advisory committee, including the Graduate Faculty Representative.

Binding — Two copies, one on at least 50 percent rag content paper (cotton bond), corrected in accordance with suggestions by the Advisory Committee and the Graduate School, must be returned to the Graduate School with a receipt from the Library showing the fee paid for the binding of four copies. This should be completed at least five *working* days prior to commencement.

Multiple Masters Degrees or Majors

Graduate students may pursue a second or additional masters degree in majors other than their first master's degree, providing the degree designation is different. If approved by the Advisory Committee and the Dean of the Graduate School, up to ten credits may be transferred to a second degree program.

Time Limitation

Obsolete Program — If the requirements for the Master's degree are not completed within six years from the time of admission to work toward the degree, a reconsideration of the student's program will be required and the rules of the Graduate School in effect at the beginning of the seventh year will apply.

Obsolete Coursework — Courses completed more than six years prior to completion of the requirements of the Master's degree and not part of a previous 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 the department involved. Validation of obsolete coursework cannot exceed fifty percent of the total coursework listed on the plan of study and must be certified by the Advisory Committee on a form prescribed by the Graduate School.

Continuing Registration, Sustaining Enrollment for Thesis/Research-Design Paper — See page 109.

Master's Degree Checklist

<i>Requirements</i>	<i>When Due</i>
1. Application for Admission to Graduate School	One month before initial registration
2. Designation of Major Advisor	Prior to registration for first semester, or as soon as practical after beginning program
3. Designation of Advisory Committee	During first semester or as soon as practical after beginning program
4. Approval of Plan of Study by Advisory Committee; submit to Graduate School	During first semester
5. Approval of Thesis Proposal/Research Problem Plan	During second semester
6. Admission to Candidacy	After 20 graduate credits have been earned
7. Comprehensive Written Examination	During last semester of course work, at least two weeks before final oral examination
8. Filing of Graduation Application	Within the first three weeks of the final semester
9. Thesis/Research-Design Paper submitted to Advisory Committee	At least ten working days before the final oral examination
10. Thesis submitted to Graduate School	At least ten working days before the final oral examination
11. Request for Scheduling Oral Examination	At least ten working days before the final oral examination
12. Final Oral Examination	At least ten working days before commencement
13. Corrected copies of Thesis submitted to Graduate School and Library OR Research Paper filed in major department	At least five working days before commencement

Doctor of Philosophy Degree Requirements

Doctor of Philosophy Degrees

Majors

- *Agricultural Engineering*
Offered through a cooperative program with Iowa State University.
- *Agronomy*
- *Animal Science*
Offered in the Departments of: Animal and Range Sciences Dairy Science
- *Atmospheric, Environmental and Water Resources*
Offered in cooperation with the South Dakota School of Mines and Technology (SDSM&T).
- *Biological Sciences*
Offered in the Departments of: Animal and Range Sciences Biology and Microbiology Dairy Science Plant Science Veterinary Science Wildlife and Fisheries Sciences
Offered in cooperation with the University of South Dakota (USD).
- *Chemistry*
- *Sociology*

Admission Requirements

Applicants for the Doctor of Philosophy degree will usually have a Master's degree. This degree must be awarded from an approved, accredited institution. In those cases where applicants do not have a Master's degree, departmental requirements will apply, either requiring completion of a Master's degree or permitting an individual to move directly into a doctoral program.

Advisory Committee

After consultation with the student, the head of the major department will designate a major advisor prior to first registration where practical. During the student's first semester in residence (or before the completion of 12 credits part-time) the major advisor will recommend to the Dean of the Graduate School members of an Advisory Committee as follows:

- a. The major advisor who acts as chairperson of the committee.
- b. The head or representative of the major department or of a department in the area of the major.
- c. An additional member of the major department or a related department.
- d. The minor advisor or a representative from an area where the supporting courses will be taken if a minor or supporting area is required. If a minor or supporting area is not required, an additional member should be recommended from the major department or a related area.
- e. The Graduate School Dean will select a fifth member from a department representing an area not closely related to the major or minor department or supporting area. This member represents the Graduate Faculty, ensuring that its rules and regulations are followed by the Committee and acts as the student's advocate, if necessary.

The above five members shall be members of the Graduate Faculty. Additional members of the committee may be requested by the student or the major advisor and assigned to the committee by the Dean of the Graduate School.

The Advisory Committee is responsible for assisting the student in developing a suitable graduate program, providing continuing guidance and counsel, evaluating student progress, and certifying the completion of the degree requirements to the Dean of the Graduate School. The Advisory Committee approves the Plan of Study and any revision(s) of it, approves the Dissertation Proposal, reviews the Dissertation, evaluates the student's progress, determines the student's proficiency with the research tools, conducts the comprehensive examinations and the final examination, supervises the validation of courses, and ensures that professional standards have been met in completing the degree requirements.

Plan of Study Information

Within six weeks after the Advisory Committee is formed, they will schedule a meeting with the student to approve a Plan of Study and to consider a research area for the dissertation. The Plan of Study must be prepared on the appropriate form and approved by the Advisory Committee and the Dean of the Graduate School. Delay in submitting a Plan of Study may result in disapproval of courses taken prior to approval. The student cannot take the comprehensive written examination prior to approval of the Plan of Study. Changes in the approved Plan of Study must be requested on a form furnished by the Graduate School, and must be approved by the Advisory Committee and the Dean of the Graduate School. While devising your plan of study, refer to the "Academic Information" section in this Bulletin, beginning on page 106, in addition to the following information.

Plan of Study Credit Requirements

Total Credits Required — A minimum of three academic years of full-time work beyond the Bachelor's degree (minimum of 90 semester credits, 90-Credit Plan) or a minimum of two academic years of full time work beyond the Master's degree (minimum of 60 semester credits, 60-credit Plan) are required for the Doctor of Philosophy degree. Where consideration is given to a master's degree it must be in the area of the major, minor or a related area, be an academic program from a regionally accredited institution, and be declared at the time the Plan of Study is submitted. The Advisory Committee may require more credits than the minimum listed above if it believes the extra requirements are in the best interest of the student.

Major Courses — At least 60 credits of the 90-Credit Plan or 40 credits of the 60-Credit Plan required for the degree must be earned in the major. Dissertation and transfer credits may apply. Not all courses need to be in a single department or area, but all courses applying to the major should be closely related to the major area.

Minor or Supporting Courses, if required — At least 15 credits of the 90-Credit Plan or 10 credits of the 60-Credit Plan required for the degree must be earned in a minor or in supporting courses (coursework chosen from two or more fields). Transfer credits may apply. All courses applying in the minor or supporting fields must be taken outside the major department or area, unless courses in the major department are considered sufficiently diverse by the Advisory Committee. If the degree program does not require a minor or supporting area, additional coursework from the major or related areas must be substituted for the 15 credits (90-credit Plan) or 10 credits (60-credit Plan).

Graduate Credit Requirement — At least 50 percent of the credits on a Plan of Study must be in courses open only to graduate students (600-series or above).

Additional Requirements — The Advisory Committee may require more credits in residence than the minimum indicated above if they feel it is in the best interest of the student.

Dissertation

Proposal — The student in consultation with the major advisor or dissertation advisor shall prepare a written dissertation proposal for approval by the Advisory Committee.

Requirements — The dissertation should represent at least one academic year of full-time research (18-30 credits). (Note: Some programs require more than 30 credits for the dissertation.) Of no specific length, it should advance or modify knowledge in the major discipline and demonstrate the candidate's mastery of the subject. The dissertation should be prepared in the style of one of the journals in the major discipline as required by the Major Department and in the format required by the Graduate School as specified in "Instructions for Dissertation." When submitted, it is accompanied by an abstract of no more than 350 words.

While the dissertation should be an integrated document providing opportunity for philosophic inquiry, the student is encouraged to develop one or more journal articles from it. Some departments may require that the journal articles be a part of the dissertation. However, the dissertation should be a single document rather than a compilation of individual manuscripts.

Review — After the dissertation is approved by the major advisor or dissertation advisor, a copy is delivered to the Graduate School. After the dissertation is found acceptable in form by the Graduate School, it is returned to the student who must distribute copies to the members of the Advisory Committee ten *working* days prior to the final oral examination.

Binding — After the final oral examination, all necessary corrections in the dissertation are made and four copies are submitted to the Library for binding. The cost for binding these

copies is the responsibility of the student. Two copies, one on at least 50 percent rag content paper (cotton bond), and an additional abstract, printed on at least 50 percent rag content paper (cotton bond), must be returned to the Graduate School with a receipt from the Library showing the binding costs paid for the four copies. This should be completed at least five *working* days prior to commencement. The student must agree to the publication of the abstract and payment for publication of the abstract and microfilming of the dissertation.

Dissertation Sustaining

See page 109, section titled "Continuing Registration, Sustaining Enrollment for Dissertation/Thesis/Research-Design Paper."

Failure to maintain registration or enrollment will automatically terminate the doctoral program. Reinstatement requires retaking the Comprehensive Written Examination with performance approved by the Advisory Committee.

Examinations

Interim Evaluation — Upon completion of approximately half of the coursework on the Plan of Study, the Advisory Committee will meet to evaluate the progress of the student, provide advice and counsel, and recommend continuance or termination of the program. Since the Doctor of Philosophy is a terminal academic degree, evaluation of student performance includes an evaluation of progress in the program as well as academic performance. The Advisory Committee may recommend to the Dean of the Graduate School termination of the student in the program.

Comprehensive Written and Oral Examinations — When coursework has been substantially completed and the research tool requirement has been met, examinations covering the coursework are taken. These examinations are open for all members of the Graduate Faculty to listen but not participate in the questioning. The first is a comprehensive written examination which is followed on satisfactory completion by an oral examination. These examinations are to test the student's knowledge and ability to integrate this knowledge in both the major and minor (or supporting courses) areas.

The Advisory Committee arranges for the exam through a memo to the Dean of the Graduate School specifying date, time, place. This memo initiates the "Notification of Action" form from the Graduate School to the Advisor who uses the form to record results of the Comprehensive Examinations. Copies of the written examination are filed in the major department. The comprehensive examinations must be completed at least two months before the final examination is taken. Upon satisfactory completion of the comprehensive examinations, a student is formally admitted to candidacy for the Ph.D. degree. Unless a student receives the Doctor's degree within three years after becoming a candidate, comprehensive examinations must be repeated.

Final Examination — This examination is conducted by the Advisory Committee after notifying the Graduate School of the time and place of the examination 10 *working* days prior to the examination. While the Advisory Committee determines the character and length of the examination, sufficient time should be devoted to the dissertation, including journal articles, to test the ability of the student to defend the research. In addition, questions to test the student's general knowledge, judgement and critical powers are usually asked. The final oral examination cannot be taken earlier than two months following successful completion of the comprehensive examinations and must be completed ten *working* days prior to commencement.

Residence Requirements

The minimum residence requirement is 50 credits, including two semesters spent on campus. Those on full-time faculty/staff appointment and graduate assistants may satisfy the residence requirements within one academic year.

Time Limitation

Obsolete Program — If the Doctor of Philosophy degree is not completed within eight years from the time of admission to work toward the degree, a reconsideration of the student's program will be required. In such cases, the rules of the Graduate School in effect at the beginning of the ninth year will become effective for the student.

Obsolete Coursework — Courses completed more than eight years before completion of the doctorate and not part of a previous degree are regarded as obsolete coursework. Such 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 a written validation examination in the subject matter area. Validation of obsolete coursework cannot exceed fifty percent of the total coursework listed on the plan of study and must be certified by the Advisory Committee on a form prescribed by the Graduate School. However, credits earned as a part of a Master's degree which is applied toward the doctoral program remain valid and require no validation.

Doctor of Philosophy Degree Checklist

<i>Requirements</i>	<i>When Due</i>
1. Application for Admission to Graduate School	One month before initial registration
2. Designation of Major Advisor	Prior to registration for first semester, where practical
3. Designation of Advisory Committee	Within first semester of graduate work or prior to 12 semester hours of graduate work
4. Approval of Plan of Study by Advisory Committee; submit to Graduate School	Within the first semester of graduate work
5. Approval of Dissertation Proposal by Advisory Committee	Before beginning research
6. Interim Evaluation by the Advisory Committee	Not later than halfway through the coursework on the Plan of Study
7. Comprehensive Examinations; Candidacy for Ph.D. Degree	Near completion of coursework and at least 2 months prior to final oral examination
8. Filing of Graduation Application	Within the first three weeks of final semester
9. Memo submitted from advisor to Graduate School requesting Final Oral Examination	At least ten working days prior to final oral examinations
10. Dissertation Due to Graduate School and Advisory Committee	At least ten working days prior to final oral examinations
11. Final Oral Examination	At least ten working days prior to commencement
12. Corrected Copies of Dissertation Due to Graduate School	At least five days prior to commencement
13. Arrangements for microfilming and binding of Dissertation	At least five days prior to commencement

Financial Information and Student Services

Application Fee — non-refundable charge assessed all applicants for initial admission.

Activity Fee — A fee charged per semester to cover health, student union and other university services, such as: admission to plays, athletic events, athletic facilities, and partially funded judging, music and forensic programs.

University Support Fee — A fee assessed per credit to replace expendable supplies, defray cost of maintenance, repair and replacement of equipment, testing and other instruction related costs. Also to assist in providing services that benefit students which are not funded from other sources.

Late Charge — If you do not pay tuition and fees during the regular established payment periods, you will be assessed a late charge. If you fail to satisfy financial obligations when due, you will be administratively withdrawn from the University.

International Student Fee — \$100 fee required during first semester of enrollment.

Tuition and Fees*

<i>Tuition, per credit hour</i>	<i>Cost</i>
Undergraduate Resident	\$56.15
Undergraduate Non-Resident	178.65
Graduate Assistant, undergraduate course	28.42
Graduate Resident	85.25
Graduate Non-Resident	251.45
Graduate Assistant, graduate course	28.42

<i>Fees, per credit hour</i>	<i>Cost</i>
University Support Fee	\$26.78
Activity Fee.....	11.77
Salary Competitive Fee	3.06
Engineering Education Fee, per credit	12.15
Engineering/Science Lab fees, per course	19.00
Nursing Major Fee, per semester	127.00
Nursing University Support Fee, per credit	25.43

See sidebar for special expenses.

**Effective Fall 1998 and subject to change by action of the Board of Regents.*

**Other tuition fees may apply for off-campus delivery.*

Fees for Auditing Courses

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

Thesis and Dissertation Fees

Masters students must pay a fee to the Library to cover the cost of binding four thesis copies. This must be done before the Graduate School will accept the manuscript in final form.

Doctor of Philosophy students must pay a fee to the Library to cover the cost of binding four copies of the dissertation. A Money Order or Cashier's Check payable to U.M.I. for microfilming and publishing the abstract in "Dissertation Abstracts" must accompany the final copies of the dissertation when submitting them to the Graduate School. This does not include Registration of Copyright, reprint costs or other incidental fees.

Fellowships and Assistantships

Application — A number of fellowships and administrative, research, and teaching assistantships are available to qualified graduate students admitted to degree programs. Recommendations for granting these are handled by the departments. Students interested in obtaining such financial assistance should write directly to the department in which they expect to do their major work. A minimum undergraduate grade point average of 2.75 or completion of at least 10 graduate credits with a cumulative grade point average of 3.0 is required for appointment as a graduate assistant.

Obligation — The Graduate School of South Dakota State University, as a member of the Council of Graduate Schools in the United States, subscribes and adheres to the following resolution regarding scholars, fellows, trainees, and graduate assistants. In every case in

which a graduate scholarship, fellowship, traineeship, or graduate assistantship for the next academic year is offered to an actual prospective graduate student, the student, having indicated acceptance before April 15, will have complete freedom through April 15 to submit in writing a resignation of the appointment in order to accept another scholarship, fellowship, traineeship, or graduate assistantship. However, an acceptance given or left in force after April 15 commits the student not to accept another appointment without first obtaining formal release for the purpose. Students working on degree programs, including those on assistantships, are considered to have assumed an obligation to complete their graduate program before transferring to any other post-baccalaureate or professional degree program.

Financial Aid

Student financial assistance programs are administered through the student Financial Aids Office in Administration Building Room 106, or may be contacted at 605/688-4695. Graduate assistantships, fellowships, and traineeships are administered by the department or program involved.

Student Services

Detailed information on Student Life and Services is found in the general University Bulletin.

Academic Evaluation and Assessment Office — Students needing testing information (GRE, TOEFL, etc.) should contact this office located in Pugsley Center Room 201, telephone 605/688-4217.

Bookstore — The University bookstore is located in the University Student Union for purchase of textbooks and other supplies.

Disabled Student Services — Assistance is available for students with disabilities. The Disabled Student Advisor is available in Administration Building Room 318, telephone 605/688-4496.

Health Service — The Health Service provides outpatient services and is located on the second floor of West Hall. Information is available by calling 605/688-4157 or 605/688-5588 for appointments.

Housing and Food Service — Prospective graduate students should inquire about rooms or apartments from the Director of Residential Life, well in advance of registration. The Residential Life office is located in Wecota Hall 115, telephone 605/688-5148. Information concerning off-campus housing is available from the Off-Campus Housing Assistance Office, USU 101, telephone 605/688-5916.

International Student Affairs — International students should consult with the International Student Affairs Office concerning special requirements and additional expenses, Administration Building Room 312, telephone 605/688-4122.

Native American Student Advising — The Native American Student Advisor is available to aid Native American students and is located in Administration Building Room 318, telephone 605/688-4126.

Special Expenses for Education Students — Education students enrolled in selected Education courses are assessed a \$100 one-time fee for Master's Level Internships.

Special Expenses for Engineering Courses — A fee of \$12.85 per credit hour is charged for courses in the College of Engineering. This fee applies to Mathematics and Computer Science courses as well.

Engineering/Science Lab Fee — of \$19.55 per designated course is charged to all lab classes in engineering, mathematics, and selected sciences. These funds are used for supplies and materials to purchase equipment.

Special Expenses for Nursing Students — Nursing majors enrolled in more than 2 credits of nursing courses are assessed a major fee of \$134.60 for the Graduate program. Students enrolled in the Family Nurse Practitioner program are assessed a fee of \$478.00 per semester.

As of July 1, 1998

- Adamson, Dwight W.**, Associate Professor of Economics, 1989, 1995; B.A., Washington State University, 1976; M.A., 1983; Ph.D., 1988.
- Anderson, Gary A.**, Associate Professor of Agricultural and Biosystems Engineering, 1987, 1992; B.S., SDSU, 1975; M.S., Iowa State University, 1985; Ph.D., 1987.
- Andrawis, Alfred S.**, Associate Professor of Electrical Engineering, 1981, 1996; B.S., Alexandria University, 1974; M.S., SDSU, 1982; Ph.D., Virginia Polytechnic Institute and State University, 1991.
- Andrawis, Madeleine Y.**, Associate Professor of Electrical Engineering, 1980, 1996; B.S., Cairo University, 1977; M.S., SDSU, 1983; Ph.D., Virginia Polytechnic Institute and State University, 1991.
- Arnold, W. Eugene**, Associate Dean of the College of Agriculture and Biological Sciences, Director of Academic Programs, Professor of Plant Science, 1970, 1988; B.S., Oklahoma State University, 1965; Ph.D., North Dakota State University, 1970.
- Arwood, Donald E.**, Associate Professor of Rural Sociology, 1986, 1994; B.S., SDSU, 1980; M.S., 1982; Ph.D., 1989.
- Baer, Robert J.**, Professor of Dairy Science, 1982, 1992; B.S., University of Georgia, 1977; M.S., 1979; Ph.D., 1983.
- Bahr, Ann Marie B.**, Associate Professor of Philosophy and Religion, 1988, 1993; B.A., Lawrence University, 1972; M.A., Stanford University, 1975; Ph.D., Temple University, 1989.
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- Lewis, James K.**, Professor Emeritus of Animal Science, 1950, 1983; B.S., Colorado State University, 1948; M.S., Montana State University, 1950.
- Linder, Raymond L.**, Professor Emeritus of Wildlife and Fisheries Sciences, 1964, 1973; B.S., University of Nebraska, 1953; M.S., Iowa State University, 1955; Ph.D., University of Nebraska, 1964.
- Lund, Lillian O.**, Professor Emerita of Textiles, Clothing, and Interior Design, 1944, 1975; B.A., St. Olaf College, 1930; M.S., University of Minnesota, 1944.
- Lundeen, Ardelle A.**, Professor Emerita of Economics, 1976, 1987; B.S., SDSU, 1970; M.S., 1971; Ph.D., Iowa State University, 1976.
- Luther, Richard M.**, Professor Emeritus of Animal Science, 1964, 1987; B.S., SDSU, 1954; M.S., 1959; Ph.D., Iowa State University, 1964.
- Lyle, Mary F.**, Professor Emerita of Extension, 1943, 1984; B.S., University of South Dakota, 1943; M.S., Iowa State University, 1953; Ph.D., University of Wisconsin, 1968.
- Lytle, William F.**, P.E., Associate Professor Emeritus of Agricultural Engineering, 1961, 1991; B.S., University of Illinois, 1939; B.S., 1940; M.S., 1948.
- Mankin, Cleon**, Professor Emeritus of Plant Science, 1953, 1990; B.S., New Mexico Highlands University, 1938; M.S., New Mexico State University, 1950; Ph.D., Washington State University, 1953.
- Marken, Jack W.**, Professor Emeritus of English, 1967, 1986; B.A., Akron University, 1947; M.A., Indiana University, 1950; Ph.D., 1953.
- McCarty, J. Walter**, Associate Professor Emeritus of Animal Science, 1948, 1986; B.S., SDSU, 1947; M.S., University of Minnesota, 1948.
- McCone, William C.**, Associate Professor Emeritus of Animal Science, 1947, 1955; B.S., SDSU, 1943; M.S., 1950.
- McDaniel, Burruss**, Professor Emeritus of Plant Science, 1966, 1992; B.A., University of Alaska, 1953; M.S., Texas A&M University, 1961; Ph.D., 1965.
- Meyer, Edward L.**, Professor Emeritus of Communication Studies and Theatre, Supervisor of Speech and Hearing Center, 1965, 1976; B.A., Huron College, 1950; M.A., University of South Dakota, 1953; Ph.D., University of Minnesota, 1975.
- Miller, Bruce L.**, Professor Emeritus of Physics, 1955, 1988; B.S., SDSU, 1947; M.S., University of Kansas, 1951; Ph.D., 1953.
- Minyard, Joe A.**, Professor Emeritus of Animal Science, 1953, 1987; B.S., West Texas State University, 1951; M.S., SDSU, 1959.
- Moore, Raymond A.**, Professor Emeritus of Plant Science, Associate Dean/Director Emeritus, 1956, 1974; B.S., SDSU, 1951; M.S., 1958; Ph.D., Purdue University, 1963.
- Morgan, Jr., Walter C.**, Professor Emeritus of Biology, Professor Emeritus of Animal Science, 1954, 1985; B.S., University of Connecticut, 1946; M.S., George Washington University, 1949; Ph.D., University of Connecticut, 1953.

- Murra, Gene E.**, Professor Emeritus of Economics, Extension Specialist, Graduate Faculty, 1959, 1977; B.S., SDSU, 1959; M.S., 1960; Ph.D., Ohio State University, 1963.
- Myers, Gerald A.**, Professor Emeritus of Biology, 1958, 1968; B.A., Kearney State College, 1951; M.A., University of Northern Colorado, 1957; Ph.D., SDSU, 1963.
- Olson, Oscar E.**, Professor Emeritus of Chemistry, 1951, 1979; B.S., SDSU, 1936; M.S., 1937; Ph.D., University of Wisconsin, 1948.
- Omodt, Gary W.**, Professor Emeritus of Pharmaceutical Sciences, 1958, 1968; B.S., University of Minnesota, 1953; Ph.D., 1959.
- Palmer, Ivan S.**, Professor Emeritus of Chemistry and Biochemistry, 1955, 1973; B.S., SDSU, 1955; M.S., 1956; Ph.D., Pennsylvania State University, 1960.
- Pengra, Robert M.**, Professor Emeritus of Microbiology, 1957, 1981; B.S., SDSU, 1951; M.S., 1953; Ph.D., University of Wisconsin, 1959.
- Peterson, Evelyn T.**, Professor Emerita of Nursing, 1954, 1993; B.S., University of Washington, 1951; M.N., 1958; D.Nu.S., University of California, 1975.
- Peterson, Ronald M.**, Professor Emeritus of Horticulture-Forestry, 1953, 1987; B.S., Colorado State University, 1947; M.S., University of California, 1949; Ph.D., University of Minnesota, 1953.
- Prashar, Paul D.**, Professor Emeritus of Horticulture, 1960, 1978; B.S., Government Agricultural College, 1952; M.S., University of Minnesota, 1955; Ph.D., University of Missouri, 1960.
- Raney, A. Leon**, Professor/Dean of Libraries Emeritus, B.S., University of Central Arkansas, 1960, M.S., Louisiana State University, 1962, Ph.D., Indiana University, 1972.
- Richardson, Jay R.**, Professor Emeritus of Human Development, Consumer and Family Sciences, 1963, 1970; B.S., Brigham Young University, 1957; M.S., 1958; Ed.D., Pennsylvania State University, 1969.
- Romans, John R.**, Professor Emeritus of Animal and Range Sciences, 1962, B.S., Iowa State University, 1955; M.S., SDSU, 1964; Ph.D., 1967.
- Rue, Rolland R.**, Professor Emeritus of Chemistry and Biochemistry, 1962, 1983; B.A., Macalester College, 1957; Ph.D., Iowa State University, 1962.
- Sandfort, John F.**, Professor Emeritus of Mechanical Engineering, 1958; B.S., Ohio State University, 1933; B.S., 1934; M.S., Iowa State University, 1947.
- Sauer, Howard M.**, Professor Emeritus of Rural Sociology, 1938, 1973; B.A., Drake University, 1929; M.A., Iowa State University, 1931.
- Scholten, Marvin**, Professor Emeritus of Education, 1956, 1985; B.A., University of Minnesota, 1949; M.A., University of South Dakota, 1950; Ed.D., 1967.
- Semeniuk, Alexandra O.**, Professor Emerita of Textiles, Clothing, and Interior Design, 1959, 1980; B.S., SDSU, 1955; M.S., 1961.
- Shank, D. Boyd**, Professor Emeritus of Plant Science, 1946, 1980; B.S., University of Nebraska, 1935; Ph.D., Iowa State University, 1941.
- Shubeck, Fred E.**, Professor Emeritus of Plant Science, 1951, 1985; B.S., SDSU, 1940; Ph.D., University of Minnesota, 1951.
- Skubic, Louis G.**, Professor Emeritus of General Engineering, 1953, 1985; B.S., University of Minnesota, 1947; M.A., 1953.
- Sogn, Arthur B.**, Associate Professor of Economics Extension Emeritus; 1968, 1974; B.S., SDSU 1948; M.S., 1959.
- Spinar, Leo H.**, Professor Emeritus of Chemistry and Biochemistry, Environmental Health and Safety Officer, 1966, 1970; B.A., University of South Dakota, 1951; M.S., University of Wisconsin, 1953; Ph.D., 1958.
- Spurgeon, Kenneth R.**, Professor Emeritus of Dairy Science, 1958, 1985; B.S., Purdue University, 1942; M.S., 1948; Ph.D., University of Wisconsin, 1951.
- Stine, Lawrence C.**, Professor Emeritus of Communication Studies and Theatre, Director Emeritus of Theatre, Associate Dean Emeritus of Arts and Science, 1952, 1977; B.A., Butler University, 1947; M.A., University of Iowa, 1951; Ph.D., 1962.
- Stoflet-Gouldin, Dorothy**, Professor Emerita of Textiles, Clothing, and Interior Design, 1963, 1977; B.A., Coe College, 1933; M.S., Iowa State University, 1948.
- Storry, Junis O.**, Dean and Professor Emeritus of Engineering, Amdahl Distinguished Professor of Engineering, 1967, 1985; B.S., SDSU, 1942; M.S. 1949; Ph.D., Iowa State University, 1969.
- Taylor, Charles A.**, Professor Emeritus of Biology, 1949, 1968; B.S., Cornell University, 1935; M.S., 1939.
- Taylor, Donald C.**, Professor Emeritus of Economics, 1980, B.S., Cornell University, 1959; M.S., University of Minnesota, 1964; Ph.D., 1965.
- Thompson, John E.**, Professor Emeritus of Economics, 1952, 1985; B.S., University of South Dakota, 1950; M.S., SDSU, 1953; Ph.D., University of Wisconsin, 1960.
- Tucker, William L.**, Agricultural Experiment Station Statistician/Professor Emeritus of Mathematics and Statistics, 1963, 1972; B.S., University of Kentucky, 1952; M.S., North Carolina State University, 1957; Ph.D., 1963.
- Volstorff, Vivian V.**, Dean Emerita of Women, Professor Emerita of History, 1932, 1973; B.S., Northwestern University, 1928; M.A., 1929; Ph.D., 1932.
- Wadsworth, Jr., William S.**, Professor Emeritus of Chemistry, 1963, 1970; B.S., Trinity College, 1950; M.S., 1952; Ph.D., Pennsylvania State University, 1955.
- Wagner, Robert T.**, President Emeritus, Professor Emeritus of Rural Sociology, Distinguished Professor of Higher Education, 1970, 1997; B.A., Augustana College, 1954; M.Div., Seabury Western Theological Seminary, 1957; S.T.M., 1970; Ph.D., SDSU, 1972; L.H.D., Augustana College, 1994; D.P.S., SDSU, 1997.
- Walstrom, Robert J.**, Professor Emeritus of Plant Science, 1955, 1988; B.S., University of Nebraska, 1947; M.S., 1949; Ph.D., Iowa State University, 1955.
- Webster, Victor S.**, Professor Emeritus of Chemistry, 1936, 1974; B.A., Iowa State University, 1930; M.S., 1931; Ph.D., 1933.
- Wells, Darrell G.**, Professor Emeritus of Plant Science, 1962, 1985; B.S., SDSU, 1941; M.S., State College of Washington, 1943; Ph.D., University of Wisconsin, 1949.
- Westin, Frederick C.**, Professor Emeritus of Plant Science, 1947, 1986; B.S., University of Wisconsin, 1941; M.S., 1947; Ph.D., 1952.
- White, Everett M.**, Professor Emeritus of Plant Science, 1954, 1990; B.S., Iowa State University, 1948; M.S., 1950; Ph.D., 1953.
- Whitehead, Eugene I.**, Professor Emeritus of Chemistry, 1941, 1983; B.S., SDSU, 1939; M.S., 1941.
- Widvey, Harold W.**, Professor Emeritus of Communication Studies and Theatre, 1972, 1978; B.S.Ed., Northern State College, 1957; M.S.Ed., 1961; Ph.D., University of Nebraska, 1971.

- Widvey, Lois I.**, Distinguished Professor Emerita of Education, 1973, 1998; B.S., Northern State College, 1955; M.S.Ed., 1958; Ed.D., University of Nebraska, 1971.
- Wiersma, John L.**, Professor Emeritus of Agricultural Engineering, 1943, 1983; B.S., SDSU, 1943; M.S., 1950; Ph.D., University of California, 1970.
- Williams, Perry W.**, Professor Emeritus of Physics, 1945, 1979; B.A., Dakota Wesleyan University, 1936; M.S., SDSU, 1940.
- Williamson, Warren E.**, Professor Emeritus of Health, Physical Education and Recreation, 1956, 1987; B.S., SDSU, 1951; M.S., 1954; Dir. in Rec., Indiana University, 1969.
- Wills, Rena**, Professor Emerita of Nutrition and Food Science, 1952, 1976; B.S., Iowa State University, 1940; M.S., 1946.
- Witherington, Paul**, Professor Emeritus of English, 1970, 1993; B.A., Baylor University, 1954; M.A., University of Texas, 1960; Ph.D., 1964.
- Wood, Leon**, Professor Emeritus of Plant Science, 1955, 1990; B.S., Kent State University, 1949; M.S., Ohio State University, 1951; Ph.D., University of Minnesota, 1958.
- Yarbrough, Jerry W.**, Professor Emeritus of English, 1968, 1976; B.A., Abilene Christian University, 1960; M.A., University of Texas, 1962; Ph.D., 1968.

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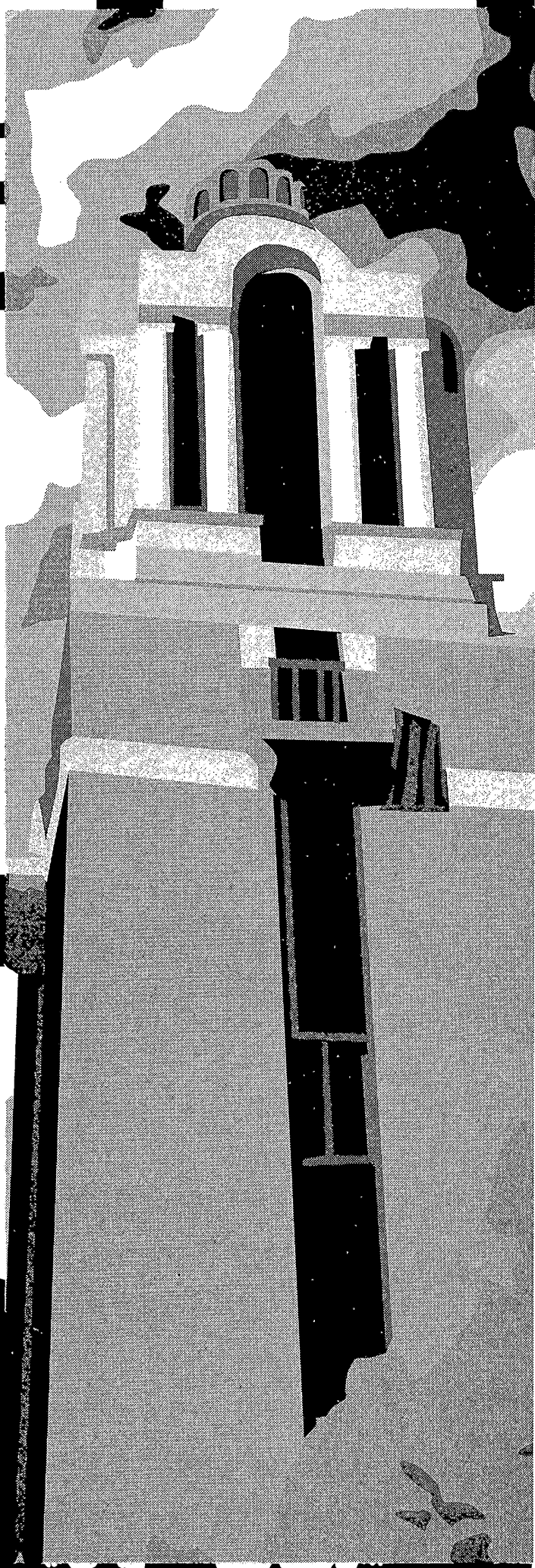
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Application for Admission

Application for Admission

Application Procedure

Processing of an application will begin only when the application form, application fee, transcripts, letters of recommendation, and test data as required by department are received in the Graduate School. If an applicant fails to complete the application file for the term proposed to begin graduate work, a new date of entry will need to be specified.

Complete application files will include:

1. Complete, signed application form. Please fill in requested information by typing or printing in ink. An application form is included at the back of this catalog.
2. \$15.00 application fee. This fee is non-refundable, regardless of what action is taken on the application for admission.
3. Official transcripts from each higher education institution attended. These transcripts must be sent directly from the institution to the Graduate School. Transcripts "Issued to Student" are unofficial. The earned Bachelor's Degree must be noted on the undergraduate transcript. When an incomplete transcript is furnished in support of the application, a complete transcript will be required by the end of the first semester of course work.
4. Two letters of recommendation. These are required from persons acquainted with the applicant's academic record. Three letters are required of applicants into the Nursing program; two additional letters of recommendation are required for CHRD (please contact the department for the forms). Signed letters of recommendation may be submitted on plain paper or letterhead, if desired, or recommenders may use the forms included in the back of this catalog.
5. The GRE test is required of all applicants into Agronomy, Biology, Chemistry, Electrical Engineering, English, Entomology, HPER, Microbiology, Pharmaceutical Sciences (program is currently not admitting any students), Plant Pathology, and Wildlife and Fisheries.
6. Some programs require additional admission materials. Applicants should consult the specific requirements for each program.
7. The TOEFL score is required of all international students. This score must be an original score, a copy of a verifiable score, or a certified copy of the original score sheet.
8. Applications and all related documents should be mailed to:

Graduate School
South Dakota State University
Administration Bldg 130
Box 2201
Brookings, SD 57007-1998



Graduate School Admission Application

South Dakota State University
Box 2201, Brookings, SD 57007-1998

Applying as a graduate student for the first time at SDSU Reapplying

BIOGRAPHICAL INFORMATION

Legal Name _____
 LAST FIRST MIDDLE OTHER PREFERRED NAME

Permanent Address _____
 Street, RFD, or Box City State or Country Zip Code

Local Address _____
 (all SDSU correspondence will be sent to this address) Street, RFD, or Box City State or Country Zip Code

Phone (Home) _____ (Work) _____ (E-mail) _____

Social Security Number _____ Birth Date _____

Emergency Contact _____
 Name Daytime Phone Number Relationship

Citizenship: USA Resident Alien Other (specify citizenship) _____ Country of Birth _____

Have you obtained a visa? Yes No If yes, type of visa: _____ Date of initial entry into the U.S. _____

Have you lived in South Dakota for the past 12 months? Yes No If no, please explain _____

What state or country are you a legal resident of? _____ County within the state in which you reside _____

EDUCATIONAL BACKGROUND

University Granting Bachelor's Degree _____ Degree _____ Date Received _____

List ALL Colleges/Universities Attended:

School Name	City	State	Dates Attended

Standardized admissions tests taken (GRE, MAT, TOEFL) minimum TOEFL of 525 required _____
 Name of Test Latest date test taken Score

Have you ever been dismissed from any college? Y N If yes, when and for what reason? _____

Have you ever applied for admission to another graduate school? Y N If yes, what college? _____ Were you admitted? Y N

PROFESSIONAL OBJECTIVE

Term Graduate Work desired _____
 Indicate Spring/Summer/Fall Year

Are you planning on working on a master's or doctoral degree at SDSU? Master's Doctoral No, I am applying as a special student (not pursuing a degree)

If yes, what program of study do you plan to pursue? _____ Major Department _____

Have you previously applied as a Graduate Student at SDSU? Yes No If yes, when? _____

ADDITIONAL INFORMATION

This information is used for institutional research and Federal reports. Your responses will in no way affect your admission. Please circle your answers.

SEX: Male Female DISABILITY: Audio Visual Learning Disabled Mobility-Ambulatory Mobility-Wheelchair

MARITAL STATUS: Married Unmarried ETHNIC GROUP: American Indian Asian African American Hispanic White Other Unknown

Providing your social security number is voluntary. Refusal to disclose this information will not affect your eligibility for admission. The number will be used solely for record-keeping purposes to provide positive identification. If you are admitted, your social security number will appear upon your official transcript; thus, it may be disclosed to outside parties, but only under those conditions that permit disclosure of the transcript.

SDSU offers all educational programs, materials, and service to all people without regard to age, race, color, religion, sex, handicap, or national origin. SDSU is an Equal Opportunity/Affirmative Action Employer.

All answers I have given on this application are accurate and true, and any intentional misrepresentation may be cause for revocation of admission. If admitted, I agree to observe the rules of the South Dakota Board of Regents and to pay all fees and charges assessed.

Signature of Applicant _____ Date _____



Graduate School
Admin. Bldg. 130

Graduate School Personal Reference Form

To the Applicant:

This form should be given to professors who are able to comment on your qualifications for graduate study. You should not request a recommendation from a non-academic person unless you have been away from academic institutions for some time. In that case, you should request the recommendation from someone knowing your academic ability.

A. Applicant's Name _____ Degree Sought _____

B. Applicant's Social Security Number _____ Graduate Program _____

C. List the courses you took under the direction of the person completing this form, if applicable.

Course Number	Course Title	When Taken	Grade

D. Describe personal contact with person furnishing reference:

Applicant's Waiver of Right to Access

The Family Educational Rights and Privacy Act of 1974, as amended, (PL 93-380), allows a candidate for admission to waive his or her right of access to confidential letters or statements written in his or her behalf if the recommendation is used solely for the purposes of admission and if the candidate, upon request, is notified of the names of all persons making such recommendations on his or her behalf. The University does not require that you make such a waiver as a condition for admission. However, under the legislation you have the option of signing such a waiver as follows:

I hereby voluntarily waive, do not waive my right to examine this confidential evaluation.

Name _____ Date _____ Signature _____
Please Print

To the Person Completing This Form:

The applicant named above has applied for admission to the Graduate School of South Dakota State University. Please complete this personal reference form and return it as soon as possible. If you have not had the applicant as a student, you may prefer to write a separate letter and attach it to this form. If you do not know this student well, please feel free to say so; such frankness will not prejudice the candidate's chance of admission.

- I have verified that the courses listed in item C were taken under my direction. Yes No
- I do not know the student well enough to give him or her a recommendation. (If you check this box, you do not need to complete the rest of this form.)
- Please check the educational level of the representative group with whom the applicant is compared:
 College Juniors College Seniors First-Year Graduate Students Advanced Graduate Students
- I would be pleased to have the applicant working under my direction as a: Research Assistant Administrative Assistant
 Teaching Assistant Fellowship

(continue on back)

5. Summary Evaluation: In comparison with a representative group of students in the same field who have had approximately the same amount of experience and training, how do you rate the applicant in general research and scholarly ability?

- Truly Exceptional** Equivalent to the very best you have known, a person who, in your experience, appears only every few years.
- Outstanding** Comparable to the best student in the current class. Highest 5%.
- Very Good** Next highest 5%.
- Good** Ability easily identifiable, but not in upper 10%. Probably in upper 15%. Certainly upper 25%.
- Above Average** Probably upper 25%.
- Average** Upper 50%.
- Below Average** Lower 50%, but recommended.

6. Some gifted individuals make mediocre scholastic records. Is the applicant's scholastic record, if you know it, an accurate index of his or her scholastic ability? Yes No Don't know

If your answer is "No," please explain briefly, possibly giving consideration to the applicant's performance in independent study or in research participation programs.

7. Do you know of any matters related to character and responsibility or to physical and mental health which should be considered by an admissions committee or will have to be taken into account in planning for the applicant's graduate work?

8. What is your estimate of the applicant's promise as a graduate student? Give views on such matters as his/her accomplishments, intellectual independence, research interests, capacity for analytical thinking, ability to work with others, ability to organize and express ideas clearly (orally or in writing), drive, and motivation.

9. Recommendations for Admission

Masters Program

Doctoral Program

- | | | |
|-----------------------------------|--------------------------|--------------------------|
| I strongly recommend for | <input type="checkbox"/> | <input type="checkbox"/> |
| I recommend for | <input type="checkbox"/> | <input type="checkbox"/> |
| I recommend with reservations for | <input type="checkbox"/> | <input type="checkbox"/> |
| I do not recommend for | <input type="checkbox"/> | <input type="checkbox"/> |

Signature of recommender _____ Date _____

Name _____ Title _____
Print or type

Institution _____

Address _____ Telephone _____



Graduate School
Admin. Bldg. 130

Graduate School Personal Reference Form

To the Applicant:

This form should be given to professors who are able to comment on your qualifications for graduate study. You should not request a recommendation from a non-academic person unless you have been away from academic institutions for some time. In that case, you should request the recommendation from someone knowing your academic ability.

A. Applicant's Name _____ Degree Sought _____

B. Applicant's Social Security Number _____ Graduate Program _____

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Course Number	Course Title	When Taken	Grade

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I hereby voluntarily waive, do not waive my right to examine this confidential evaluation.

Name _____ Date _____ Signature _____

Please Print

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The applicant named above has applied for admission to the Graduate School of South Dakota State University. Please complete this personal reference form and return it as soon as possible. If you have not had the applicant as a student, you may prefer to write a separate letter and attach it to this form. If you do not know this student well, please feel free to say so; such frankness will not prejudice the candidate's chance of admission.

- I have verified that the courses listed in item C were taken under my direction. Yes No
- I do not know the student well enough to give him or her a recommendation. (If you check this box, you do not need to complete the rest of this form.)
- Please check the educational level of the representative group with whom the applicant is compared:
 College Juniors College Seniors First-Year Graduate Students Advanced Graduate Students
- I would be pleased to have the applicant working under my direction as a:
 - Research Assistant
 - Administrative Assistant
 - Teaching Assistant
 - Fellowship

(continue on back)

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- Truly Exceptional** Equivalent to the very best you have known, a person who, in your experience, appears only every few years.
- Outstanding** Comparable to the best student in the current class. Highest 5%.
- Very Good** Next highest 5%.
- Good** Ability easily identifiable, but not in upper 10%. Probably in upper 15%. Certainly upper 25%.
- Above Average** Probably upper 25%.
- Average** Upper 50%.
- Below Average** Lower 50%, but recommended.

6. Some gifted individuals make mediocre scholastic records. Is the applicant's scholastic record, if you know it, an accurate index of his or her scholastic ability? Yes No Don't know

If your answer is "No," please explain briefly, possibly giving consideration to the applicant's performance in independent study or in research participation programs.

7. Do you know of any matters related to character and responsibility or to physical and mental health which should be considered by an admissions committee or will have to be taken into account in planning for the applicant's graduate work?

8. What is your estimate of the applicant's promise as a graduate student? Give views on such matters as his/her accomplishments, intellectual independence, research interests, capacity for analytical thinking, ability to work with others, ability to organize and express ideas clearly (orally or in writing), drive, and motivation.

9. Recommendations for Admission Masters Program Doctoral Program

- | | | |
|-----------------------------------|--------------------------|--------------------------|
| I strongly recommend for | <input type="checkbox"/> | <input type="checkbox"/> |
| I recommend for | <input type="checkbox"/> | <input type="checkbox"/> |
| I recommend with reservations for | <input type="checkbox"/> | <input type="checkbox"/> |
| I do not recommend for | <input type="checkbox"/> | <input type="checkbox"/> |

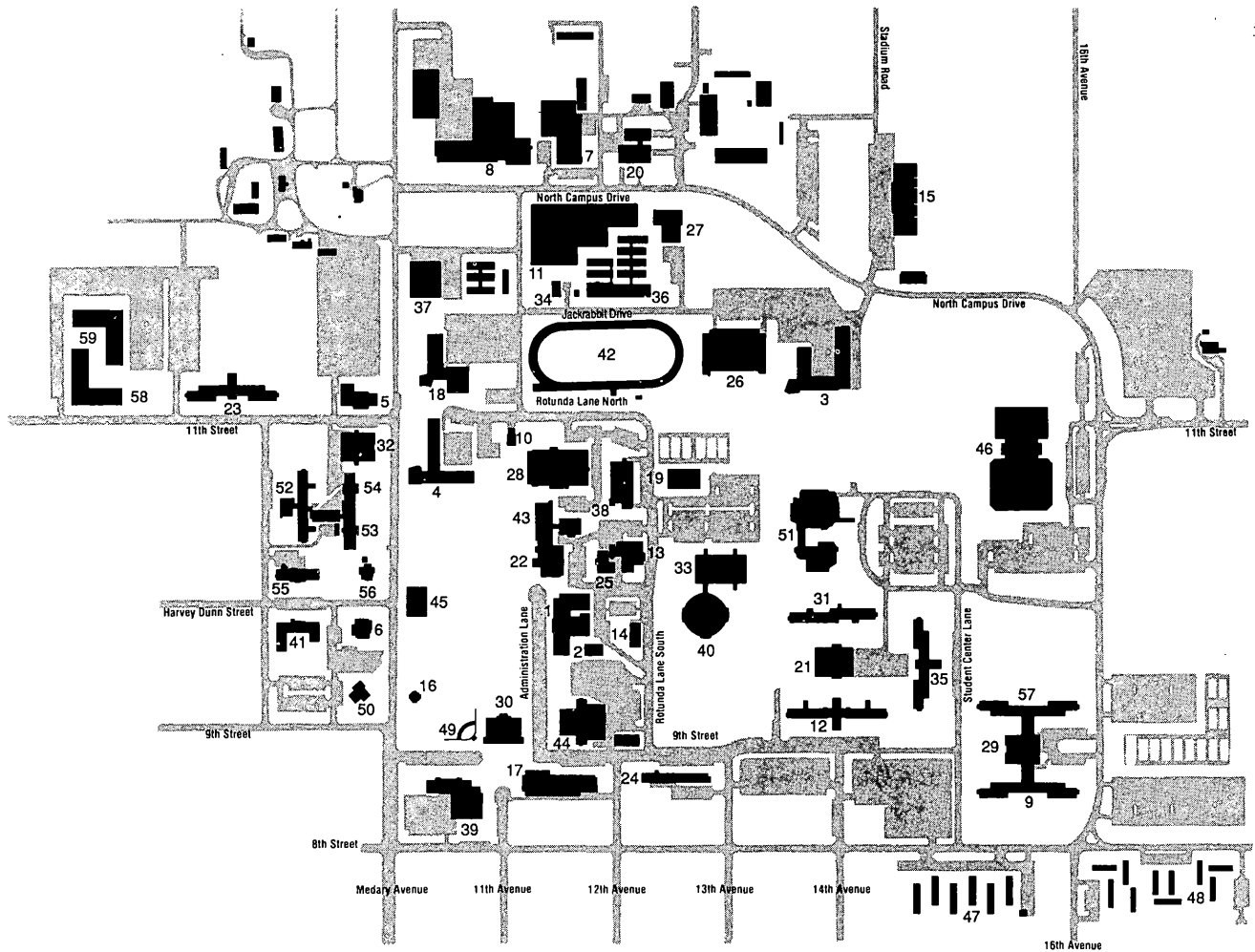
Signature of recommender _____ Date _____

Name _____ Title _____
Print or type

Institution _____

Address _____ Telephone _____

South Dakota State University Campus



- | | | | |
|--|--|--|---|
| 1 Administration Building | 13 Central Heating Plant | 30 Lincoln Music Hall | 44 Solberg Hall |
| 2 Agricultural Communications Center | 14 Communication Center | 31 Mathews Hall | 45 South Dakota Art Museum |
| 3 Agricultural Engineering | 15 Coughlin-Alumni Stadium | 32 Medary Commons | 46 Stanley J. Marshall HPER Center |
| 4 Agricultural Hall | 16 Coughlin Campanile | 33 Nursing, Family & Consumer Sciences, Arts & Science | 47 State Court |
| 5 Agricultural Heritage Museum | 17 Crothers Engineering Hall | 34 Physiology Laboratory | 48 State Village |
| 6 FRMC <i>also houses</i> University Police Department | 18 Dairy Microbiology | 35 Pierson Hall | 49 Sylvan Theatre |
| 7 Animal Disease Research and Diagnostic Laboratory | 19 DePuy Military Hall | 36 Plant Science Building | 50 Tompkins Alumni Center |
| 8 Animal Science Complex | 20 Foundation Seed Conditioning Plant | 37 Plant Science Seedhouse | 51 University Student Union |
| 9 Binnewies Hall | 21 Grove Hall | 38 Printing and Journalism Building | 52 Waneta Hall |
| 10 Biology Annex | 22 Guilford C. Gross Pharmacy Building | 39 Pugsley Continuing Education Center | 53 Wecota Hall |
| 11 Northern Plains Biostress Laboratory | 23 Hansen Hall | 40 Rotunda for Arts and Science | 54 Wenona Hall |
| 12 Brown Hall | 24 Harding Hall | 41 Scobey Hall | 55 West Hall |
| | 25 Heat/Power Laboratory | 42 Sexauer Field | 56 Woodbine Cottage (President's Residence) |
| | 26 H. M Briggs Library | 43 Shepard Hall | 57 Young Hall |
| | 27 Horticulture-Forestry | | 58 Berg Hall |
| | 28 Intramural Building | | 59 Bailey Hall |
| | 29 Larson Commons | | |



GRADUATE SCHOOL

South Dakota State University
Box 2201
Brookings, SD 57007

