



College of Arts and Sciences

Victor S. Hjelm, Ph.D., Dean
Merwin "Bob" R. Swanson, Ph.D.,
Associate Dean
Alan C. Frantz, Ph.D., Assistant Dean

Department of Anthropology

Chair and Associate Professor Hall
Professor Holmer, Stocks
Associate Professors Loether, Lohse
Adjunct Faculty Dean, Gould,
Henrickson, Meldrum, Weppner,
Wolfley, Woods

The Department of Anthropology offers the option of earning a Master of Arts or Master of Science in Anthropology. The option must be selected in consultation with the student's major advisor.

Admission

In addition to the general requirements of the Graduate School, the student must provide:

1. A letter of application, including areas of interest and professional goals
2. Three letters of recommendation
3. Undergraduate transcripts
4. Minimum grade point average of 3.0
5. Total GRE scores which average at least the 50th percentile for admission as a classified student
6. Undergraduate major in Anthropology or the equivalent

General Requirements

1. A minimum of 30 credits must be taken, including these required courses:

ANTH 605	Seminar in Linguistic Anthropology	3 cr
ANTH 615	Seminar in Biological Anthropology	3 cr
ANTH 625	Seminar in Cultural Anthropology	3 cr
ANTH 635	Seminar in Archaeology PLUS	3 cr
ANTH 641	Special Projects OR	6 cr
ANTH 650	Thesis	6 cr
		Total 18 cr

2. In consultation with the student's major advisor, an additional 12 credits in graduate level courses will be taken. The 12 elective credits may be satisfied by courses taken from the Medical Anthropology Option Area for those students also completing an MPH Degree. Students completing both an MS in Anthropology and an MPH degree may apply 12 credits to both degrees.
3. To maintain classified status, the student must register for a minimum of 6 credits each semester of the first year.
4. Comprehensive written examinations in Anthropology must be passed before registering for thesis credits.
5. By the end of the second semester, the student will form a three member thesis committee, with one member from outside the department.
6. An acceptable thesis or publishable manuscript must be written and orally defended.
7. In addition to the general degree requirements, the MA or MS option requirements are as follows:

Master of Arts Option:

Four semesters of foreign language must be completed, or competence must be demonstrated by an examination administered by the Foreign Language Department.

Master of Science Option:

Six credits of graduate statistics and research methods approved by the department.

Anthropology Graduate Courses

ANTH g330 Human Origins and Evolution 3 credits. Examines human origins within the context of evolutionary processes. Adaptations, trends and relationships within the primate lineage will be investigated. PREREQ: ANTH 230, ANTH 232, BIOS 202 OR PERMISSION OF INSTRUCTOR.

ANTH g332 Human Osteology 3 credits. Provides a working knowledge of skeletal anatomy, primarily focusing on identification of individual bones. Other topics include: osteogenesis, pathologies and applications of knowledge and technique. PREREQ: ANTH 230 AND ANTH 232 OR PERMISSION OF INSTRUCTOR.

ANTH g336 Nutritional Anthropology 3 credits. Overview of human nutritional needs and the factors influencing food consumption patterns. Human nutrition examined as a biocultural adaptive mechanism, using information provided by paleoanthropology, paleopathology and epidemiology. PREREQ: ANTH 230 OR PERMISSION OF INSTRUCTOR.

ANTH g360 Introduction to Sociolinguistics 3 credits. Study of the patterned covariation of language and society, social dialects and social styles in language; problems of bilingualism, multilingualism, Creoles and language uses. PREREQ: ANTH 107.

ANTH g362 American Indian Verbal Arts 3 credits. Analysis of current theories in the study of oral literature and ethnopoetics, focusing on the oral traditions of American Indians. PREREQ: ANTH 107, ANTH 220, OR PERMISSION OF INSTRUCTOR.

ANTH g364 Survey of American Indian Languages 3 credits. History of scholarship, analysis and classification of American Indian languages with emphasis on the languages of a particular phylum or geographical area. PREREQ: ANTH 107 OR PERMISSION OF INSTRUCTOR.

ANTH g384 Methods and Techniques of Ethnographic Field Research 3 credits. Participant observation, field notes, data types, analytical procedures, interviewing skills, oral history, report writing. PREREQ: ANTH 250 AND ANY ANTHROPOLOGICAL LINGUISTICS COURSE, OR PERMISSION OF INSTRUCTOR.

ANTH g401 History and Theory of Anthropology 3 credits. Survey of the development of anthropology, various schools of thought, important personalities, and concepts that have contributed to anthropology over time. PREREQ: ANTH 230 AND ANTH 250 OR PERMISSION OF THE INSTRUCTOR.

ANTH g402 Ecological Anthropology 3 credits. Interaction of human biocultural systems and environment. Relations of natural resources, technological inventories, social organization, cultural categories. Native resource management practices. PREREQ: ANTH 230, ANTH 250, ANTH 203 AND BIOS 120, OR PERMISSION OF INSTRUCTOR.

ANTH g403 Theory in Archaeology 3 credits. History of the development of current methods and theory in archaeology. PREREQ: ANTH 203 OR PERMISSION OF INSTRUCTOR.

ANTH g404 Material Culture Analysis 3 credits. Method and analyses used in archaeology and anthropology to understand the relationship between objects and culture. PREREQ: ANTH 203 OR PERMISSION OF INSTRUCTOR. COREQ: ANTH 405.

ANTH g405 Analytical Techniques Laboratory 1 credit. Analytical techniques laboratory to accompany ANTH 404. Students will complete an assigned project in material culture analysis. PREREQ: ANTH 203 OR PERMISSION OF INSTRUCTOR. COREQ: ANTH 404

ANTH g406 American Indian Health Issues 3 credits. An overview of health concerns, both current and past, of American Indian people, and the biological and sociocultural factors which influence health status. PREREQ: ANTH 220 OR PERMISSION OF INSTRUCTOR.

ANTH g407 Cross-Cultural Health and Healing 3 credits. Examination of the biocultural basis of human health and disease. Focuses on the ways in which cultures define health and illness, and how these definitions ultimately influence the health status of individuals.

ANTH g408 Special Topics in Medical Anthropology 3 credits. Rotating topics within the specialization of medical anthropology, including: international health issues, ethnopsychiatry, ethnomedicine and non-western healing systems. May be repeated up to 6 credits.

ANTH g410 Introduction to Cultural Resources Management 3 credits. Introduction to CRM reviewing historic preservation and federal legislation as they pertain to archaeology; practical experience in site survey and recording. PREREQ: ANTH 203 OR PERMISSION OF INSTRUCTOR.

ANTH g420 Applied Statistics in Anthropology 3 credits. Practical applications of commonly used statistical analyses in anthropology. PREREQ: MATH 253 OR PERMISSION OF INSTRUCTOR.

ANTH g421 Advanced Analytical Methods in Anthropology 3 credits. Examination and practical experience in applying advanced quantitative and qualitative methods and analyses in anthropological research. PREREQ: ANTH g420.

ANTH g436 Principles of Taphonomy 3 credits. Study of the effects of processes which modify organisms between death and the time the usually fossilized remains are studied. The emphasis will be on vertebrates. Cross-listed with BIOS g436 and GEOL g436. PREREQ: PERMISSION OF INSTRUCTOR.

ANTH g455 Linguistic Analysis I 3 credits. Introduction to descriptive linguistics focusing on phonetics, phonology and morphology. Cross-listed as LANG g455. PREREQ: ANTH 107.

ANTH g456 Linguistic Analysis II 3 credits. Introduction to descriptive linguistics focusing on morphology, syntax, and semantics. Cross-listed as LANG g456. PREREQ: ANTH g455.

ANTH g458 Historical Linguistics 3 credits. The methods and theories of the historical study of language. The comparative method, internal reconstruction, linguistic change over time, genetic typology of languages, and applications to prehistory. PREREQ: ANTH 107.

ANTH g459 Linguistic Field Methods 3 credits. Practical experience in linguistic analysis of a language using data elicited from a native speaker. May be repeated up to 6 credits. PREREQ: ANTH 456 OR PERMISSION OF INSTRUCTOR.

ANTH g472 Native American Arts 3 credits. Survey of Native American arts and industries, including prehistoric, ethnographic, and contemporary venues. PREREQ: ANTH 238 AND PERMISSION OF INSTRUCTOR.

ANTH g474 Special Topics in Indian Education 3 credits. Rotating review of topics dealing with issues in Indian education. Consult current schedule of classes for exact course being taught. PREREQ: ANTH 220 OR PERMISSION OF INSTRUCTOR.

ANTH g481 Specializations in Anthropology 3 credits. Rotating specialized topics such as applied anthropology, proxemics, ethnology, religion, international development. See current class schedule for titles. May be repeated up to 6 credits. PREREQ: UPPER DIVISION STATUS OR PERMISSION OF INSTRUCTOR.

ANTH g482 Independent Problems in Anthropology 1-3 credits. Investigation of an anthropological problem chosen by the student and approved by the staff. May be repeated up to 6 credits.

ANTH g483 Field Research 3 credits. Practical experience in field research. PREREQ: PERMISSION OF INSTRUCTOR.

ANTH g485 Linguistic Analysis 3 credits. Advanced course in the techniques of language analysis. Topics deal with sound systems (phonetics and phonology) or grammatical systems. May be repeated up to 6 credits.

ANTH g486 Archaeology Field School 1-6 credits. Practical field and laboratory training in archaeological excavation techniques and methods of analysis. PREREQ: ANTH 230 OR PERMISSION OF INSTRUCTOR.

ANTH g487 Ethnographic Field School 3 credits. Supervised fieldwork in cultural anthropology in a given ethnographic setting where students and faculty work on a specific set of field problems. PREREQ: ANTH 250 AND ANTH g384 OR PERMISSION OF INSTRUCTOR.

ANTH g489 Special Topics in American Indian Studies 3 credits. Rotating review of topics dealing with issues in American Indian studies. Consult current schedule of classes for exact course being taught. PREREQ: ANTH 220 OR PERMISSION OF INSTRUCTOR.

ANTH g490 Folklore 3 credits. Principles, content, and dissemination of orally transmitted religious beliefs and popular narrative forms in preliterate societies. Also listed as ENGL 490.

ANTH g491 Archaeology Laboratory Analysis 3 credits. Directed analysis of archaeological remains and report writing. May be repeated up to 6 credits. PREREQ: ANTH 404, ANTH 405, AND ANTH 486.

ANTH g493 Interdisciplinary Anthropology 3 credits. Rotating review of cross-disciplinary anthropology: psychological, medical, visual, educational, biodiversity conservation. See current class schedule for course titles. May be repeated up to 6 credits. PREREQ: UPPER DIVISION STATUS OR PERMISSION OF INSTRUCTOR.

ANTH g495 Department Colloquium 1 credit. Critical examination of a significant problem in anthropology to be chosen each semester. For faculty, graduate students, and anthropology majors. Interdepartmental participation is also encouraged.

ANTH 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

ANTH 605 Seminar in Linguistic Anthropology 3 credits. Discussion of theories, methods, and results in linguistic anthropology. PREREQ: ANTH g360 OR PERMISSION OF INSTRUCTOR.

ANTH 610 Seminar in Medical Anthropology 2 credits. Discussion of current topics within the various specializations of medical anthropology. PREREQ: PERMISSION OF INSTRUCTOR.

ANTH 615 Seminar in Biological Anthropology 3 credits. Discussion of theories, methods, and results in biological anthropology. PREREQ: ANTH g330, ANTH g332, OR PERMISSION OF INSTRUCTOR.

ANTH 625 Seminar in Sociocultural Anthropology 3 credits. Discussions of theories, methods, and results in sociocultural anthropology. PREREQ: ANTH g401 OR PERMISSION OF INSTRUCTOR.

ANTH 635 Seminar in Archaeology 3 credits. Studies in current theories, methods, and results in archaeological anthropology. PREREQ: ANTH g403 OR PERMISSION OF INSTRUCTOR.

ANTH 641 Special Projects 1-6 credits. The student will pursue original research under staff guidance. The final report will result in a publishable manuscript. PREREQ: PERMISSION OF THE CHAIR OF STUDENT'S GRADUATE COMMITTEE.

ANTH 642 Practicum in Teaching Anthropology 3 credits. Directed preparation of an anthropology course with a review of course materials, format, teaching techniques, films, and other aids. The trainee will participate in a supervised teaching experience.

ANTH 649 Independent Studies 1-4 credits. Independent research under the guidance of faculty. PREREQ: PERMISSION OF INSTRUCTOR.

ANTH 650 Thesis 1-10 credits.

ANTH 655 Cultural Resource Management Internship 3-6 credits. Supervised work experience in the development and implementation of cultural resource inventory, conservation and utilization plans, including preparation of budget, contracts, R.T.E. evaluation, and environmental impact statements.

Department of Art

Chair and Professor Dial
Professors Evans, Friend, Kovacs,
Martin

Associate Professors Granger
Assistant Professor Warnock
Affiliate Instructor Vaughn
Professor Emeritus Brown
Associate Professor Emeritus Obermayr

Master of Fine Arts in Art

The MFA degree is the recognized terminal degree in the studio arts. The MFA program is designed to refine the visual art skills of the graduate student in a particular area or areas of concentration by providing the instruction, facilities and time for the student both to develop a significant body of studio work and to expand his or her intellectual horizons in preparation for a rewarding professional career.

In addition to the general requirements for admission to the Graduate School, each applicant must submit a portfolio of work, either color slides or actual paintings, drawings, etc., to the Art Department for approval. Admission portfolio should consist of work from preferred studio area(s) indicating control and capability. Remedial work may be suggested. The portfolio of slides will be retained by the department for students who are accepted and enroll into the program. Twelve undergraduate credits in art history are required for admission or must be completed in addition to the graduate program before admission to candidacy.

Basic requirements are a minimum of 60 credits in graduate courses approved by the Department of Art and the Graduate School. A minimum of six credits must be in the area of art history, and a minimum of 12 credits must be thesis project. The student may elect, as a program option, to take up to six credits in other related areas outside the Art Department. These courses must be departmentally approved. Students are required to complete ART 601 and ART 621. The department will accept a grade of C in one class as long as the minimum overall 3.0 GPA is maintained. The student will have the opportunity to repeat the course.

Each candidate for the MFA degree must exhibit a one-person show during the last semester before the granting of the degree. A collection of slides of the exhibit must be turned in to the Art Department at this time. The thesis project consisting of original creative work by the candidate is the focal point of all the work necessary to the granting of the degree. The MFA degree is the terminal degree in the field of the visual arts. The candidate should have the time and opportunity to create a significant body of work which demonstrates a professional level of competency within a unified creative point of view. A minimum of two years of participation in the program is required for this goal. An oral examination is held concurrently with the thesis project show. Additional information is available from the Department of Art.

Art Graduate Courses

ART g422 World Arts 3 credits. Study of the art produced in cultures outside of the western tradition. Topics include pre-Hispanic art of Mexico, Central and South American art, and North American Indian art, Oceanic art, and the art of Africa south of the Sahara.

ART g423 Nineteenth Century Art 3 credits. History of the visual arts from the beginning of the 19th century up to the advent of Cubism.

ART g424 Twentieth Century Art 3 credits. History of the visual arts from Cubism to the present.

ART g425 Contemporary Art Forms 3 credits. The study of the major developments of art as an expression of contemporary society. Emphasis on art since 1950. PREREQ: ART 423 OR ART 424 OR PERMISSION OF INSTRUCTOR.

ART g426 Seminar in Art History 3 credits. Extensive reading and discussion in Art History and aesthetics under the supervision of the instructor. May be repeated up to 6 credits.

ART g431-g432 Advanced Printmaking 3 credits. Advanced work in printmaking. Choice of medium. PREREQ: ART 331 AND ART 332.

ART g441-g442 Advanced Painting and Composition 3 credits. Special projects and experimental individual work for advanced students. PREREQ: ART 341 AND ART 342.

ART g451-g452 Advanced Metals-Jewelry 3 credits. Experimental work. Individual projects may include plastics, electroplating, electroforming, advanced fabrication, anodizing or raising techniques. PREREQ: ART 351 AND ART 352.

ART g461-g462 Advanced Weaving 3 credits. Experimental work. Individual projects may include on-loom and off-loom techniques, dyeing processes, basketry, or multilayered fabrics. PREREQ: ART 361 OR HEC 353.

ART g471-g472 Advanced Ceramics 3 credits. Individual projects may include ceramic sculpture, mosaics or experimental problems in form and techniques. PREREQ: ART 371 OR ART 372.

ART g481-g482 Advanced Sculpture 3 credits. Experimental work with an emphasis on scale and environmental problems. PREREQ: ART 381 OR PERMISSION OF INSTRUCTOR.

ART g491 Advanced Papermaking 3 credits. Further development of topics from ART 391. PREREQ: ART 391 OR PERMISSION OF INSTRUCTOR.

ART 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

ART 601 Independent Study in Drawing 3 credits (required). Individualized course designed to address drawing-specific concerns: technical, material, and/or conceptual possibilities inherent to various drawing media. May be repeated for a total of 6 credits.

ART 621 Graduate Seminar 3 credits (required). Reading and discussion of theories and practices related to the production and presentation of studio art under the supervision of the instructor. Students will research and prepare written presentations for weekly seminar discussion and evaluation.

ART 635 Research in Studio or Theory 4 credits. Investigation of technical, material, and/or aesthetic/theoretical problems in art history/studio areas under the supervision of the instructor.

ART 640 Experimental Problems in Studio 4 credits. Experimentation in technical, material, and aesthetic problems in a studio area under the supervision of the instructor.

ART 645 Studio variable credit. Studio work under the supervision of the instructor. May be repeated up to 12 credits.

ART 649 Thesis Proposal 1 credit. Summary of the objectives and goals of the thesis project prepared under supervision of the student's advisor. Concurrent with application for admission to candidacy.

ART 650 Thesis Project variable credit; 12 credits required minimum. Preparation and presentation in a one-person show of a significant body of work which demonstrates a professional level of competency within a unified creative point of view. An exhibition and slides of the works are required by the department under the supervision of the candidate's advisor. A graduate faculty orals committee will review and approve or disapprove the show and thesis proposal. May be repeated up to 16 credits. PREREQ: ART 649.

ART 699 Special Topics 1-4 credits.

Department of Biological Sciences

Chair and Professor Seeley

Assistant Chair and Associate Professor Smith

Coordinator of Graduate Programs and Professor J. Anderson

Professors R. Anderson, Farrell, Griffith, House, Huntly, Keller, J. McCune, R. McCune, Minshall, Peterson, Rose, Scalarone, Spall, Stephens, Streubel, Trost, Winston

Associate Professors Akersten, Hill, Inouye, Meldrum, Rodnick, Watwood

Assistant Professors C. Anderson, Belzer, Brandon, Johnson, Ptacek, Spiegel, Weiler, Xiang

Research Assistant Professor Laundré, Sommer

Affiliate Faculty C. Bunde, Chesson, Childress, Kritsky, Markham, Morris, Reynolds, Rosentreter, Urfer

Doctor of Philosophy in Biology

The degree of Doctor of Philosophy is granted for proven ability, independent investigation, and scholarly attainment in a special field. It is primarily a research degree and is not granted solely on the completion of a certain number of credits. There is not a fixed total credit requirement for this degree. Credits for the dissertation and the research upon which it is based should comprise a substantial portion of the program and involve original work. It is understood that the research for and writing of the dissertation will require the equivalent of at least one year of full-time work.

Admission

Applicants Who Hold a Master's Degree

Entrance into the PhD program requires (1) at least a 3.0 grade point average (GPA) for the last two years of undergraduate study, (2) scores in the 50th percentile or higher on the verbal and quantitative sections of the Graduate Record Exam (GRE), and (3) acceptance by a member of the graduate faculty who is willing to serve as the student's advisor. Scores in the verbal, quantitative,

and analytical sections of the GRE must be submitted before entrance can be considered. Required scores on the GRE may be waived if the average of the verbal and quantitative scores is above the 50th percentile and the GPA requirement has been met.

Applicants who do not meet the minimum GPA and/or GRE requirements may be admitted on Conditional status. The conditions of acceptance will be specified on the applicant's Approval for Admission to Graduate School form. In some cases, students may be required to retake the GRE. Students admitted on Conditional status because of low GRE scores will be transferred to Classified status if new GRE scores that meet the minimal requirement are submitted. Students on Conditional status must petition the MS/PhD Committee for transfer to Classified status after a year of graduate work and successful completion of the qualifying examination (see below). This petition will include a recommendation from the student's advisory committee signed by the major professor. Continuation in the PhD program is contingent upon approval of transfer to Classified status or a recommendation by the MS/PhD committee for the student to remain on Conditional status. Any Conditional student who has not been approved for Classified status by the end of his/her second year will be dismissed from the program.

Applicants Who Do Not Hold a Master's Degree

For applicants who hold only a Bachelor's degree in biological sciences or a closely related discipline, entrance into the PhD program requires a minimum of a 3.0 GPA for all undergraduate work and scores in the 50th percentile or higher on the verbal and quantitative sections of the GRE. No waiver of GRE scores is allowed except in the case of students for whom English is a second language who receive a lower verbal GRE score; these individuals must meet the Graduate School minimal TOEFL score.

The application must include a letter of support from the prospective major professor that includes a description of a general plan of study. This letter is in addition to the three outside letters of recommendation required of all applicants. The application must be approved by majority vote of the MS/PhD Committee prior to formal acceptance by the Department. Applicants will only be admitted as Classified students.

No student in the Department's Master's program will be permitted to advance to the PhD program without approval of the

MS/PhD Committee. Application for advancement must include 1) a letter from the student that provides a rationale for the status change and 2) a letter of support from the major professor.

Program of Study

The program of study shall consist of courses in the major field as determined by an advisory committee and shall include a minor of at least 12 credit hours. Up to four credit hours of the minor may be selected from a complementary subdiscipline in biology. At least two full-time consecutive semesters must be taken in residence after the first 30 hours of graduate work is completed.

Qualifying Examination

Candidates complete a qualifying examination early in the program and a comprehensive examination when course work is essentially complete. A final defense of the dissertation is required.

Research Tool Requirements

Scientific inquiry at the PhD level requires understanding of the fundamentals of research design and application of statistical analyses. Students should also develop expertise in the use of additional research tools appropriate to their interest and area of specialization. To fulfill these requirements, each student must:

- a) Demonstrate proficiency in statistics and research design.
- b) Demonstrate the ability to use an additional research tool. Examples of such tools might include:

- Electron microscopy
- Foreign language
- Instrumental analysis
- Computer programming languages
- Geographic Information Systems
- Computer-based phylogenetic analysis

The student must satisfy both a) and b) above. In each case, the student has several options:

- 1) Complete formal course works. The number of courses and credit hours will be determined by the candidate's advisory committee but should be equivalent to at least two upper division 3-credit courses (preferably at the graduate level).
- 2) Satisfy the committee that the student had obtained the proper expertise through non-classroom means (job experience, self instruction, etc.). Because of the unique nature of the foreign language

tool, the student would be required to either (a) demonstrate the ability to translate articles in the field of biology from a foreign language into English, or (b) complete 2 years of the foreign language in college with grades of “c” or better. The articles to be translated will be determined by the student’s advisory committee after consultation with the examiner and will not be material that the student has seen previously.

The choice of foreign language is within the discretion of the Department of Biological Sciences. For a candidate whose native language is not English, proficiency in English shall be determined by the Department of Biological Sciences.

Language examinations passed at other accredited colleges may satisfy the language requirements, subject to the approval of the MS/PhD committee. Such requests and approvals must be in writing.

Doctor of Arts in Biology

The Doctor of Arts (D.A.) degree program stresses preparation for undergraduate teaching in biology at colleges and universities. The program is designed to develop the candidate as a biologist, professional educator, and scholar. The general goals of the program are to help students develop:

1. A broad background in biology.
2. An understanding of scientific inquiry.
3. The ability to synthesize concepts of biology and to communicate these concepts effectively.
4. Expertise with teaching strategies appropriate for a variety of learning situations.
5. The skills and attitudes that will enhance his or her effectiveness as a college faculty member.

The program consists of a life science component and a pedagogical component. The life science component is designed to enhance one’s understanding of biological concepts and ability to interpret current research. This component emphasizes breadth in biology, but does not preclude depth in specific areas of interest. The purposes of the pedagogical component are to enhance communicative skills, to provide experience with a variety of teaching techniques,

and to help the student develop a sound philosophy of education.

All candidates for the program must have at least a 3.0 GPA for the last two years of undergraduate work, minimum 50th percentile scores on the GRE general and biology subject exams, and must have completed a Master’s degree prior to entrance into the program. If a student enters the program without having completed the Master’s level research paper in biology or a related science, she/he must complete this requirement in addition to the D.A. degree requirements.

Requirements

The program requires a minimum of 48 semester credits beyond a Master’s degree and at least two years of full-time study. Students must complete several examinations, a scholarly activity, and an internship as part of the degree program. A written and oral diagnostic qualifying examination is taken during the first semester. The purpose of this examination is to ascertain the student’s competency to integrate concepts into undergraduate courses in botany, zoology or microbiology and to help the student plan a program of study. A comprehensive examination must be taken prior to filing a final program of study. The purpose of this written and oral examination is to assess the student’s knowledge of a broad spectrum of biological and educational topics and his/her ability to communicate answers effectively. During the last semester of the student’s program an open seminar on the internship and scholarly activity will be presented. After this presentation the student’s committee will conduct the final examination, which will primarily cover the scholarly activity and internship. The scholarly activity requires a substantive contribution to biological education, and one of four approaches may be used to meet this objective:

1. Analysis and synthesis of existing literature relating to a specific question in biology
2. Research in biological education; i.e., investigation of a specific problem in college biology teaching
3. Research involving the investigation of a specific question or problem in biology; and
4. Development of instructional materials which result from the investigation of a specific biological problem. This

activity may be integrated with the internship. The internship is a supervised pedagogical activity that provides for the development of skills in traditional and innovative teaching methods.

Students are required to meet the objectives for the life science and the pedagogical components. This will require course work, readings or individual projects in biology as well as other disciplines.

Master of Science in Biology (Botany or Zoology) or Master of Science in Microbiology

The M.S. programs require a substantial, original research project that culminates in a thesis, a minimum of 30 credits (including research and thesis) earned in graduate courses and seminars, expertise in core conceptual areas of the biological sciences, and completion of a research tool. Candidates must have at least a 3.0 GPA for all upper division credits taken at the undergraduate level. Scores in the verbal, quantitative, and analytical portions of the GRE must be submitted; an average score of the 50th percentile or above on the verbal and quantitative portions of the GRE is required. If either the GPA or GRE requirement is not met, the Department may choose to admit the candidate on conditional status. In all cases, acceptance by a member of the faculty is required for admission.

Several courses are prerequisite for the M.S. degree programs, and any student who has not met these requirements through previous course work must take them as part of his/her M.S. program. These are:

- 1) a semester of calculus
- 2) one year of inorganic chemistry
- 3) one year of organic chemistry
- 4) one year of physics, and
- 5) (M.S. in Microbiology only) quantitative analysis or analytical chemistry.

These are undergraduate courses; thus, credits earned in them do not count toward the 30 credit hour requirements for the M.S. In addition, there are a number of core conceptual areas of biology to which we expect all students to have had significant

exposure by the time they complete their degree requirements. The core areas for the M.S. in Biology are:

- 1) genetics and evolution
- 2) animal or plant physiology
- 3) cell biology, biochemistry, or molecular biology, and
- 4) ecology or morphology.

The core areas for the M.S. in Microbiology are:

- 1) biochemistry and molecular biology
- 2) physiology of microorganisms,
- 3) immunology
- 4) microbial genetics, and
- 5) virology

Students may opt to gain expertise in these areas via a variety of mechanisms including graduate courses, seminars, special projects, or readings. Although there are no specific credit requirements for the core areas, we expect that the total effort expended in each area would be at least equivalent to that required in a rigorous course in that subject area. It is also expected that any credits earned as part of the graduate program will be at the graduate level (i.e., at the 500 or 600 level); these credits count toward the 30-credit requirement.

Thirty graduate credits approved by the Department of Biological Sciences and the Graduate School are required to complete the M.S. degree program. At least 15 of these credit hours must be earned at the 600 level. Specific course requirements include:

BIOS 691-692	Graduate Seminar	2 cr
BIOS 648	Graduate Problems	1-4 cr
BIOS 650	Thesis	1-6 cr
PLUS	Two additional 600-level courses	6 cr

Students in the microbiology program must take

BIOS 610	Principles of Molecular Biology	3 cr
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Tool Requirement: A reading knowledge of a foreign language or proficiency with another research tool is required for the M.S. degree in Biology or Microbiology. Students may satisfy the tool requirement by selecting option 1a, 1b, or 2.

- 1) Foreign Language:
 - a) Students who enter the program with grades of "C" or better in two years of a foreign language in college or four years in high school, or the equivalent,

meet this requirement. Others must pass a total of 12 credits in one language or pass a special exam administered by the Department of Foreign Languages at ISU.

- b) A foreign-born student from a non-English speaking country may satisfy the requirement by passing courses (with a "C" or better) in a foreign language other than his/her native tongue (as described above) or two semesters of English composition courses at an English-speaking university.
- 2) A research tool of equivalent intensity to the language requirement may be substituted for a foreign language. Examples of such tools are biometry, electron microscopy, or a related field outside the biological sciences, such as geology, engineering, economics, or computer science. Graduate credits in the Biological Sciences taken to satisfy the tool requirement count toward the 30-credit requirement for the M.S. degree.

Master of Natural Science in Biology

The Master of Natural Science degree is designed for teachers and those who wish to obtain additional breadth and/or depth in the Biological Sciences and related areas. This degree emphasizes subject matter and is a non-thesis program. The degree is only for students who possess a standard teaching certificate or are working toward a standard teaching certificate. It is not designed to prepare students for doctoral programs with a research emphasis or requirement.

Individuals meeting the requirements for admission to the Graduate School should apply to the Department of Biological Sciences for entrance into the M.N.S. program. Acceptance will be based upon review of the applicant's credentials by a departmental committee.

Requirements

Completion of a prescribed program of study approved by a major advisor and advisory committee that is selected by the student; a minimum of 30 semester credits beyond the bachelor's degree with at least 22 credits taken in residence; satisfactory performance on a final written and oral examination.

Biological Sciences Graduate Courses

BIOS g303 Principles of Animal Physiology 4 credits. Compares homeostatic processes including ionic and osmotic regulation, nerve and muscle physiology, circulation, respiration, and endocrine functions among major animal groups. Lecture and Laboratory. PREREQ: BIOL 202 AND BIOS 203, OR BIOL 101 AND BIOL 102, AND 1 YEAR OF COLLEGE CHEMISTRY.

BIOS g304 Elements of Plant Physiology 4 credits. Study of the physical and chemical basis of plant life as related to such things as absorption, transpiration, manufacture of foods, digestion, growth, and reproduction. PREREQ: BIOL 202 AND BIOL 203, OR BIOL 101 AND BIOL 102, AND 1 YEAR OF COLLEGE CHEMISTRY.

BIOS g307 Radiobiology 3 credits. Survey of the effects of ionizing radiation on living matter at the subcellular, cellular, and organismal levels. PREREQ: BIOL 202 OR BIOL 203; PHYS 111, PHYS 112 OR PERMISSION OF INSTRUCTOR.

BIOS g309 Range Agrostology 2 credits. Study of grasses with emphasis on western species. Field trips. PREREQ: BIOL 202 AND BIOL 203, OR BIOL 101 AND BIOL 102.

BIOS g310 Invertebrate Zoology 4 credits. General study of invertebrate animals with laboratory work on representatives of the invertebrate phyla. Field trips. PREREQ: BIOL 202 AND BIOL 203, OR BIOL 101 AND BIOL 102.

BIOS g311 Dendrology 3 credits. Identification, classification, characteristics, and economic importance of the principal species of trees of temperate North America. Field trips. PREREQ: BIOL 203.

BIOS g314 Comparative Vertebrate Anatomy 4 credits. Descriptive studies of adult morphology of selected vertebrates and examples of other representative chordates are used to illustrate the evolution of structure and function. PREREQ: BIOL 202 AND BIOL 203, OR BIOL 101 AND BIOL 102.

BIOS g317 Organic Evolution 3 credits. Critical discussion of the facts and theories of organic evolution and the general development of evolutionary speculation. PREREQ: BIOS 358.

BIOS g318 Ecological Topics 1 credit. Flexible use of seminars, lectures, and laboratory work dealing with ecological relationships. Emphasis varies. May be repeated until a maximum of 3 credits is earned. PREREQ: BIOS 209 OR PERMISSION OF INSTRUCTOR.

BIOS g324 Comparative Embryology and Human Development 4 credits. Descriptive studies of the embryonic development of selected vertebrates together with the embryonic and fetal development of the human. PREREQ: BIOL 202 AND BIOL 203, OR BIOL 101 AND BIOL 102.

BIOS g332 Biochemistry 3 credits. General introductory course which includes the occurrence, structure, function, and metabolism of carbohydrates, amino acids, lipids, proteins, and nucleic acids; energy metabolism; and integration of the above areas. PREREQ: CHEM 302 OR PERMISSION OF INSTRUCTOR.

BIOS g351 Immunology 3 credits. Fundamental concepts of antibody-mediated and cell-mediated mechanisms of immunity. In-vivo and in-vitro antigen-antibody interactions are discussed. PREREQ: BIOS 235 OR PERMISSION OF INSTRUCTOR.

BIOS g355 Pathogenic Microbiology 3 credits. Study of the important disease-producing microorganisms. Host-parasite relationships, pathogenic properties of microorganisms and pathology of disease processes will be discussed. PREREQ: BIOS g351 OR PERMISSION OF INSTRUCTOR.

BIOS g400 Oral Histology and Embryology 3 credits. The microanatomy and formative processes of the teeth and their surrounding structures.

BIOS g405 Plant Anatomy 3 credits. Study of the development and microscopic structure of the stems, leaves, roots, and reproductive structures of vascular plants with emphasis on the flowering plants. PREREQ: BIOL 202 AND BIOL 203, OR BIOL 101 AND BIOL 102.

BIOS g406 Plant Morphology 4 credits. Study of the reproduction, structure, development, evolution, and classification of the fungi, algae, bryophytes, and vascular plants. PREREQ: BIOL 202 AND BIOL 203, OR BIOL 101 AND BIOL 102.

BIOS g408 Plant Ecology 3 credits. Major factors limiting plant growth and distribution with emphasis on adaptation and response at the individual, population, and community levels. Includes studies of species distributions along environmental gradients and community structure and analysis. PREREQ: BIOL 202 AND BIOL 203, BIOL 101 AND BIOL 102.

BIOS g413 Biology Teaching Methods 3 credits. Designed to help biology teachers plan, teach and evaluate biology activities for their students. A diversity of laboratory and outdoor environmental education materials and methods will be experientially considered. Required for secondary teachers in biology.

BIOS g416 Community Ecology 3 credits. Structure, function, and classification of plant and animal communities, emphasizing biotic and abiotic interactions and patterns of change in space and time. Field work emphasizes the collection and analysis of data. PREREQ: BIOS 209.

BIOS g419 Mammalian Histology 4 credits. Study of human animal tissues, including structural and functional characteristics of tissues and organs. PREREQ: BIOS 206, BIOS 207, OR BIOS g303 OR BIOS g301 AND BIOS g302.

BIOS g420 Musculo-Skeletal Anatomy 2 credits. Study of human body structure emphasizing muscular system and its relationship to axial and appendicular skeleton. Focus on extremities, thorax, and pelvis with applications toward normal,

diseased and rehabilitative functions. PREREQ: BIOS g301 AND BIOS g302.

BIOS g423 Parasitology 3 credits. Study of the animal parasites with emphasis on those of man. Laboratory includes identification of the important parasites of man; the collection and the preservation of the available local forms. PREREQ: BIOL 202 AND BIOL 203, OR BIOL 101 AND 102.

BIOS g425 Human Anatomy 4 credits. General systemic anatomy with emphasis on microscopic and gross structure. PREREQ: BIOL 202.

BIOS g426 Herpetology 3 credits. The biology of amphibians and reptiles: lecture topics include evolutionary history, functional morphology, physiological ecology, biogeography, reproductive, and population ecology. Laboratories and field trips cover systematic, natural history, and collecting/sampling techniques. PREREQ: BIOS 209.

BIOS g427 Ichthyology 3 credits. The biology of fishes: lecture topics include evolutionary history, functional morphology, physiological ecology, and biogeography. Laboratory and field trips cover identification and natural history with an emphasis on Idaho species. PREREQ: BIOS 209.

BIOS g428 Veterinary and Medical Entomology 3 credits. Identification, habits, life cycles, ecology and management of arthropods of veterinary and public health importance, including relationships between vectors, pathogens, and hosts. PREREQ: BIOL 202 AND BIOL 203, OR BIOL 101 AND BIOL 102.

BIOS g429 Regional Anatomy and Histology 4 credits. Regional approach to gross human anatomy emphasizing the use of projected materials and microscopic anatomy. Designed primarily for students in the Physician Assistant Program. PREREQ: BIOS g301, BIOS g302.

BIOS g430 Human Performance Physiology 4 credits. Physiology as applied to human energetics with relation to respiratory, cardiovascular, muscular, nervous and endocrine systems. Includes rehabilitation analysis of abnormalities of performance. Lecture and laboratory. PREREQ: BIOS g301, g302, OR BIOS g303.

BIOS g431 General Entomology 3 credits. Study of structure, development, classification, and life histories of insects, including ecological, economic and management considerations. A returnable collection of insects may be required. Field trips. PREREQ: BIOL 202 AND BIOL 203, OR BIOL 101 AND BIOL 102.

BIOS g433 Microbial Physiology 4 credits. Comparative biochemistry of microorganisms, including enzyme kinetics, carbon and energy metabolism, nitrogen metabolism, nutrition, and the effect of environmental factors on growth, death, and metabolism. PREREQ: BIOS g332 OR PERMISSION OF INSTRUCTOR.

BIOS g435 Vertebrate Paleontology 4 credits. Phylogenetic history of the vertebrates outlined in the light of morphology, classification, evolution, paleoecology, and the significance of fossils. Field trips. (NOTE: BIOS g435 cross-listed with

GEOL.) PREREQ: GEOL g431 OR BIOS g314 OR EQUIVALENT.

BIOS g436 Principles of Taphonomy 3 credits. Study of the effects of processes which modify organisms between death and the time the usually fossilized remains are studied. The emphasis will be on vertebrates. Cross-listed with ANTH g436 and GEOL g436. PREREQ: PERMISSION OF INSTRUCTOR.

BIOS g438 Ornithology 3 credits. Study of the origin, evolution, structure, habits, adaptations, distribution, and classification of birds. Field trips. PREREQ: BIOL 202 AND BIOL 203, OR BIOL 101 AND BIOL 102.

BIOS g440 Human Gross Anatomy 4 credits. Comprehensive regional study of gross human anatomy with emphasis on the upper limb, thorax, abdomen, pelvis and perineum. Designed for the first year dental students and complements BIOS g450. Lecture and laboratory.

BIOS g441 Mammalogy 3 credits. General study of mammals including classification, identification, habits, ecology, economics, and techniques of study, with emphasis on North American forms. Field trips. PREREQ: BIOS 209.

BIOS g443 Endocrinology 3 credits. Study of the anatomy and physiology of the ductless glands and the properties and uses of natural and synthetic hormones. PREREQ: BIOS g303 OR BIOS g301 AND g302.

BIOS g444 General Pathology 4 credits. Study of basic pathologic processes which underlie disease, including inflammation, neoplasia, infarction and cellular alterations; an attempt is made to correlate the anatomical, functional, and biochemical alterations. Lectures, demonstrations and small group discussions.

BIOS g445 Biochemistry I 3 credits. Introduction to basic aspects of biochemical systems, including fundamental chemical and physical properties of biomolecules. Enzymology including allosterism, metabolic regulation, bioenergetics, and carbohydrate metabolism. PREREQ: CHEM 302 OR PERMISSION OF INSTRUCTOR.

BIOS g446 Selected Topics in Physiology 1 credit. Selected topics in physiology for dental students: blood coagulation-complement-kinin systems, prostaglandin and related substances, vitamins, steroids, mucopolysaccharides, collagen and other extracellular matrix molecules and cyto- and molecular genetics.

BIOS g447 Biochemistry II 3 credits. Functional continuation of g445. Lipid, amino acid and nucleotide metabolism. Emphasis is on metabolic regulation, metabolic dysfunction, biochemical mechanism of hormone action, biochemical genetics, protein synthesis, and metabolic consequences of genetic defects.

BIOS g448 Advanced Experimental Biochemistry 2 credits. Advanced laboratory projects designed to emphasize techniques of qualitative and quantitative biochemical analysis. PREREQ: CONCURRENT ENROLLMENT IN BIOS g447 OR PERMISSION OF INSTRUCTOR.

BIOS g449 Human Physiology I 4 credits. First of a two-course sequence. Physiology of the nervous, muscular, circulatory, respiratory, and excretory systems. PREREQ: BIOL 202; CHEM 111 AND 112; COREQ: BIOS g425.

BIOS g450 Head and Neck Anatomy 4 credits. Comprehensive presentation of the anatomy of the head and neck as it applies to the practice of dentistry. Lecture and laboratory.

BIOS g452 Population Ecology 3 credits. Study of the forces that determine the composition, density, and distribution of terrestrial animal populations, including natality, mortality, dispersion, and environment, knowledge of which is applicable to game management. Field trips. PREREQ: BIOS 209 OR PERMISSION OF INSTRUCTOR.

BIOS g454 Advanced Immunology 3 credits. Detailed study of selected areas of immunology. Course content will vary with current demand. Students will lead discussions and present current literature. PREREQ: BIOS g351 AND PERMISSION OF INSTRUCTOR.

BIOS g456 Human Physiology II 4 credits. Physiology of gastrointestinal, endocrine, and reproductive systems. Includes studies of acid-base balance, peripheral circulation, shock, and temperature regulation. PREREQ: BIOS g449 OR EQUIVALENT.

BIOS g459 Fish Ecology 3 credits. Study of the behavior, habitat use, diet, population dynamics, and management of freshwater fishes, especially trout and salmon. Field trips emphasize sampling techniques. PREREQ: BIOS 209; BIOS g426 RECOMMENDED.

BIOS g460 Neuroanatomy 2 credits. Comprehensive presentation of the anatomy of the central nervous system, the brain and spinal cord. Combined lecture and laboratory demonstration. PREREQ: PERMISSION OF INSTRUCTOR.

BIOS g461 Advanced Genetics 3 credits. Detailed and critical consideration of selected genetic topics with emphasis of recent advances. PREREQ: BIOS g358 AND PERMISSION OF INSTRUCTOR.

BIOS g462 Freshwater Ecology 3 credits. Study of the interaction of physical and biotic factors in aquatic communities. Field trips. PREREQ: BIOS 209.

BIOS g463 Human Pathophysiology 4 credits. The study of basic processes underlying diseases with an emphasis on correlating anatomical, functional, and biochemical alterations with clinical manifestations. PREREQ: BIOS g425; BIO-CHEMISTRY; ONE YEAR OF PHYSIOLOGY, OR PERMISSION OF INSTRUCTOR.

BIOS g465 Microbial Genetics 3 credits. Principles of heredity and variation with application of these principles to bacteria and viruses. PREREQ: BIOS 236; CHEM 302.

BIOS g466 Medical Mycology 3 credits. Lecture/laboratory course addressing medically important fungi. Taxonomy, clinical disease,

pathogenesis, immunological diagnosis and laboratory identification of contaminants, opportunists, superficial, cutaneous, subcutaneous and systemic mycoses. PREREQ: BIOS 221 OR 235.

BIOS g467 Microbial Genetics Laboratory 1 credit. Laboratory investigations of the principles of heredity, variation and genetic exchange in bacteria and bacterial viruses. PREREQ: BIOS 235 OR BIOS 221 AND 223.

BIOS g468 Oral Microbiology 1 credit. Study of microbiology of plaque, caries, periodontal disease, immunobiology of oral disease and control of microorganisms with antimicrobial agents. Four periods devoted to laboratory study of medically important oral microbes. PREREQ OR COREQ: BIOS g355.

BIOS g469 Special Topics in Microbiology 1-4 credits. Study of selected topics in microbiology. Course contents will vary with topics selected. May be repeated with departmental approval for nonrepetitive course content. PREREQ: PERMISSION OF INSTRUCTOR.

BIOS g470 Cross Sectional Anatomy 2 credits. Human gross regional anatomy in cross and sagittal sections. Designed to prepare students in radiographic sciences to understand structure depicted by various imaging techniques. PREREQ: BIOL 202 OR BIOL 203; BIOS g301 AND BIOS g302.

BIOS g471 Pathophysiology 4 credits. Focuses on the response of physiological systems to pathophysiological disruptions. The relationships between tissue, organ, and systemic physiology and pathological conditions will be emphasized. PREREQ: BIOS g301 AND g302 OR BIOS g303.

BIOS g473 Industrial Microbiology 4 credits. Microbiological and biochemical aspects of fermentative and oxidative processes of industrial importance such as yeast, mold, and bacterial fermentation. PREREQ: BIOS g433.

BIOS g474 Human Anatomy (Physical Therapy Emphasis) 5 credits. Human gross anatomy and histology for, but not limited to, physical therapy students emphasizing the skeletal, muscular, integumentary, peripheral nervous, cardiovascular, and pulmonary systems. PREREQ: BIOS g301 AND BIOS g302 OR EQUIVALENT.

BIOS g475 General Virology 3 credits. Introduction to the general principles of virology through consideration of structure, genetics, replication and biochemistry of animal and bacterial viruses. PREREQ: COMPLETION OF 90 CREDITS.

BIOS g476 Ecology of Water Pollution 3 credits. Study of the causes of pollution and their effects on the aquatic environment and its inhabitants. Special consideration will be given to the biological and chemical assessment of pollution in streams and to its control. Field work. PREREQ: BIOS g462 OR PERMISSION OF DEPARTMENT.

BIOS g477 Bacterial Virology Laboratory 1 credit. Designed to acquaint students with the techniques and experimental principles used in the study of bacterial viruses. Must be accompanied by BIOS g475.

BIOS g478 Animal Virology Laboratory 1 credit. Introduces tissue culture methods and other techniques employed in the study of animal viruses. Must be accompanied by BIOS g475.

BIOS g479 Survey of Electron Microscopy 2 credits. Introduction to the potentialities, theory, techniques, and limitations of electron microscopy. The field will be surveyed as a whole, but primary emphasis will be on biological applications. Lectures will include both formal presentations and demonstrations of selected techniques. The operation of the electron microscope also will be demonstrated. PREREQ: PERMISSION OF INSTRUCTOR.

BIOS g481-g482 Independent Problems 1-4 credits. Individual problems will be assigned to students on the basis of interest and previous preparation. PREREQ: SENIOR STANDING IN BIOLOGY AND PERMISSION OF INSTRUCTOR.

BIOS g485 Nutritional Biochemistry 3 credits. Human metabolism in health and disease. Emphasizes interrelationships among hormones, carbohydrates, proteins, lipids, vitamins and minerals within tissues and organs. PREREQ: CHEM 101, CHEM 102; OR CHEM 111 AND CHEM 301.

BIOS g486 Human Systemic Physiology 5 credits. One semester human physiology course emphasizing the function and regulation of the muscular, skeletal, circulatory, respiratory, urinary, reproductive, and immune systems. PREREQ: CHEM 111 AND CHEM 112; BIOS g301 AND BIOS g302 OR EQUIVALENT.

BIOS g489 Field Ecology 3 credits. An intensive field of study of at least one biogeographical region to increase students' knowledge of and skill with field sampling techniques, field-study design, data collection and analysis, and report preparation. PREREQ: BIOS 209.

BIOS g491-492 Seminar 1 credit. Review of current research and literature in the general fields of biological science. Open only to graduate students and seniors or by permission of the department.

BIOS g495 Ethology 3 credits. Behavior of animals and the evolutionary mechanisms that dictate behavioral patterns. PREREQ: UPPER DIVISION OR GRADUATE STATUS.

BIOS 521 Ecological Concepts 3 credits. Major concepts in ecology in relation to environmental degradation, pollution, hazardous materials, and environmental management. Credit may not be used for a graduate degree in biology.

BIOS 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

BIOS 601 Animal Behavior 3 credits. Behavior and social organization of animals with particular attention to the vertebrates. Lecture, laboratory, and field work. PREREQ: GRADUATE STANDING AND PERMISSION OF DEPARTMENT.

BIOS 602 Advanced Plant Physiology 3 credits. Study of interrelationships of soil, water, and minerals in the nutrition of plants. PREREQ: BIOS g304.

BIOS 603 Comparative Physiology 3 credits. Study of the ways in which organisms meet their functional requirements. Lecture and laboratory. PREREQ: GRADUATE STANDING AND PERMISSION OF DEPARTMENT.

BIOS 604 Advanced Limnology: Streams and Biotic Production 3 credits. Study of the ecology of streams; chemical, physical, and geological aspects in relation to biota. The production of organic matter in flowing water is emphasized, including the tracing of food chains and food webs and the construction of energy budgets. Field trips. PREREQ: PERMISSION OF INSTRUCTOR.

BIOS 605 Biometry 4 credits. Application of descriptive and analytical statistical methods to experimental design and biological research. PREREQ: MATH 143 OR EQUIVALENT OR PERMISSION OF INSTRUCTOR.

BIOS 607 Environmental Physiology 3 credits. Study of the physiological mechanisms and interrelated behavioral patterns by which animals respond to environmental factors. PREREQ: GRADUATE STANDING AND PERMISSION OF INSTRUCTOR.

BIOS 610 Principles of Molecular Biology 3 credits. Introduction to subcellular biology and molecular genetics. DNA replication, cell division, the genetic code, transcription, translation, enzyme function, and control mechanisms in prokaryotic and eucaryotic cells. PREREQ OR COREQ: BIOS g332.

BIOS 613 Biogeography 3 credits. Discussion of patterns of distribution of species and their historical and ecological causes. Includes research project.

BIOS 621 Advanced Methods in Microbiology 3 credits. PREREQ: GRADUATE STANDING AND PERMISSION OF INSTRUCTOR.

BIOS 623 Soil and Ground Water Bioremediation 3 credits. Theoretical and applied aspects of biological treatment for contaminated subsurface systems. PREREQ: BIOS 587.

BIOS 624 Microbial Ecology 3 credits. Ecological principles applied to microorganisms. PREREQ: GRADUATE STANDING AND A COURSE IN MICROBIOLOGY.

BIOS 628 Cytology and Cell Physiology 4 credits. Advanced study of the functions and structural components of cells. Lecture and laboratory. PREREQ: GRADUATE STANDING AND PERMISSION OF INSTRUCTOR.

BIOS 629 Basic Concepts in Biology 3 credits. Considerations of fundamental concepts of biology, their origin and development. PREREQ: PERMISSION OF INSTRUCTOR.

BIOS 631-632 Advanced Systematic Botany 3 credits. Classification of plants as it rests on morphological, chemical, ecological, and genetic bases. PREREQ: BIOS g312.

BIOS 633 Advanced Microbial Physiology 3 credits. Advanced topics in microbial physiology and biochemistry. PREREQ: BIOS g332 AND PERMISSION OF INSTRUCTOR.

BIOS 634 Intermediary Metabolism 3 credits. Theory, reactions, and methods pertinent to research in intermediary metabolism. PREREQ: BIOS g332 AND PERMISSION OF INSTRUCTOR.

BIOS 636 Experimental Intermediary Metabolism 2 credits. Must be accompanied by or preceded by BIOS 634.

BIOS 648 Graduate Problems 1-9 credits per semester (may be repeated). Thesis related research. Graded S/U. PREREQ: GRADUATE STANDING AND PERMISSION OF INSTRUCTOR.

BIOS 650 Thesis 1-6 credits. Graded S/U.

BIOS 651 Advanced Studies in Ecology 2-6 credits. Flexible use of seminars, lectures, and laboratory work dealing with ecological relationships.

BIOS 652 Advanced Studies in Physiology 2-6 credits. Flexible use of seminars, lectures, and laboratory work dealing with problems in physiology.

BIOS 653 Advanced Studies in Vertebrate Zoology 2-6 credits. Flexible use of seminars, lectures, and laboratory work dealing with problems in vertebrate zoology.

BIOS 654 Advanced Studies in Invertebrate Zoology 2-6 credits. Flexible use of seminars, lectures, and laboratory work dealing with problems in invertebrate zoology.

BIOS 655 Advanced Studies in Vertebrate Paleontology 2-6 credits. Flexible use of seminars, lectures, and laboratory work dealing with problems in vertebrate paleontology.

BIOS 656 Advanced Studies in Systematic Biology 2-6 credits. Flexible use of seminars, lectures, and laboratory work dealing with problems in systematic biology.

BIOS 657 Advanced Studies in Plant Biology 2-6 credits. Flexible use of seminars, lectures, and laboratory work dealing with problems in plant biology.

BIOS 658 Advanced Studies in Limnology 2-6 credits. Flexible use of seminars, lectures, and laboratory work dealing with problems in limnology.

BIOS 659 Advanced Studies in Genetics 2-6 credits. Flexible use of seminars, lectures, and laboratory work dealing with problems in genetics.

BIOS 660 Selected Topics in Biochemistry 3 credits. Detailed study of selected areas of biochemistry. Course content will vary with current demand. PREREQ: BIOS g435 OR PERMISSION OF INSTRUCTOR.

BIOS 661 Advanced Studies in Environmental Physiology 2-6 credits. Flexible use of seminars, lectures, and laboratory work dealing with problems in environmental physiology.

BIOS 662 Advanced Studies in Developmental Biology 2-6 credits. Flexible use of seminars, lectures, and laboratory work dealing with problems in developmental biology.

BIOS 670 Selected Topics in Microbiology 1-4 credits. Detailed study of selected areas of microbiology. Course content will vary with current demand. PREREQ: PERMISSION OF INSTRUCTOR.

BIOS 675 Advanced Bacterial Virology 3 credits. Detailed study of selected areas of bacterial virology. Course content will vary with current demand. PREREQ: g475 AND PERMISSION OF INSTRUCTOR.

BIOS 676 Advanced Animal Virology 3 credits. Detailed study of selected areas of animal virology. Course content will vary with current demand. PREREQ: BIOS g475 AND PERMISSION OF INSTRUCTOR.

BIOS 679 Electron Microscopy 5 credits. Introduction to uses of the electron microscope in biological research. Designed to develop proficiency in use and operation of the electron microscope, specimen preparation for electron microscopy, and photographic skills as applied to electron microscopy. In addition, students will develop a special project for individual study. Enrollment limited to students who have a demonstrated need to learn electron microscopy techniques. PREREQ: BIOS g479, GRADUATE STANDING, AND PERMISSION OF INSTRUCTOR.

BIOS 687 Environmental Science and Pollutants 3 credits. Structure and function of ecosystems, sources and characteristics of hazardous materials, mechanisms and pathways of pollutant transport and degradation, mechanisms of pollutant impact on ecosystems and human health. PREREQ: BIOS 521, AN UNDERGRADUATE ECOLOGY COURSE, OR EQUIVALENT.

BIOS 691 Seminar 1 credit. Review of current research and literature. May be repeated until a maximum of 4 credits is earned. Graded S/U.

BIOS 692 Seminar 1 credit. Review of current research and literature. May be repeated until a maximum of 4 credits is earned. Graded S/U.

BIOS 693 Seminar in College Teaching 1 credit. Doctor of Arts candidates. May be repeated once. Graded S/U.

BIOS 694 Advanced Studies in College Teaching 2-6 credits. Investigation into new approaches to the teaching of biology in community and junior colleges.

BIOS 699 Doctor's Dissertation variable credit. Graded S/U.

BIOS 700 Supervised Teaching Internship variable to 9 credits per semester. Graded S/U.

Department of Chemistry

Chair and Professor Strommen

Professors Kalivas, B. Ronald, Sutter, Wiegand

Associate Professors Castle, De Jesus, Rodriguez, Rosentreter

Instructors Braun, Mohseni, Omar, A. Ronald

Professors Emeriti Arcand, Benson, Braun, Faler

Combined BS/MS Program in Chemistry

Students may be admitted to the program after having completed 64 credit hours. Application for admission must be made to the Chemistry Department. In addition, the student should have completed the following courses or the equivalent:

CHEM 121-122	General Chemistry	9 cr
CHEM 126	Cations and Anions	1 cr
CHEM 211	Inorganic Chemistry I	2 cr
CHEM 232	Quantitative Analysis	2 cr
CHEM 234	Quantitative Analysis Laboratory	2 cr
CHEM 301-302	Organic Chemistry	6 cr
CHEM 303-304	Organic Chemistry Laboratory I & II	2 cr
PHYS 221-222	Engineering Physics	8 cr
PHYS 223-224	Engineering Physics Laboratory	2 cr
MATH 121	Calculus and Analytic Geometry I	4 cr
MATH 222	Calculus and Analytic Geometry II	4 cr

Requirements (See the suggested schedule).

During the first semester each student is expected to select three faculty members to serve as his/her advisory committee subject to the approval of the Department Chair. In the second semester, each student will form their planned program of study with their research advisor, write a research overview of their project, apply and be admitted to the Graduate School. The student is expected to begin his/her research no later than the beginning of the summer session. Thereafter, individual sections of the research paper will be required as students progress through the program.

Students must apply and be admitted to the Graduate School prior to their fourth year. The student must score at or above the 35th percentile in two areas of the aptitude sections (Verbal, Quantitative, and Analytical).

Continuation in the program requires that the student maintain a minimum GPA of 3.0 from date of admission and annual approval of his/her committee. It will be recommended that students who are not making adequate progress discontinue the program.

The student must complete a total of 158 credit hours. This corresponds to 128 credit hours for the BS degree and 30 credit hours for the MS degree. It should be noted that g300 chemistry courses taken at the 500-level cannot be used for an M.S. degree in Chemistry. The final course selection must be approved by the Chemistry Graduate Program Committee. Students are required to have completed all general education requirements by the end of their second year in the combined BS/MS program. It is the intent that all students will finish within the period of 3 years after admission to the program. Successful completion of the program requires that the student write and defend a research paper embodying his/her research before his/her research committee.

Suggested Schedule

The following schedule will show how a typical student might progress through the BS/MS program. Even though courses are listed as suggested, each student is required to meet all course requirements for the BS degree in chemistry (except independent problems CHEM 481 and CHEM 482). Each student is also required to complete all four advanced chemistry courses at the 500 level (CHEM 510, CHEM 530, CHEM 555, and CHEM 571). These courses are taken during the second and third years of the program.

Third Year (Junior)

Fall/Spring

*CHEM 305	Organic Chemistry Laboratory III	2 cr
*CHEM 313	Instrumental Analysis	2 cr
*CHEM 334	Instrumental Analysis Laboratory	2 cr
*CHEM 351	Physical Chemistry	3 cr
*CHEM 352	Physical Chemistry	3 cr
MATH 230	Linear Algebra	2 cr
MATH 360	Differential Equations	3 cr
	Electives	11 cr
	TOTAL	28 cr

**Must be completed by the end of the junior year.*

Summer

CHEM 435	Senior Research	6 cr
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Fourth Year (Senior)

Fall/Spring

CHEM 407	Inorganic Chemistry II	2 cr
CHEM 408	Preparative Inorganic Chemistry I	1 cr
CHEM 435	Senior Research	2 cr
CHEM 453	Modern Experimental Physical Chemistry	2 cr
CHEM 466	Structural Analysis in Chemistry	2 cr
CHEM 491	Seminar	1 cr
CHEM 510	Advanced Inorganic Chemistry	3 cr
CHEM 555	Advanced Physical Chemistry	3 cr
	Electives	11 cr
	TOTAL	27 cr

Summer

CHEM 635	Master's Research	6 cr
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Fifth Year

Fall/Spring

CHEM 530	Advanced Analytical Chemistry	3 cr
CHEM 571	Advanced Organic Chemistry	3 cr
CHEM 601	Seminar	2 cr
CHEM 635	Master's Research	4 cr
	Electives	13 cr
	TOTAL	25 cr

Master of Natural Science in Chemistry

The Master of Natural Science in Chemistry is designed primarily for teachers and prospective teachers who want to improve their understanding of the subject matter of chemistry. Emphasis is upon the subject matter and it is generally a non-thesis program. Individuals interested in this degree should hold a teaching certificate or be working towards one. The program of study will be determined in consultation with the student's advisor and committee. The program requires a minimum of at least 30 credits, 22 of which must be taken in residence. A final oral examination is required.

Chemistry Graduate Courses

CHEM g335 Environmental Chemistry 2 credits. This course applies chemical principles and calculation to investigate environmental issues. Natural systems, environmental degradation and protection, and the methodology of chemical detection and monitoring. PREREQ: CHEM 232 AND CHEM 234 OR PERMISSION OF INSTRUCTOR.

CHEM g337 Environmental Chemistry Laboratory 1 credit. This laboratory course utilizes both structured and self-designed field and classroom experiments to emphasize principles of environmental chemistry. COREQ: CHEM 335 OR PERMISSION OF INSTRUCTOR.

CHEM g351-g352 Physical Chemistry 3 credits each. The fundamental principles of physical chemistry: thermodynamics, reaction kinetics, molecular structure, quantum theory, spectroscopy, and solution chemistry. PREREQ: CHEM 112, MATH 175, AND PHYS 212, OR PERMISSION OF INSTRUCTOR.

CHEM g400 Practicum in Physical Science 2 credits. Practical problems associated with equipping, setting up, and operating laboratories in chemistry. PREREQ: PERMISSION OF INSTRUCTOR.

CHEM g407 Inorganic Chemistry II 2 credits. Structure and reactivity of inorganic compounds including coordination compounds; acid-base chemistry and nonaqueous solvent systems; organometallic chemistry and other special topics of current interest. PREREQ: CHEM 211, CHEM g352 OR PERMISSION OF INSTRUCTOR.

CHEM g408 Preparative Inorganic Chemistry 1 credit. A laboratory course for the preparation of selected inorganic compounds utilizing various methods of synthesis and purification employing physical, chemical and spectroscopic methods of characterizations. COREQ: CHEM g407 OR PERMISSION OF INSTRUCTOR.

CHEM g410 Advanced Inorganic Chemistry 3 credits. Modern physical methods in inorganic chemistry with an emphasis on the application of group theory to spectroscopic analysis. COREQ: CHEM g466 OR PERMISSION OF INSTRUCTOR.

CHEM g430 Advanced Analytical Chemistry 3 credits. Advanced treatment of standards, sampling, special methods of analysis, and methods of separation. PREREQ: CHEM g302, CHEM g303 AND CHEM g352, OR PERMISSION OF INSTRUCTOR.

CHEM g432 Chemometrics 4 credits. Data analysis of chemical measurements and design or selection of optimal measurement procedures and experiments by mathematical and statistical analysis including sampling theory, optimization, factor analysis, pattern recognition, and multicomponent analyses. PREREQ: PERMISSION OF INSTRUCTOR.

CHEM g446 Computer Applications in Science 2 credits. Emphasis will be on Basic Programming and Chemistry. Students will be allowed opportunity to concentrate on problems which may be of special interest to them in their science field.

CHEM g453 Modern Experimental Physical Chemistry 2 credits. Magnetic, optical, and electrical properties of materials, calorimetry, voltammetry, optical and laser spectroscopic techniques. PREREQ: CHEM 334 AND CHEM 352.

CHEM g455 Advanced Physical Chemistry 3 credits. Introductory material from quantum chemistry and statistical mechanics with applications in chemical thermodynamics. PREREQ: CHEM g302 AND CHEM g352 OR PERMISSION OF INSTRUCTOR.

CHEM g466 Structural Analysis in Chemistry 2 credits. The application of spectra-structure correlations to the solution of chemical structural problems. PREREQ: CHEM g302 AND CHEM g407, OR PERMISSION OF INSTRUCTOR.

CHEM g471 Advanced Organic Chemistry 3 credits. Kinetics and mechanisms in organic reactions. PREREQ: CHEM g302 AND CHEM g352, OR PERMISSION OF INSTRUCTOR.

CHEM g481-482 Independent Problems in Chemistry 1-4 credits each. Directed library and laboratory research. Courses may be repeated to a maximum of 6 credits. PREREQ: CHEM 352.

CHEM g491-492 Seminar 1 credit each. Oral reports of library and laboratory research. COREQ: CHEM g481-482 OR PERMISSION OF INSTRUCTOR.

CHEM 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

CHEM 601 Seminar 1 credit. Oral reports of current literature and research in chemistry.

CHEM 610 Special Topics in Chemistry 1-3 credits. Detailed consideration of a limited phase of chemistry; course content will vary with current demand and with the instructor; may be repeated with departmental approval for non-repetitive course content.

CHEM 615 Neutron Activation Analysis 4 credits. Theory and use of neutron activation methods for quantitative chemical analysis of natural and synthetic materials. Applications in geologic systems will be emphasized. Cross-listed as GEOL 615, PHYS 615. PREREQ: PERMISSION OF INSTRUCTOR.

CHEM 617 Environmental Geochemistry 3 credits. Geochemistry of environmental systems. Emphasis given to low-temperature water-rock interactions, including sorption processes, retardation, reaction kinetics and reaction-mass transport modeling. Cross-listed as GEOL 617. PREREQ: GEOL 420, OR CHEM 351 AND GEOL 109.

CHEM 621 Organic Reactions 3 credits. Advanced study of organic chemical reactions with emphasis on synthetic applications. PREREQ: CHEM 302.

CHEM 625 Quantitative Geochem Lab 3 credits. Applications of instrumental methods for geochemical analysis. Cross-listed as GEOL 625.

CHEM 635 Master's Research 2-6 credits. A continuation of CHEM 435 to improve ability of students to solve chemical problems independently and pursue research at an advanced level. May be repeated for up to 12 credits. PREREQ: CHEM 435.

CHEM 640 Research Techniques in Chemistry 2-6 credits. Designed to improve the ability of students to solve chemical problems independently in the laboratory; special emphasis on development of manipulative skills, instrumental methods and supporting library research; nature of the projects dictated by students' needs; may be repeated with departmental approval for nonrepetitive course content. Limit 12 credits.

CHEM 650 Thesis 1-10 credits.

Department of Communication and Theatre

Chair and Professor Loebis
Professors Blomquist, Dienstfrey,
Mauch, Trinklein
Associate Professors DiSanza, Frazier,
House, Jull, Legge
Assistant Professors Gribas, Macon,
Simerly

Master of Arts in Speech Communication, Organizational Communication and Master of Arts in Theatre

Required for All Students

SPCH 601	Introduction to Research in Speech and Drama	3 cr
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For Theatre Degree

THEA 641	Seminar in Drama Theory	3 cr
THEA 642	Seminar in Drama Theory	3 cr

For a Speech Communication Degree

SPCH 630	Seminar in Rhetorical/Communication Theory	3 cr
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For an Organizational Communication Degree

SPCH 635	Seminar in Organizational Communication	3 cr
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Students must select one of the following three options:

Thesis Option

A minimum of 30 credits. One to six credits may be thesis credits.

Exam Option (Theatre degree only)

A minimum of 30 credits and an oral and written examination.

Degree Paper Option

A minimum of 32 credits and three degree papers. Two credits may be degree paper credits.

Mass Communication Graduate Courses

MC g431 Teaching High School Journalism 2 credits. Current high school journalism practices. Includes newspapers, broadcast, advertising, photography as appropriate. Emphasis is on applying the content of other journalism courses in the high school.

MC g452 Mass Communication and Society 3 credits. Interface between mass media (news, entertainment and advertising) and audiences. Analysis of public's right to know, press freedom, censorship, political and other leanings in the media, media effectiveness, and ethics. PREREQ: JUNIOR STANDING OR PERMISSION OF INSTRUCTOR.

MC g460 Corporate Video Production 3 credits. Producing for corporate, educational, home video, documentary and other non-fiction markets. Advanced production techniques. Major project required. PREREQ: MC 360 OR PERMISSION OF INSTRUCTOR.

Speech Communication Graduate Courses

SPCH g408 Communication Theory 3 credits. Examines models of social science and how these contribute to the development of communication theory. Examines a variety of communication theories in interpersonal, small group, organizational contexts. Focus on history of theory development in communication.

SPCH g436 Rhetorical Criticism 3 credits. Study and application of various theories and methods of rhetorical criticism including Aristotelian and Burkeian principles.

SPCH g437 Rhetorical Theory 3 credits. Principal rhetorical theories from the Greeks through the 18th century and contemporary American theorists. Writings of Plato, Aristotle, Cicero, Quintilian, Campbell, Blair, Whately, and Burke are stressed.

SPCH g440 Gender and Communication 3 credits. Course examines communication arenas from a perspective that focuses on gender and includes study of similarities and differences in female/male patterns. Topics include nonverbal, organizational, language, family and friendship.

SPCH g441 Interpersonal Communication 3 credits. Largely theoretical course, drawing from research in social sciences as well as speech. Focuses on communication variables associated with interpersonal communication including awareness of self/others, nature/functions of language, nonverbal behavior, norms and roles.

SPCH g442 American Rhetoric and Public Address 3 credits. Has a dual purpose: to study the impact of rhetoric (oral and written persuasion) on major events in American history; examine great speakers and rhetorical documents in their historical context.

SPCH g447 Rhetoric of Hitler and Churchill 3 credits. Rhetorical theory and practice of these influential leaders and the impact of their

persuasion. Topics include Hitler's oratory, Nazi propaganda, and Churchill's World War speeches.

SPCH g451 Recent Rhetorical Issues 3 credits. Study of the rhetoric of contemporary issues such as the Vietnam war, the Black revolution, and other current political and social topics, including the rhetoric of ongoing election campaigns (taught alternate years).

SPCH g491 Independent Research Projects 1-2 credits. Under the supervision of professors in the various areas of communication, students will prepare reports and carry out projects designed to promote professional growth.

SPCH 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

SPCH 601 Introduction to Research in Speech and Drama 3 credits.

SPCH 630 Seminar in Rhetorical/Communication Theory 3 credits. In-depth study and analysis of selected rhetorical and/or communication theories. See instructor for specific topics. May be repeated once with permission of instructor.

SPCH 650 Thesis 1-6 credits.

SPCH 660 Graduate Degree Papers 2 credits.

SPCH 691 Independent Study in Speech 1-4 credits.

Organizational Communication Graduate Courses

SPCH g441 Interpersonal Communication 3 credits. Largely theoretical course, drawing from research in social sciences as well as speech. Focuses on communication variables associated with interpersonal communication including awareness of self/others, nature/functions of language, nonverbal behavior, norms and roles.

SPCH g452 Conflict Management 3 credits. Examines the dynamics of everyday conflicts across a variety of settings, from personal to organizational. Principles of conflict, similar across all communicative contexts, are emphasized. Theory and its applications are given equal importance.

SPCH g453 Organizational Communication 3 credits. Examines functions, forms and patterns of communication in organizations as well as effects of organizational structures and dynamics on communication. Methods of evaluating communication policies and practices as an aid to organizational management are studied.

SPCH g491 Independent Research Projects 1-2 credits. Under the supervision of professors in the various areas of communication, students will prepare reports and carry out projects designed to promote professional growth.

SPCH 597 Professional Education Development Topics. Variable credit. May be repeated. A course

for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

SPCH 601 Introduction to Research in Speech and Drama 3 credits.

SPCH 630 Seminar in Rhetorical/Communication Theory 3 credits. In-depth study and analysis of selected rhetorical and/or communication theories. See instructor for specific topics. May be repeated once with permission of instructor.

SPCH 635 Seminar in Organizational Communication 3 credits. In-depth study and analysis of selected topics in organizational communication. See instructor for specific topics. May be repeated once with permission of instructor.

SPCH 650 Thesis 1-6 credits.

SPCH 660 Graduate Degree Papers 2 credits.

SPCH 691 Independent Study in Speech 1-4 credits.

Theatre Graduate Courses

THEA g313 Theatre Backgrounds I 3 credits. Study of the theatre and drama from their origins through the Jacobean period. PREREQ: THEA 101 OR PERMISSION OF INSTRUCTOR.

THEA g314 Theatre Backgrounds II 3 credits. Study of the theatre and drama from the Spanish Golden Age through the "well-made play." PREREQ: THEA 101 OR PERMISSION OF INSTRUCTOR.

THEA 323 Stage Costume History and Design 3 credits. Study of clothing history and costume design from ancient times to 1800.

THEA g328 Stage Costume History and Design 3 credits. Clothing history and costume design from 1800 to modern times.

THEA g351 Problems in Acting 3 credits. Focuses on special acting problems such as characterization, movement, voice, pantomime, and film and television acting. Content varies from year to year. May be repeated once with the consent of the instructor. PREREQ: THEA 251, 252.

THEA g412 Scenic Painting 3 credits. A study of painting techniques as used in theatrical scenery; theory, practice, and equipment will be investigated as they apply to the art of stage painting.

THEA g419 Modern European Theatre 3 credits. Continental and British theatre and drama from 1850 to mid-twentieth century. PREREQ: THEA 101 OR PERMISSION OF INSTRUCTOR.

THEA g420 American Theatre 3 credits. American theatre and drama from the beginning to mid-twentieth century. PREREQ: THEA 221 OR PERMISSION OF INSTRUCTOR.

THEA g421 Basic Pattern Drafting for Stage Costuming 3 credits. Cutting patterns from measurements. Adjusting various patterns to designs. Alterations and fittings. PREREQ: THEA 221 OR PERMISSION OF INSTRUCTOR.

THEA g422 Period Pattern Drafting for Stage Costuming 3 credits. Use of the basic patterns to reproduce historical costumes from the 12th century to 1950. PREREQ: THEA 221 OR PERMISSION OF INSTRUCTOR.

THEA g424 Advanced Acting Styles 3 credits. Study of the various period styles of acting including Greek, Medieval, Elizabethan, Restoration, and 19th century melodrama. The student will act in a series of special projects encompassing a variety of styles. PREREQ: THEA 355 OR PERMISSION OF INSTRUCTOR.

THEA g426 Scene Design 3 credits. Consideration of elements of design and composition, light, and shadow and period styles as applied to scenery for plays, musicals, ballet, and opera. Projects are juried. PREREQ: THEA 111, 112, 209, 311 OR PERMISSION OF INSTRUCTOR.

THEA g456 Advanced Stage Direction 3 credits. Advanced theories in techniques of stage direction including consideration of period styles. The student will direct a series of advanced projects including scenes and a full-length play. PREREQ: THEA 355 OR PERMISSION OF INSTRUCTOR.

THEA g470 Contemporary Theatre 3 credits. World drama and theatre during the two most recent decades. PREREQ: THEA 101 OR PERMISSION OF INSTRUCTOR.

THEA g490 Practicum Theatre Arts 4 credits. Integrated projects for advanced students in various areas of theatre arts emphasizing analysis and presentation of experimental work.

THEA g491 Independent Research Projects 1-2 credits. Under the supervision of the drama faculty, students will undertake special research projects in theatre.

THEA 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

THEA 641 Seminar in Drama Theory 3 credits.

THEA 642 Seminar in Drama Theory 3 credits.

THEA 650 Thesis 1-6 credits.

THEA 660 Graduate Degree Papers 2 credits.

THEA 691 Independent Study in Drama 1-4 credits. Supervised individual study in drama. Instructor's consent required. May be repeated for a maximum of 4 credits.

Department of Economics

Chair and Associate Professor Stegner
Professors Norman, Tokle
Associate Professor Benson
Assistant Professor Green, Hill
Professor Emeritus Fouad, Hoffman

Economics Graduate Courses

(No graduate degrees are offered)

ECON g301 Macroeconomic Theory 3 credits. Techniques of measuring aggregate economic activity including theories of general equilibrium.

ECON g302 Microeconomic Theory 3 credits. Theory of partial equilibrium, including economics of the firm, price theory, competition, monopoly, and linear processes.

ECON g306 History of Economic Doctrines 3 credits. Survey of the development of economic thought from early times to the present, including doctrines developed by Aristotle, Aquinas, Smith, Malthus, Ricardo, Marx, Mill, Marshall, Veblen, and Keynes.

ECON g323 Economic History 3 credits. The origin and development of modern economic institutions and the study of economic forces which have contributed to this development.

ECON g331 Money and Banking 3 credits. Principles of money, credit, and government controls of monetary institutions. History and organization of the money and banking systems of the United States.

ECON g334 International Economics 3 credits. Study of the principles and practices of international trade including the historical and economic background of foreign trade tariffs, foreign exchange, international finance, international balance of payments, and contemporary problems and policies in the field of foreign trade.

ECON g338 Public Finance 3 credits. Study of government revenues, expenditures, and debt management, including an analysis of the effects of these governmental activities on the American economy.

ECON g341 Labor Economics 3 credits. History of the American labor movement and the structure and functioning of the labor market.

ECON g351 Business Cycles 3 credits. Introduction to national income analysis and an analytical presentation of theories of fluctuations in general economic activity. Study of the general problems involved in forecasting economic fluctuations.

ECON g352 Environmental Economics 3 credits. An introduction to the economic principles relevant to pollution control, the use of exhaustible natural resources, and conservation. Federal, state and local policy and legislation concerning the environment is examined.

ECON g384 Methods of Mathematical Economics 3 credits. Building basic economic models and using calculus and matrix algebra in economics. PREREQ: ECON 201, ECON 202, AND MATH 160 AND MATH 170.

ECON g409 Industrial Organization 3 credits. Industrial organization extends the theory of the firm to examine firms' strategic behavior, including methods to differentiate products and aggressive pricing schemes, and the government's response to these activities. PREREQ: ECON 201, ECON 202.

ECON g411 Political Economy 3 credits. A critical introduction to the relationship between economic institutions and social analysis. The social implications of different views on economic concepts, such as the division of labor, capital, and value, are investigated from a classical, neoclassical and an institutional perspective.

ECON g433 Economic Development 3 credits. Theories and principles of economic development, characteristics, and problems of underdeveloped and developing countries, alternative techniques and policies for the promotion of growth and development.

ECON g439 State and Local Finance 3 credits. Study of taxation, borrowing and spending by state, city, county and other local governments. Taxing and spending patterns are evaluated and compared by states.

ECON g472 Comparative Economic Systems 3 credits. Study and comparison of the theories and practices found in various economic systems. Includes a study of both the free market and socialistic planning.

ECON g474 Current Economic Problems 3 credits. Covers the use of reference materials, research sources, and the preparation of written papers and reports on economic topics selected by the students. PREREQ: ECON 201 AND ECON 202.

ECON g481 Independent Studies 1-3 credits. Individuals will be assigned independent problems for research under the supervision of a departmental faculty member.

ECON g485 Econometrics 3 credits. The application of statistical and mathematical methods to the analysis of economic data, with a purpose of giving empirical content to economic theories and verifying them or refuting them. PREREQ: ECON 201, ECON 202, AND MATH 253.

ECON g491-g492 Seminar 1-3 credits.

ECON 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

ECON 610 Applied Economics 3 credits. Applied principles and techniques of analysis in micro and macro economics. Cross-listed as MBA 610.

ECON 620 Seminar: Philosophy of Social Science 3 credits. The application of mathematical and scientific methods to the study of social, economic, and political life will be considered through the reading of certain seminal writings. Attention will be given to the fundamental assumptions about the nature of scientific rationality. Required of all D.A. students.

ECON 621 Seminar: Interdisciplinary Topics in Social Sciences 3 credits. Examination of selected topics in the social sciences from the analytic orientations and perspectives common and peculiar to the disciplines of political science, economics and sociology. Required of all D.A. students.

ECON 650 Thesis 1-6 credits. The student will do research of an economic nature supervised by a faculty member in the Economics Department. The research project will be of an interdisciplinary nature and the student will be supervised by faculty members from the department(s) involved as well as from the Economics Department.

Refer to Political Science Department for descriptions of the following courses:
POLS 669 Independent Problems—Tutorial 3 credits.

POLS 700 Supervised Teaching Internship Variable up to 9 credits.

Department of English and Philosophy

Chair and Professor Kijinski
Assistant Chair and Associate Professor Schmidt

Director of Philosophy and Professor Wahl

Associate Professor and Writing Center Director Mullin

Professors B. Attebery, Cantrill, Goldbeck, Levenson, Schow, F. Swetnam, S. Swetnam, Tate, D. Walsh, M.E. Walsh

Associate Professors J. Attebery, Baergen, Engebretsen, Hamlin, Hellwig, King, Montgomery, Westphal

Assistant Professors Jones, Kane, Kaufmann, Myers, Prineas, Van Pelt

Doctor of Arts in English

The Doctor of Arts in English prepares graduates to teach in two-year and four-year colleges. Thus the program requires breadth of study in English and American literature, interdisciplinary course work, course work in pedagogy and supervised teaching internships. Students will undertake directed research in one or both required doctoral papers.

Admission

For classified admission to the D.A. program, applicants must satisfy the following criteria:

1. An accumulative grade point average of 3.5 in English courses.

2. Scores at or above the 50th percentile on the verbal section and at or above the 35th percentile on the analytical section of the GRE general test. A score at or above the 50th percentile on the GRE subject test on literature in English.

3. Three letters of recommendation, preferably from professors who know the student's recent academic work.

Priority will be given to experienced, successful teachers.

Students admitted conditionally without GRE scores must take the tests the first time they are offered following the student's admission. Continuation in the program is subject to a student's meeting this requirement.

General Requirements

The Doctor of Arts in English requires a minimum of 48 semester credits beyond the M.A. degree in English. A course completed as part of a student's M.A. program may be approved to satisfy a particular requirement of the D.A. program, with the exception of the four required seminars in literature. However, the substitution of coursework does not waive the minimum credit requirement for the D.A. program.

Not more than nine semester hours beyond the M.A. may be transferred from other institutions.

At least two consecutive semesters of full-time residence study are required.

Students must maintain a 3.5 grade point average to qualify for the D.A. degree. Three grades below B during the entire program will automatically disqualify a student.

Graduate students must follow the policy on incomplete grades as it is listed in the Idaho State University Graduate Catalog.

Teaching assistantships and D.A. fellowships will not be renewed for students with incomplete grades on their transcripts.

Special Requirements

1. Students must complete two supervised teaching internships. The student must submit a detailed written prospectus for each proposed internship for approval by the Graduate Committee prior to the semester of the internship. An unacceptable D.A. internship will be interpreted the same as a course grade of C.

2. Students will write two Doctor of Arts papers, choosing from the following options:

- a. One pedagogical or interdisciplinary
- b. One from the choice not taken above or a creative or critical literary paper.

The doctoral papers will be evaluated by at least three members of the graduate faculty, including a representative from outside the Department of English. An unacceptable D.A. paper will be interpreted the same as a course grade of C.

3. A colloquium presentation on a topic of their current research, given in the penultimate or ultimate semester of full-time study, allows students to obtain experience in presenting the results of their research to their peers.

Course Work

Pedagogy Component

A minimum of 12 semester credits, including the following requirements:

ENGL 631	Seminar in Teaching Writing	3 cr
ENGL 700	Supervised Teaching Internship	6 cr
An additional pedagogy course approved by the department		3 cr

Interdisciplinary Component

A minimum of 12 semester credits.

Students will design an interdisciplinary component appropriate for their interests and professional needs. The Graduate Committee must approve a written prospectus for this component before the student begins the course work. In this component students are expected to explore relationships between English and another discipline (e.g., art, drama, rhetoric, psychology, history, philosophy).

Language and Literature Component

A minimum of 24 credits, including the following requirements:

ENGL 613	Methods of Scholarship in Language and Literature	3 cr
ENGL 611	Literary Theory and Criticism	3 cr
Course work in language studies		6 cr

Course work in language studies must include two courses chosen from the following list:

ENGL g401	Advanced Composition	
ENGL g481	Studies in Grammar	
ENGL g485	Linguistic Analysis	
ENGL g486	Old English	
ENGL g487	History of the English Language	
ENGL 685	Seminar in Linguistics	
SPCH g436	Rhetorical Criticism	
OR		
SPCH g437	Rhetorical Theory	
	Seminars in literature	12 cr

One of these must be in literature before 1800 and one must be in literature after 1800.

Comprehensive Examination

The comprehensive examination, taken after the student has completed at least 32 semester credits beyond the M.A. degree, includes the following sections:

- a. Pedagogy
- b. Genre
- c. Literature before 1800 or after 1800.

The comprehensive examination may be repeated one time, within 12 months.

Foreign Language Requirement

Students must demonstrate proficiency in one foreign language, either modern or ancient, before the program of study is complete. The purpose of this requirement is for students to have a current knowledge of a language other than English and of its relation to the culture from which it originates. Students may satisfy this requirement in one of the following ways:

1. By passing four semesters of one foreign language with an average grade of B, either during the course of study for the graduate degree or with an interval of no longer than two years between the completion of the last language course and the beginning of graduate study in English at Idaho State University.
2. By passing a two-part examination administered by the Foreign Language Department with a grade of B.
3. By having completed a major in a foreign language, as verified by a college transcript.
4. By having satisfied a foreign language requirement as part of having completed an M.A. in English with an interval of no longer than two years between the completion of the last language course and the beginning of graduate study in English at Idaho State University.

Master of Arts in English

The Master of Arts in English prepares graduates for careers and for doctoral study in English. The program emphasizes study in English and American literature and requires course work in the English language. A well-developed mentoring program provides supervised teaching experience in composition for students holding assistantships.

Admission

For classified admission to the M.A. program, applicants must satisfy the following criteria:

1. An accumulative grade point average of 3.0 over the last two years of undergraduate course work for the B.A.
2. Score at or above the 50th percentile on the verbal section and at or above the 35th percentile on the analytical section of the GRE general test.
3. Three letters of recommendation, preferably from professors who know the student's recent academic work.

Students admitted conditionally without GRE scores must take the general test the first time it is offered following their admission. Continuation in the program is subject to a student's meeting this requirement.

Students admitted without at least 21 credits of undergraduate courses in English and American literature and language, excluding freshman composition, will be required to make up deficiencies in their undergraduate work. The Graduate Committee will specify the courses that the student must take to do so.

Requirements

The Master of Arts in English program provides both thesis and non-thesis options. Each option requires a minimum of 30 semester credits in courses approved by the Department of English, and students in each option must pass the General Literature Examination. Teaching assistants must take a minimum of 33 semester credits, including English 731. Students must take at least 18 of these credits in 600-level courses.

In place of the 6 credits granted for the thesis, students selecting the non-thesis option must take 6 credits of graduate course work. Students selecting the non-thesis option must also pass a Set Text Examination to qualify for the M.A. degree.

Students selecting either option must demonstrate proficiency in one foreign language (see options for satisfying requirement under Doctor of Arts in English).

All students must maintain a satisfactory record of scholarship. Three grades below B during the entire program will automatically disqualify a student from continuing in the program.

Graduate students must follow the policy on incomplete grades as it is listed in the Idaho State University Graduate Catalog.

Teaching assistantships and D.A. fellowships will not be renewed for students with incomplete grades on their transcripts.

All students must take the following 9 required credits:

ENGL 611	Literary Theory and Criticism	3 cr
ENGL 613	Methods of Scholarship in Language and Literature	3 cr
One course in English language studies, chosen from the following group:		
ENGL g401	Advanced Composition	3 cr
ENGL g481	Studies in Grammar	
ENGL g485	Linguistic Analysis	
ENGL g486	Old English	
ENGL g487	History of the English Language	
ENGL 685	Seminar in Linguistics	

Students appointed to teaching assistantships must also take the following 6 required credits:

ENGL 631	Seminar in Teaching Writing	3 cr
ENGL 731	Practicum in Teaching Writing	3 cr

English Composition and Language Graduate Courses

ENGL g401 Advanced Composition 3 credits. An advanced course in which students develop an independent style in writing such types of essays as the personal, biographical, argumentative, and critical. May contain prose analysis. PREREQ: ENGL 301, ENGL 307, ORENGL 308.

ENGL g406 Advanced Creative Writing Workshop 3 credits. Production and discussion of student writing. Study in a specific genre, with emphasis on longer works. May be repeated once for undergraduate credit. PREREQ: ENGL 306 OR PERMISSION OF INSTRUCTOR.

ENGL g431 Idaho Writing Project 1-3 credits. This National Writing Project affiliate program helps K-12 teachers and education majors develop skills in teaching writing across the curriculum. Participants study theory; write daily; and prepare critiques, teaching demonstrations, and position papers.

ENGL g481 Studies in Grammar 3 credits. Focus on the study of transformational-generative grammar and its application to sentence level problems. PREREQ: ENGL 281.

ENGL g485 Linguistic Analysis 3 credits. Advanced topics course in the techniques of language analysis. Examples are phonology and morphology, semantics, or rhetorical grammar. May be repeated for up to 6 credits. PREREQ: ENGL 281

ENGL g486 Old English 3 credits. Intensive study of the Old English language, with attention to its intrinsic structure and its relation to Middle and Modern English.

ENGL g487 History of the English Language 3 credits. Linguistic and historical study of the major changes and developments in the English Language.

ENGL 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

Graduate Seminars in Composition and Language

ENGL 606 Seminar in Creative Writing 3 credits. Composition of poetry, fiction, and drama (emphasis may vary); methods of teaching creative writing. Permission of the instructor required. May be repeated once with permission of the department.

ENGL 607 Advanced Professional Writing 3 credits. Discussion and practice in the techniques of producing and editing documents for business and industry, governments, and universities. PREREQ: PERMISSION OF INSTRUCTOR.

ENGL 631 Seminar in Teaching Writing 3 credits. A systematic application of the knowledge of language to the teaching of writing, including the analysis and evaluation of student papers.

ENGL 633 Seminar in Teaching Business and Professional Writing 3 credits. Preparation to teach undergraduate business and technical writing courses. Includes the nature and history of business and technical writing, issues in practice and teaching, pedagogical strategies, textbook choice, and research design.

ENGL 685 Seminar in Linguistics 3 credits. Advanced studies in selected topics of linguistics. May be repeated once with permission of the department.

Literature Graduate Courses

ENGL g440 Philosophy and Literature 3 credits. Reflections on the relation between poetic and speculative discourse. Topics include forms of consciousness, temporality and narrative, metaphysics of genre. Cross-listed as PHIL g440.

ENGL g455 Studies in a National Literature 3 credits. Studies in important literatures and cultures not otherwise covered in the curriculum. Will include literatures in translation and literature written in English outside of America and the British Isles. Cross-listed as LANG g415.

ENGL g456 Comparative Literature 3 credits. The analysis of ideas, problems, and techniques common to important writers of various national literatures.

ENGL g461 Classical Literature 3 credits. Study of the major literature of the classical Greek and Roman periods, especially in relationship to its cultural backgrounds.

ENGL g462 Medieval Literature 3 credits. Study of the major literature of the Middle Ages and its background, with emphasis upon the development of English literature.

ENGL g463 Renaissance Literature 3 credits. Study of the major literature of the Renaissance and its background, with emphasis upon the development of English literature.

ENGL g464 Seventeenth-Century Literature 3 credits. Study of the major literature of the seventeenth century and its background, with emphasis on English or American or other literature of the period.

ENGL g465 Eighteenth-Century Literature 3 credits. Study of the major literature of the eighteenth century and its background, with emphasis on English or American or other literature of the period.

ENGL g466 Early Nineteenth-Century Literature 3 credits. Study of the major literature of the early nineteenth century and its background, with emphasis on English or American or other literature of the period.

ENGL g467 Late Nineteenth-Century Literature 3 credits. Study of the major literature of the late nineteenth century and its background, with emphasis on English or American or other literature of the period.

ENGL g468 Early Twentieth-Century Literature 3 credits. Study of the major literature of the early twentieth century and its background, with emphasis on English or American or other literature of the period.

ENGL g469 Contemporary Literature 3 credits. Study of recent major literature and its background, with emphasis on English or American or other literature of the period.

ENGL g470 Post-Colonial Literature 3 credits. Study of post-colonial literary texts, with attention to the role of literature in history, political resistance, and social movements of one or more colonized cultures.

ENGL g472 Proseminar in a Major Literary Figure 3 credits. Intensive study in a single major author other than Chaucer, Milton, and Shakespeare, demanding some independent study and small group participation.

ENGL g473 Chaucer 3 credits. Intensive study of selected works of Chaucer.

ENGL g474 Milton 3 credits. Intensive study of selected works of Milton.

ENGL g476 Shakespeare 3 credits. Intensive study of selected works of Shakespeare.

ENGL g477 Shakespeare in Performance 2 credits. Intensive study of selected works by Shakespeare, with emphasis placed upon performance issues. Includes field trip to attend live dramatic productions of Shakespearian plays.

ENGL g489 American Indian Literature 3 credits. Considers literary works by and about North American native people, especially in relationship to history, genre, and culture, including oral traditions. Cross-listed as ANTH g489. PREREQ: COMPLETION OF GOAL 1.

ENGL g490 Folklore 3 credits. Principles, content, and dissemination of orally transmitted religious beliefs and popular narrative forms in preliterate societies. Also listed as ANTH g490.

ENGL 648 Graduate Reading 1-3 credits. Supplementary reading course arranged on an individual basis. The course requires conferences with faculty supervisor and written assignments or examination. Requires approval of a prospectus by the Graduate Committee.

ENGL 650 Thesis 1-6 credits. Research or creative project. Optional in the M.A. program.

Graduate Seminars in Literature

ENGL 611 Literary Theory and Criticism 3 credits. Examination of major literary theories and critical approaches.

ENGL 613 Methods of Scholarship in Language and Literature 3 credits. Training in bibliographical and problem-solving techniques relevant to English.

ENGL 621 Seminar in a Major Literary Genre 3 credits. Study of the theory, form, and conventions of a genre. May be repeated once with permission of department.

ENGL 632 Seminar in Teaching Literature 3 credits. Practical strategies for teaching literature at beginning and advanced undergraduate levels.

ENGL 661 Seminar in Classical Literature 3 credits.

ENGL 662 Seminar in Medieval Literature 3 credits.

ENGL 663 Seminar in Renaissance Literature 3 credits.

ENGL 664 Seminar in Seventeenth-Century Literature 3 credits.

ENGL 665 Seminar in Eighteenth-Century Literature 3 credits.

ENGL 666 Seminar in Nineteenth-Century Literature 3 credits.

ENGL 668 Seminar in Twentieth-Century Literature 3 credits.

ENGL 672 Seminar in a Major Literary Figure 3 credits. Intensive study of the writings of one or two major authors. Critical and biographical topics and historical significance may be considered. May be repeated once with permission of the department.

ENGL 685 Seminar in Linguistics 3 credits. Advanced studies in selected topics of linguistics. May be repeated once with permission of the department.

ENGL 691 Interdisciplinary Seminar 3 credits. Intensive study of a subject from the perspectives of two or more academic disciplines. May be repeated once with permission of the department. Fulfills three credits of interdisciplinary component for the D.A.

Supervised Teaching

ENGL 700 Supervised Teaching Internship 1-9 credits. Practical experience in classroom or laboratory teaching. Graded S/U.

ENGL 731 Practicum in Teaching Composition 3 credits. Teaching composition under supervision. Required of, and limited to, second semester M.A. teaching assistants. PREREQ: ENGL 631. Graded S/U.

Philosophy Graduate Courses

PHIL g305 History of Philosophy: Greek Reason and Christian Faith 3 credits. Philosophical readings from the pre-Socratics to St. Thomas

Aquinas. Topics include: the theory of essence, human nature and happiness, the problem of evil, the relation of reason and faith.

PHIL g315 History of Philosophy: Rationalism and Empiricism 3 credits. Readings in philosophy from Descartes to Hegel. Emphasis on the question of the limits of human knowledge.

PHIL g325 History of Philosophy: Modern Philosophy Movements 3 credits. Readings in philosophy of the 19th and 20th centuries. Organized to illuminate the development of particular schools of thought, including existentialism, pragmatism, phenomenology, analytic philosophy, and Marxism. Emphasis varies.

PHIL g400 Philosophy of Art 3 credits. Study of philosophic problems encountered in perceiving, interpreting, and evaluating works of art. Topics include the nature of a work of art, aesthetic response, expression, symbol; the nature and role of representation; the nature of interpretive and evaluative claims.

PHIL g410 Philosophy of Language 3 credits. Study of theories of language, with emphasis on contemporary thinkers such as Frege, Heidegger, Russell, Wittgenstein, Piaget, and Chomsky. Topics include the nature and origin of meaning, the temporal dimension of discourse, the significance of syntax, animal languages, computer languages.

PHIL g420 Philosophy of Mind 3 credits. Inquiry into the mind-body problem and representative solutions, such as dualism, philosophical behaviorism, central-state materialism. Related topics include the self, personal identity, immortality, claims of parapsychology, mystical consciousness.

PHIL g430 Philosophy of Science 3 credits. A critical analysis of the philosophical presuppositions of the empirical sciences with attention given to the wider expressions of the presuppositions in contemporary life.

PHIL g440 Philosophy and Literature 3 credits. Reflections on the relation between poetic and speculative discourse. Topics include forms of consciousness, temporality and narrative, metaphysics of genre. Cross-listed as ENGL g440.

PHIL g450 Ethical Theory 3 credits. Study of the nature of value claims, stressing ethical value claims; examination of the scope of reason in ethical decision-making. Applications to normative ethical theories. Related topics include human rights, justice, ethical and legal systems.

PHIL g460 Theory of Knowledge 3 credits. A survey of reflections on the question, "What, if anything, can we know?" Topics include knowing, believing, meaning, truth, and certainty.

PHIL g470 Symbolic Logic and Foundations of Mathematics 3 credits. A comprehensive study of formal methods of determining validity and of systems of symbolic logic, with attention to the philosophy of logic and the relationship between logic and mathematics.

PHIL g490 Philosophy Seminar 1-3 credits. Advanced reading and discussion on selected topics in philosophy. May be taken for credit more than once with permission of the department.

PHIL 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

PHIL 600 Ethics in Health Care 3 credits. Application of ethical principles and theories to current issues in health care. Topics include allocation of scarce resources, informed consent, duty to treat, research on human subjects, organ transplants, death and dying.

Department of Foreign Languages

Chair and Professor Dolsen
Professors Nickisch, Park
Associate Professors Hunt, Sherman
Assistant Professors Carter-Cram, Frantz,
Sieber, Tweraser
Instructors Stewart, Wells

Foreign Languages Graduate Courses

(No graduate degrees are offered)

LANG g415-g416 Studies in Major National Literatures 3 credits each. Studies in important literatures and cultures not covered by regular course offerings. Will include literatures in translation and literature written in English outside of America and the British Isles. Also listed as ENGL g455.

LANG g437 The Teaching of Foreign Languages 2-3 credits. Study of the various methods used in teaching foreign languages, the extent and scope of language courses; the selection of suitable textbooks; audio-visual techniques and their contribution to language instruction. PREREQ: PERMISSION OF INSTRUCTOR.

LANG g455 Linguistic Analysis I 3 credits. Introduction to descriptive linguistics focusing on phonetics, phonology and morphology. Cross-listed as ANTH g455. PREREQ: LANG 107.

LANG g456 Linguistic Analysis II 3 credits. Introduction to descriptive linguistics focusing on morphology, syntax, and semantics. Cross-listed as ANTH g456. PREREQ: LANG g455.

LANG g477 Phonology 3 credits. Study of articulatory phonetics and practice in phonetic transcription of a broad survey of languages; phonological analysis and theory. PREREQ: PERMISSION OF INSTRUCTOR.

LANG g488 Foreign Language Seminar 3 credits. Advanced studies in selected topics from language, culture, literatures or methods of research. May be conducted in English. May be

repeated up to 6 credits with different content. PREREQ: PERMISSION OF INSTRUCTOR.

LANG 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

French Graduate Courses

FREN g341-g342 Survey of French Literature and Civilization I, II 3 credits each. Comprehensive overview of the main currents of French cultural history and literature. Conducted in French. PREREQ: FREN 202 OR EQUIVALENT.

FREN g381 French Current Affairs 3 credits. Study of contemporary French culture through an examination of current socio-cultural issues in French speaking countries. Conducted in French. PREREQ: PERMISSION OF INSTRUCTOR.

FREN g400 French Advanced Grammar 3 credits. Survey of selected grammar and composition topics on the advanced level. PREREQ: PERMISSION OF INSTRUCTOR.

FREN g410 Seventeenth Century French Literature 3 credits. Study of representative works of the 17th century, with particular emphasis on the works of Corneille, Moliere, and Racine. Conducted in French. PREREQ: PERMISSION OF INSTRUCTOR.

FREN g420 Eighteenth Century French Literature 3 credits. French thought as reflected in the literature from 1715 to the Revolution. Special emphasis on the works of Montesquieu, Voltaire, Diderot, and Rousseau. Conducted in French. PREREQ: PERMISSION OF INSTRUCTOR.

FREN g430 French Romanticism 3 credits. Study of the Romantic prose, poetry, and drama of the period: Lamartine, Musset, Vigny, Hugo, and others. Conducted in French. PREREQ: PERMISSION OF INSTRUCTOR.

FREN g440 French Realism and Naturalism 3 credits. Study of the main currents in French literature, as reflected in the works of Balzac, Flaubert, Zola, Maupassant, and other writers of the latter 19th century. Conducted in French. PREREQ: PERMISSION OF INSTRUCTOR.

FREN g450 Twentieth Century French Literature 3 credits. Study of the main currents of contemporary French literature including symbolism, surrealism, existentialism, objectivism, etc. Conducted in French. PREREQ: PERMISSION OF INSTRUCTOR.

FREN g470 Readings in French 2 credits. Reading, discussion, and preparation of reports on selected topics in French literature. May be repeated once with different content. Conducted in French. PREREQ: PERMISSION OF INSTRUCTOR.

FREN g480 Independent Studies in French 3 credits. A directed project, under the guidance of an instructor, emphasizing individual study or research according to the needs of the student. PREREQ: PERMISSION OF INSTRUCTOR.

FREN g490 French Senior Seminar 3 credits. Advanced studies in selected topics from language, culture, literatures or methods of research. May be repeated up to 6 credits with different content. Conducted in French. PREREQ: PERMISSION OF INSTRUCTOR.

German Graduate Courses

GERM g341-g342 Survey of German Literature and Civilization I, II 3 credits each. Comprehensive overview of the main currents of German cultural history and literature. Conducted in German. PREREQ: GERM202 OR EQUIVALENT.

GERM g381 German Current Affairs 3 credits. Study of contemporary German culture through an examination of current socio-cultural issues in the German-speaking world. Conducted in German. PREREQ: PERMISSION OF INSTRUCTOR.

GERM g400 German Advanced Grammar 3 credits. Survey of selected grammar and composition topics on the advanced level. PREREQ: PERMISSION OF INSTRUCTOR.

GERM g410 Survey of German Poetry 3 credits. Reading, analysis and discussion of representative examples of epic and lyric poetry from the major literary eras, with emphasis on German poetry since Luther. Conducted in German. PREREQ: PERMISSION OF INSTRUCTOR.

GERM g420 The Age of Goethe 3 credits. A survey of the major works and movements of the preclassical and classical periods in German literature. Conducted in German. PREREQ: PERMISSION OF INSTRUCTOR.

GERM g430 German Romanticism 3 credits. Selections of prose, verse and drama by leading German-speaking Romantic writers are read and discussed, and the principal literary movements of the period are considered. Conducted in German. PREREQ: PERMISSION OF INSTRUCTOR.

GERM g440 German Realism and Naturalism 3 credits. A survey of the major works from Buechner to Hauptmann, with emphasis on prose fiction and drama. Conducted in German. PREREQ: PERMISSION OF INSTRUCTOR.

GERM g450 Modern German Literature 3 credits. Reading and discussion of 20th Century works by the major authors of the German-speaking world, including Kafka, Hesse, Mann, Grass and Boell. Conducted in German. PREREQ: PERMISSION OF INSTRUCTOR.

GERM g470 Readings in German 1-2 credits. Reading, discussion, and preparation of reports on selected topics in German literature. May be repeated once with different content. PREREQ: PERMISSION OF INSTRUCTOR.

GERM g480 Independent Studies in German 3 credits. A directed project, under the guidance of an instructor, emphasizing individual study or research according to the needs of the student. PREREQ: PERMISSION OF INSTRUCTOR.

GERM g490 German Senior Seminar 3 credits. Advanced studies in selected topics from language, culture, literatures or methods of research. May be

repeated up to 6 credits with different content. Conducted in German. PREREQ: PERMISSION OF INSTRUCTOR.

Latin Graduate Courses

LATN g471 Readings in Latin 2 credits. Reading, discussion, and preparation of reports on selected topics in Latin literature. May be repeated once with different content. PREREQ: PERMISSION OF INSTRUCTOR.

Russian Graduate Courses

RUSS g471 Readings in Russian 2 credits. Reading, discussion, and preparation of reports on selected topics in Russian literature. May be repeated once with different content. PREREQ: PERMISSION OF INSTRUCTOR.

Spanish Graduate Courses

SPAN g341-g342 Survey of Spanish and Latin American Literature and Civilization I, II 3 credits each. Comprehensive overview of the main currents of Peninsular and Latin American cultural history and literature. Conducted in Spanish. PREREQ: SPAN202 OR EQUIVALENT.

SPAN g381 Spanish Current Affairs 3 credits. Study of contemporary Spanish culture through an examination of current socio-cultural issues in Spanish speaking countries. Conducted in Spanish. PREREQ: PERMISSION OF INSTRUCTOR.

SPAN g400 Spanish Advanced Grammar 3 credits. Survey of selected grammar and composition topics on the advanced level. PREREQ: PERMISSION OF INSTRUCTOR.

SPAN g410 Spanish Medieval through Golden Age Literature 3 credits. Examination of Medieval, Renaissance, Golden Age Literature with an emphasis on the major trends that shaped Spanish thought and letters. Conducted in Spanish. PREREQ: PERMISSION OF INSTRUCTOR.

SPAN g420 Early Latin American Literature 3 credits. Study of major writers from the conquest to nationalism, including colonial, enlightenment, revolutionary and late 19th-century prose and poetry. Conducted in Spanish. PREREQ: PERMISSION OF INSTRUCTOR.

SPAN g430 Spanish Enlightenment and Romanticism 3 credits. Consideration of literary currents from the beginning of the Bourbon Monarchy in Spain (1700) until 1868. Conducted in Spanish. PREREQ: PERMISSION OF INSTRUCTOR.

SPAN g440 Spanish Realism through Generation of '98 3 credits. Examination of major literary works beginning with the realist and naturalist authors and concluding with the Generation of 1898. Conducted in Spanish. PREREQ: PERMISSION OF INSTRUCTOR.

SPAN g450 Twentieth Century Spanish Literature 3 credits. Examination of modern Peninsular letters as evidenced in poetry, the short story, the novel, and the essay. Conducted in Spanish. PREREQ: PERMISSION OF INSTRUCTOR.

SPAN g460 Modern Latin American Literature 3 credits. Study of major writers from "modernism" to the present. Conducted in Spanish. PREREQ: PERMISSION OF INSTRUCTOR.

SPAN g470 Readings in Spanish 2 credits. Reading, discussion, and preparation of reports on selected topics in Spanish literature. May be repeated once with different content. PREREQ: PERMISSION OF INSTRUCTOR.

SPAN g480 Independent Studies in Spanish 3 credits. A directed project, under the guidance of an instructor, emphasizing individual study or research according to the needs of the study. PREREQ: PERMISSION OF INSTRUCTOR.

SPAN g490 Spanish Senior Seminar 3 credits. Advanced studies in selected topics from language, culture, literatures or methods of research. May be repeated up to 6 credits with different content. Conducted in Spanish. PREREQ: PERMISSION OF INSTRUCTOR.

Department of Geology

Chair and Associate Professor Rodgers
Professors Link, McCurry
Associate Professor Hughes
Assistant Professors Kruger, Thackray
Instructor Fortsch
GIS Director and Instructor Weber
Affiliate Associate Professor Akersten
Supervisory Research Geologist Welhan
Emeritus Faculty Ore, Strawn

Master of Science in Geology

The M.S. degree is offered to those students who have degrees in geology who have demonstrated the potential for research and a professional career. Classified (degree-seeking, fully accepted) admission to the program is decided by the graduate faculty of the Geology Department in accordance with standards set by the Graduate School.

Admission

A complete graduate application for classified status in the ISU Geology Department consists of:

- GRE aptitude scores (35% on math or verbal is required for classified students)
- A letter of intent and statement of goals in Graduate School
- An ISU Graduate School application form and official copies of transcripts
- Three letters of recommendation

Applicant must hold the degree of Bachelor of Science or Bachelor of Arts in geology or the equivalent as determined by the department. The student's course of study will be determined by consultation and possibly an entrance examination. Students will normally be required to complete as deficiencies at the undergraduate level any courses required for the B.S. in geology at ISU which they have not already taken. Continued enrollment in the program is contingent upon maintaining a 3.0 grade point average and upon making satisfactory progress toward the degree.

Students who do not meet the minimum requirements or with incomplete applications can be admitted on a conditional or unclassified basis. Conditional status can be changed to classified after one or two semesters if performance is satisfactory. Unclassified status is used for students with large numbers of deficiencies or with very low undergraduate GPAs. Unclassified students may petition for classified status when their performance warrants.

Requirements

A student who wants to earn an M.S. in Geology must complete at least 30 credits of coursework. These credits must be earned under the conditions outlined below:

- a) The student must earn at least 17 credits (including six Thesis credits) at the 600 level in Geology.
- b) The remaining 13 credits may be earned at the 500 or 600 level, of which eight credits may come from a related discipline.

In addition to the 30 required credits, each student must take two approved courses from outside the Geology Department (e.g., technical writing, anthropology, etc.) or may opt to take the foreign language challenge exam at the elementary level.

The department requires that the following core courses be completed. These classes are normally taken during the first semester of graduate study:

GEOL 591	Seminar	1 cr
GEOL 601	Advanced Physical Geology	2 cr
GEOL 603	Geologic Writing Seminar	1 cr

Graduate students may not sign up for GEOL 650 (Thesis) until their thesis prospectus has been submitted and approved by the Thesis Committee. Additionally, all graduate students are required to present at least one geology colloquium dealing with their thesis topic prior to taking their oral examination.

Master of Science in Geology with Emphasis in Environmental Geoscience

A Geology M.S. degree may be awarded with the annotation "Emphasis in Environmental Geoscience" added, if the student completes the requirements for an M.S. Geology degree plus at least 9 credits in approved graduate-level courses in the general area of Environmental Geoscience. Students who wish their M.S. degree to contain the added designation "With Emphasis in Environmental Geoscience", need to file an amended program of study form with the Office of Graduate Studies. The curriculum may be developed in, but is not limited to, the following areas: surface and groundwater hydrology; environmental geochemistry; surficial geological processes; geomorphology; volcanic, earthquake and other geologic hazards; environmental geophysics; assessment and remediation of hazardous waste sites; Neogene and Quaternary geology. Courses in related sciences and engineering disciplines may also be included.

The curriculum must be approved by the student's graduate committee, and may include components taken at Boise State University and/or the University of Idaho. Inter-university graduate committees are encouraged.

Master of Natural Science in Geology

The Master of Natural Science degree in Geology is designed primarily for teachers and prospective teachers who wish to broaden their understanding of geologic processes, the nature of natural resources, and the effect of humans on their environment. This is a non-thesis program of study with an emphasis on subject matter that will enhance the ability of the teacher to give students an interesting, up-to-date class in earth science or geology. Those interested in the program should possess or be working toward a standard teaching certificate. Requirements include completion of a prescribed program of study of 30 credits approved by a departmental committee selected by the student in consultation with the student's major professor and approved

by the Dean of Graduate Studies, and satisfactory performance on final written and oral examinations. See Master of Natural Science for details of M.N.S. degree.

Cooperative ISU-Boise State University Master's Degree in Geology

Graduate students admitted to the ISU M.S. program in geology may, subject to the approval of their thesis committee, transfer up to 12 credits of graduate credit from BSU. The thesis committee consists of three or more people: an ISU geology faculty member, a graduate faculty representative from ISU, a geology and geophysics faculty member from BSU (must be member of ISU graduate faculty), and perhaps an additional geology graduate faculty as desired by the student.

Thesis research can be conducted under auspices of faculty at BSU or ISU, but registration must be for ISU GEOL 650 (Thesis) totaling six credits. Students can register for GEOL 650 only after a thesis prospectus has been approved. Normally, students must spend at least one semester at ISU. Students may apply credits of GEOL 648 (Research Problems-ISU credit), taught by BSU faculty, to their degree. These are ISU credits, not BSU transfer credits.

The total credits required are the same as for a normal ISU geology M.S. degree (at least 17 at 600 level; at most 13 at 500 level.) The requirement of two approved courses from outside the field of geology can be met at either ISU or BSU. Presentation of at least one geology colloquium at ISU is required.

Cooperative ISU-Boise State University Master's Degree in Applied Geophysics

Graduate students admitted to the Boise State University M.S. program in applied geophysics may, subject to the approval of

their thesis committee, transfer up to 12 credits of graduate credit from ISU. For details of this cooperative program, the student should consult the BSU graduate bulletin and the BSU Department of Geology and Geophysics.

Cooperative University of Idaho-Boise State University-ISU Master's Degree in Hydrology

Access to the University of Idaho M.S. program in hydrology is provided to ISU and BSU graduate students via the offering of University of Idaho hydrology classes at Boise State University. Students interested in the University of Idaho hydrology degree should consult the U. of I. graduate bulletin and the U. of I. Department of Geology.

Geology Graduate Courses

GEOL g306 Environmental Geology 3 credits. Humans and the environment, fossil fuels, soils, water quality, environmental health, pollution, waste disposal, hazards, disasters, land use. PREREQ: GEOL 101 OR GEOL 109.

GEOL g314 Optical Mineralogy and Petrography 3 credits. Lecture and laboratory covering optical properties of minerals, their description and identification. PREREQ: GEOL 211.

GEOL g352 Sedimentation-Stratigraphy 4 credits. Principles of sedimentation from source to diagenesis. The basis of stratigraphic nomenclature, classification, and correlation. Lab covers unconsolidated sediment, hand specimen, subsurface, and field techniques. PREREQ: GEOL 210, ENGL 201 OR EQUIVALENT.

GEOL g356 Geology of Southern Idaho 2 credits. A study of the geology of Southern Idaho, including stratigraphy, thrust belt structure, Idaho batholith, core complexes, Challis volcanic episode, Snake River Plain, Basin and Range, and Lake Bonneville. PREREQ: GEOL 101 OR 109.

GEOL g358 Geology of North America 3 credits. Regional stratigraphy and tectonics of North America emphasizing National Parks and the Intermountain West. Graduate students will do extensive additional reading in current literature. PREREQ: GEOL 101 OR 109.

GEOL g371 Historical Geography of Idaho 4 credits. Influences of geography and geology on Idaho's economic, political and cultural history. May be team taught. Labs, field trips, discussion sections. Cross-listed as HIST g371 and POLS g371.

GEOL g402 Geomorphology 4 credits. Process-response approach to landforms and landscapes. Historical perspectives, endo- and exogenetic processes, equilibrium and relict landforms. Emphasis on interrelations among various geologic subdisciplines. Field trips, some lab exercises. PREREQ: GEOL 421.

GEOL g403 Principles of Geographical Information System 3 credits. Study of GIS fundamentals, introduction to GPS, databases, and metadata. Practical application of ESRI Arc View. Build, edit, and query a GIS; basic spatial analysis. Requires competence in computer operating systems.

GEOL g404 Advanced Geographic Information Systems 3 credits. Study of relational databases, including spatial analysis, and remote sensing. Practical application of Arc/Info and Idrisi. Exercises include digitizing, querying, digital terrain modeling, and image processing. PREREQ: GEOL g403 OR PERMISSION OF INSTRUCTOR.

GEOL g405 Volcanology 3 credits. Aspects of physical and chemical volcanology: types of volcanoes; interpretation of volcanic deposits; properties of magma; generation, rise, and storage of magma; volcanic hazards and prediction. PREREQ: ONE OF GEOL g352, GEOL g402, GEOL g411 OR GEOL 421.

GEOL g410 Science in American Society 2 credits. Observational basis of science; technology's historical influences on scientific developments; perceptions of science in contemporary America; tools/strategies for teaching science. Cross-listed as PHYS g410. PREREQ: JUNIOR STANDING AND PERMISSION OF INSTRUCTOR.

GEOL g411 Petrology 3 credits. Classification, genesis and mineralogy of the principal igneous and metamorphic rock associations. PREREQ: GEOL 210, GEOL 211. COREQ: g412.

GEOL g412 Petrology Lab 2 credits. Microscopic identification of igneous and metamorphic minerals and rocks. PREREQ: GEOL 210, GEOL 211. COREQ: GEOL g411.

GEOL g415 Quaternary Geology 4 credits. Use and interpretation of landforms, sediments, and fossil life in the reconstruction of Quaternary events, environment, and climates. PREREQ: PERMISSION OF INSTRUCTOR.

GEOL g417 General Soils 3 credits. Formation, morphology, and distribution of soils, including developments in soil classification. PREREQ: GEOL 101 OR GEOL 109 OR GEOL 115, OR PERMISSION OF INSTRUCTOR.

GEOL g420 Principles of Geochemistry 3 credits. Chemistry of the earth; discussion of factors controlling abundance, distribution, and migration of chemical elements within the earth. PREREQ: GEOL 211, AND CHEM 112, OR PERMISSION OF INSTRUCTOR.

GEOL g422 Planetary Geology for Teachers 3 credits. K-12 teachers and M.N.S. candidates. Formation of planetary bodies (planets, moons, asteroids, and comets), internal and surficial processes, tectonics, and planetary exploration. PREREQ: GEOL 101.

GEOL g430 Principles of Hydrogeology 3 credits. Surface and groundwater occurrence, movement and recovery, water quality and pollution, well construction principles, and computer modeling. PREREQ: GEOL 100, OR GEOL 101, OR GEOL 109, OR PERMISSION OF INSTRUCTOR.

GEOL g431 Invertebrate Paleontology 4 credits. Principles of biology and geology applied to the study of fossil invertebrates; consideration is given to morphology, classification, evolution, paleoecology, and the stratigraphic significance of fossils. PREREQ: PERMISSION OF INSTRUCTOR.

GEOL g435 Vertebrate Paleontology 4 credits. Phylogenetic history of the vertebrates outlined in the light of morphology, classification, evolution, paleoecology, and the significance of fossils. Field trips. Cross-listed as BIOS g435. PREREQ: GEOL g431 OR BIOS g314 OR EQUIVALENT.

GEOL g436 Principles of Taphonomy 3 credits. Study of the effects of processes which modify organisms between death and the time the usually fossilized remains are studied. The emphasis will be on vertebrates. Cross-listed with ANTH g436 and BIOS g436. PREREQ: PERMISSION OF INSTRUCTOR.

GEOL g440 Ore Deposits 3 credits. Nature, mode of occurrence, and origin of ores with each type related to a given rock association and as the product of a particular environment. PREREQ: ONE OF GEOL g352, GEOL g411 (RECOMMENDED), OR GEOL 421.

GEOL g442 Economic Mineralogy Lab 2 credits. Identification and study of economic minerals and commodities using techniques of hand specimen identification, study of fluid inclusions, and ore microscopy using transmitted and reflected light. PREREQ OR COREQ: GEOL g440.

GEOL g450 Field Geology 6 credits. Five-week summer field camp, applying standard geologic field instruments and geologic concepts to a series of field problems. PREREQ: GEOL g352 AND 421.

GEOL g461 Principles of Geophysics 3 credits. Basic principles of geophysics and their applications, including seismic, gravity, magnetics, heat flow, GPR, and electrical methods. PREREQ: GEOL 101 OR GEOL 109, MATH 170, PHYS 112 OR PHYS 212, OR PERMISSION OF INSTRUCTOR.

GEOL g465 Petroleum and Subsurface Geology 3 credits. Basic principles of petroleum geology, well log and seismic interpretation, cross section and subsurface map creation, development of hydrocarbon prospects. PREREQ: GEOL 210, GEOL g352.

GEOL g491 Seminar 1 credit. Field trip or discussion of current geologic literature and geologic problems. May be repeated until 3 credits are earned. PREREQ: PERMISSION OF INSTRUCTOR. S/U grading.

GEOL 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

GEOL 601 Advanced Physical Geology 2 credits. An advanced level course in physical geology required for all first year graduate students. A review of the principles of physical geology, and an overview of current hypotheses and research in the field.

GEOL 602 Advanced Geomorphology 3 credits. Seminar in the treatment of theoretical concepts in classical and modern geomorphology.

GEOL 603 Geologic Writing Seminar 1 credit. Review of quality geologic writing practices; extended field trip and introduction to regional geology. Topics include databases, abstracts, stratigraphic terminology, grant proposals, thesis prospecti, and use of reference library. Required for all Geology graduate students.

GEOL 606 Geostatistical Spatial Data Analysis and Modeling 3 credits. Description, analysis and modeling of spatial data in the geosciences, emphasizing hands-on application of geostatistical software tools for spatial analysis and probabilistic modeling in petroleum and groundwater reservoirs, environmental remediation, and mining or any application involving spatially-varying data. PREREQ: PERMISSION OF INSTRUCTOR.

GEOL 613 Advanced Ore Deposits 2 credits. Advanced topics in ore deposit studies including theoretical and applied aspects. Special topics focus on ore deposit models, plate tectonic setting, hydrothermal alteration and applied exploration geology. PREREQ: GEOL g411.

GEOL 615 Neutron Activation Analysis 4 credits. Theory and use of neutron activation methods for quantitative chemical analysis of natural and synthetic materials. Applications in geologic systems will be emphasized. Cross-listed as CHEM 615, PHYS 615. PREREQ: PERMISSION OF INSTRUCTOR.

GEOL 617 Environmental Geochemistry 3 credits. Geochemistry of environmental systems. Emphasis given to low-temperature water-rock interactions, including sorption processes, retardation, reaction kinetics and reaction-mass transport modeling. Cross-listed as CHEM 617. PREREQ: CHEM 112 AND GEOL g420, OR CHEM 351 AND GEOL 109.

GEOL 618 Applied Geophysics - Seismic 3 credits. Theory, acquisition, processing, modeling and interpretation of refraction and reflection seismic data. PREREQ: GEOL 101 OR GEOL 109, MATH 175, PHYS 111 OR PHYS 211, OR PERMISSION OF INSTRUCTOR.

GEOL 619 Applied Geophysics - Non-Seismic 3 credits. Theory, acquisition, processing, modeling, and interpretation of gravity, magnetic, GPR, electrical, and electro-magnetic data. PREREQ: GEOL 101 OR GEOL 109, MATH 175, PHYS 112 OR PHYS 212, OR PERMISSION OF INSTRUCTOR.

GEOL 621 Advanced Structural Geology 3 credits. Current aspects of structural geology or tectonics. May focus on regional structures, tectonic theories, orogenic mechanics, global tectonic model(s), or topics of special interest in structural geology.

GEOL 622 Orogenic Belts of the World 3 credits. Interdisciplinary analysis of Alpine and Cordilleran-type mountain belts including their infrastructure, tectonic evolution, and mechanisms of formation.

GEOL 623 Tectonics and Sedimentation 3 credits. Sedimentary basin analysis and mechanisms of subsidence. Extensional, compressional and strike-slip tectonics as related to depositional systems, facies architecture, and provenance.

GEOL 625 Quantitative Geochemistry Lab 3 credits. Practical application of theory involving use and operation of instrumental techniques. Cross-listed as CHEM 625.

GEOL 630 Advanced Hydrogeology 3 credits. Advanced topics in hydrogeology, including precipitation and stream flow, soil moisture, principles and modeling of groundwater flow, migration of wastes in both saturated and unsaturated zones, design and impact of production wells, water chemistry. PREREQ: GEOL g430 OREQUIVALENT.

GEOL 631 Sedimentology 3 credits. Provenance, dispersal, and environments of deposition; emphasis on various aspects of surface equilibria.

GEOL 632 Advanced Paleontology 3 credits. Theoretical and applied aspects of paleontology; origin of life, evolution and genetics, ecology and paleoecology, taxonomic theory.

GEOL 641 Advanced Petrology 3 credits. Selected topics in igneous and/or metamorphic petrology, regional and/or global aspects of current interest, including relationship to major advances in other areas of solid earth sciences.

GEOL 646 The Sedimentary Record 4 credits. Earth history as revealed in sedimentary facies, provenance, chemical and isotopic excursions. Methods of analysis including sequence stratigraphy, geochronology, biogeochemistry, chemostratigraphy. Sedimentary petrology and field methods emphasized in lab.

GEOL 648 Research Problems 1-6 credits. Independent research on non-thesis subject matter, subject to approval of the staff before results receive credit. Course may be repeated until 10 credits are earned.

GEOL 650 Thesis 1-6 credits. Ordinarily a field problem with supporting laboratory work undertaken by the student with approval of the geology graduate faculty, and after a thesis prospectus has been accepted.

Department of History

Chair and Professor A. Christelow
Professors S. Christelow, Hale,
Hatzembuehler, Owens, Ruckman,
Swanson
Associate Professor Boag
Professor Emeritus Marley

History Graduate Courses

(No graduate degrees are offered)

HIST g311 American Cultures before 1800 3 credits. A study of American cultures prior to the arrival of Europeans, of the variety of transplanted cultures in America, and their changes over time.

HIST g313 The Age of Jefferson 3 credits. The emergence of the American nation focusing on Thomas Jefferson and his contributions. Special Emphasis on the American Revolution, nation-building, and the early years under the Constitution. PREREQ: HIST 111.

HIST g315 Civil War and Reconstruction 3 credits. U.S. 1840-1877. The origins of the war between the states and the legacy of the war and Reconstruction for North and South.

HIST g317 Industrialization and Reform in America 3 credits. U.S. 1877-1914. The emergence of a modern, industrialized society and its many problems; agricultural and labor protest and the challenge of new ideas in the social, economic and intellectual realms.

HIST g319 Modern America 3 credits. U.S. 1914-1960. The major political, social, and economic developments; the Twenties; the Great Depression; the New Deal; and post World War II America.

HIST g320 Renaissance Creativity 3 credits. The social history of the imagination, 1300-1650. Examines comparatively the conditions promoting individual creativity in an age of significant cultural change. PREREQ: HIST 101.

HIST g321 Post-Modern America 3 credits. 1960 to the present. The end of the modern era in the 1960s; post-modern social, cultural, and political developments.

HIST g322 Religious Reformation and Conflict 3 credits. A comparative study of the development of new faith communities and the religious violence which shattered the unity of Western Christianity, 1300-1650. PREREQ: HIST 101.

HIST g323 Old Regime and French Revolution 3 credits. A study of traditional European institutions, society and culture from 1650 to 1789 and their transformation in the age of the French Revolution and Napoleon, 1789-1815.

HIST g325 Industrialization and Social Change 3 credits. Impact of European and American Industrial Revolutions on diverse social groups and their ways of life, on social habits and customs, and on politics and culture. PREREQ: HIST 102, HIST 112.

HIST g326 Twentieth Century Europe 3 credits. Europe from World War I through the end of the Cold War. PREREQ: HIST 102 OR PERMISSION OF INSTRUCTOR.

HIST g336 Idaho and the Northwest 3 credits. Background for the settlement of Idaho: territorial development and statehood; Idaho in the twentieth century and its relation to the other states in the Pacific Northwest.

HIST g352 Islam and Nationalism in the Modern World 3 credits. A study of the interaction of Islam and national and ethnic identities in the Middle East including North Africa, from 1800 up to the present.

HIST g356 Imperialism and Progressivism 3 credits. A study of the world 1880-1920. Movements of change within the West, Third World responses to the Western challenge, and global crisis. PREREQ: HIST 252, HIST 254, OR HIST 255.

HIST g360 The Spanish Empire 3 credits. The geographic, cultural, economic, administrative and military dimensions of the encounters and conflicts among the peoples of a major global empire from its medieval beginnings to its final collapse in the Napoleonic era.

HIST g371 Historical Geography of Idaho 4 credits. Influences of geography and geology on Idaho's economic, political and cultural history. May be team taught. Includes labs, field trips, discussion sections. Cross-listed as GEOL g371 and POLS g371.

HIST g375 Early France and the Age of Chivalry 3 credits. Tests the assumption that French culture from AD 400 to 1400 epitomized the culture of the middle ages—imperialistic, romantic, religious, feudal and chivalric.

HIST g382 Russian History 3 credits. Russian history and civilization from the medieval Kievan state to modern times.

HIST g405 Problems in History 3 credits. A thorough consideration of historical problems, particularly from a comparative perspective. Designed to give deeper insight into problems, issues, and topics which are treated more generally in other courses.

HIST g427 American West 3 credits. Comparison of various American Wests in reality and imagination; emphasis on exploration, settlement, ethnic groups, economic development, resource utilization, and cultural depiction. PREREQ: HIST 111, HIST 112.

HIST g429 Foreign Relations since 1900 3 credits. A study of foreign relations in the twentieth century from an international perspective. Special emphasis on the impact of wars on various peoples and cultures.

HIST g430 Environmental History 3 credits. Historical examination of the social, intellectual, cultural, ecological, and political aspects of human interaction with the North American environment from Asian migration to the present.

HIST g435 Colonial Frontiers in America and Africa 3 credits. A comparative examination of exploration, conquest, and resistance, and the interaction of cultures in frontier settings. Examines both the realities of the frontier and their impact on Western thought and imagination.

HIST g437 Families in Former Times 3 credits. Reconstructs the marriage patterns and domestic lives of people in pre-industrial Europe (1000-1700 AD).

HIST g439 Women in History 3 credits. Shifting images and perceptions of women and women's roles, as contrasted with the realities of women's lives with emphasis on 19th century Europe and America and the development of the movement for women's emancipation.

HIST g443 English History 3 credits. Survey of the more important British political, constitutional, economic, and cultural developments from Anglo-Saxon times to the Victorian Period.

HIST g444 Victorian England and After 3 credits. England, 1837 to the present. An examination of the cultural, social, political, and economic history of the most prosperous and productive period of English history including British national and imperial decline in the twentieth century.

HIST g446 Social and Economic History of Greece and Rome 3 credits. Investigates ways in which geography, demography and politics affected the mentalities and behaviors of social groups—women, patrons, clients and slaves—and the functioning of households, villages and cities.

HIST g448 Medieval Social and Economic History 3 credits. Analyzes the impact of political instability, migration and environment upon European women and men from roughly AD 400 to 1400 and their economic responses.

HIST g451 Constituting Modern Spain 3 credits. Comparative study of Spaniards' attempts to create a constitutional regime that would provide a stable political framework in the face of serious religious, national, and class divisions, 1808 to the present. PREREQ: HIST 102.

HIST g461-g462-g463 Independent Study 1-3 credits. Selected readings in areas and periods not covered by the regular curriculum offerings. PREREQ: PERMISSION OF INSTRUCTOR.

HIST g491 Seminar 3 credits. Reading, discussion, and preparation of research papers on selected topics. (For seniors majoring in history.) PREREQ: HIST 291 OR PERMISSION OF INSTRUCTOR.

HIST 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

Department of Mathematics

Chair and Associate Professor Ford
Assistant Chair and Associate Professor Lay

Professors Egger, Fisher, R. Hill, Kratz, Lang

Associate Professors Bosworth, Chang, Cresswell, Fisher, L. Hill, Kantabutra, Laquer, Parker, Stowe, Wolper
Assistant Professors Hanin, Kriloff

Doctor of Arts in Mathematics

The Doctor of Arts program in mathematics is designed to prepare the student for a teaching career in institutions of higher learning. The program emphasizes broad competence in mathematics rather than specialization and makes provision for classroom teaching experience.

Admission

Admission to the D.A. program requires the completion of the requirements for a master's degree equivalent to the M.S. in mathematics at Idaho State University with a 3.5 GPA in all graduate work. The aptitude portion of the Graduate Record Examination is required with a minimum score at the 50th percentile. The aptitude percentile is determined by averaging the percentiles of the quantitative, verbal and analytical sections.

Applicants will be selected according to the following criteria:

1. Measure of success in completing the master's program
2. Satisfactory GRE scores
3. Teaching experience
4. Three letters of recommendation
5. Applicant's letter discussing reasons for wishing to pursue this specific program.

Residence

Six semester hours beyond the master's degree may be transferred into the program. Two consecutive semesters of full-time study are required in residence.

Committees and Advising

The student will be advised initially by the departmental graduate committee. This

group will be the student's temporary advising committee and will assist in the selection of the student's permanent committee who will supervise the remainder of the student's program.

Requirements

The program requires coursework, a thesis, teaching internships, and examinations as described below. The program must include a minimum of 48 credits, and at least two 600-level sequences taken in residence. Mathematics g300 courses taken at the 500-level may not be included in the 48 credits. Approval for optional courses is granted by the Mathematics Department Graduate Committee.

A. Coursework

1. Mathematics Component

MATH 625-626	Real Analysis	6 cr
MATH 627-628	Complex Analysis	6 cr
MATH 631-632	Abstract Algebra	6 cr
MATH 671-672	Topology	6 cr

Twelve additional 600-level Mathematics credits, including one full-year sequence

2. Interdisciplinary and Applied Mathematics Component

MATH 550-551 Mathematical Statistics

Nine additional hours of approved interdisciplinary or applied mathematics coursework

3. Education Component

EDUC 676	College and University Teaching, or an approved related course
MATH 692	Doctor of Arts Seminar
MATH 693	Mathematical Exposition

An approved course in technical or expository writing

B. Doctor of Arts Thesis

The Doctor of Arts Thesis is an expository or research paper in mathematics or mathematics education. Six hours of course credit are given for the completion of the thesis.

C. Teaching Internship

Each candidate must complete teaching internships under the supervision of the departmental Graduate Committee. Six hours of course credit must be earned in MATH 700 Supervised Teaching Internship.

D. Examinations

1. DA Written Examination: A written comprehensive examination on undergraduate-level mathematics.

2. Oral Examination: An oral examination on graduate-level mathematics including the four areas of competence described in Section A. above, and the candidate's program of graduate coursework.

3. Final Examination: The candidate will present to the public a lecture on the candidate's dissertation, and will answer any questions that arise. Following the lecture and question period, the candidate will be examined orally by the candidate's dissertation committee on topics related to the dissertation.

Master of Science in Mathematics

The Master of Science degree program is designed to provide a broad and in-depth background and prepare the student for further study at the doctoral level or for an industrial or academic career.

Admission

For full admission to the M.S. degree program in mathematics, the applicant must have completed all requirements for a bachelor's degree in mathematics at an accredited institution. The applicant should have a grade point average of at least 3.0 over the last two years of undergraduate work and have taken the Graduate Record Examination, achieving at least the 50th percentile on the quantitative part of the general aptitude test. The student should have completed course work in modern algebra, differential equations, advanced calculus, and introductory analysis. Applicants not fully meeting these requirements may be allowed to make up deficiencies at ISU.

Requirements

Two 600-level sequences are required. The department routinely offers the following sequences:

MATH 625-626	Real Analysis	6 cr
MATH 627-628	Complex Analysis	6 cr
MATH 631-632	Abstract Algebra	6 cr
MATH 641-642	Numerical Analysis	6 cr
MATH 662-663	Differential Equations	6 cr
MATH 671-672	Topology	6 cr

Of the remaining 18 credits at least 12 must be taken in graduate mathematics and at most 6 may, subject to departmental approval, be chosen from graduate courses in other disciplines. Mathematics g300 courses taken at the 500-level may not be included in the 18 credits. The student must complete

a written examination in one of the two required sequences, and must pass a final oral examination which is intended to verify satisfactory understanding of the major field. Each student's program must be approved by the departmental graduate committee.

Master of Natural Science in Mathematics

The degree of Master of Natural Science with a major in mathematics is designed specifically for people who hold a standard secondary school teaching certificate for the teaching of mathematics. The objective of the program is to enhance the mathematical training of secondary teachers and to equip such teachers with a broad and modern background in mathematics.

Admission

For full admission to the M.N.S. program in mathematics the applicant must hold a bachelor's degree and a standard secondary school teaching certificate. The applicant must have a GPA of at least 2.75 for the last two years of undergraduate work and must have taken the Graduate Record Examination (GRE), achieving at least the 50th percentile on the quantitative part of the general aptitude test. Applicants should have completed undergraduate work in both analytic geometry and calculus, a first course in both linear algebra and modern algebra, and at least one other mathematics course at the upper-division level.

Requirements

Candidates for the Master of Natural Science in Mathematics degree must meet the following criteria:

1. Possession of a standard secondary teaching certificate or the equivalent.
2. Completion of a program of study approved by the graduate committee of the Mathematics Department and the Dean of the Graduate School.
3. A minimum of 30 credits beyond the bachelor's degree in courses numbered 300 or above. At least 22 credits must be in residence.
4. Satisfactory performance on final written and oral examinations.

Required coursework will depend upon the student's background in mathematics.

Mathematics Graduate Courses

MATH g326 Elementary Analysis 3 credits. Rigorous calculus on the real line. Completeness, compactness, connectedness. Continuity, images of compact and connected sets. Series, uniform convergence. Differentiability, inverse functions, chain rule. Integration, fundamental theorem, improper integrals. PREREQ: MATH 275 AND MATH 287.

MATH g327 Vector Analysis 3 credits. Calculus of vector functions of several variables. Derivative matrix. Chain rule. Inverse function theorem. Multiple integration. Change of variables. Integrals over curves and surfaces. Green's, Stokes' and divergence theorems. Applications to physics. PREREQ: MATH 275.

MATH g330 Linear Algebra 3 credits. Fields, vector spaces, linear transformations and matrices, triangular and Jordan forms, eigenvalues, dual spaces and tensor products, bilinear forms, inner product spaces. PREREQ: MATH 175 AND MATH 287.

MATH g343 Modern Geometry 3 credits. Projective, Euclidean, and non-Euclidean geometries from an axiomatic point of view. PREREQ: MATH 230 OR PERMISSION OF INSTRUCTOR.

MATH g352 General Statistics 3 credits. Probability, random variables, discrete and continuous distributions such as the Binomial, Poisson, Geometric, Hypergeometric, Normal, and Gamma, sampling distribution, point and interval estimation, hypothesis testing. PREREQ: MATH 160 OR MATH 175.

MATH g355 Operations Research I 3 credits. Deterministic problems in operations research oriented towards business. Includes linear programming, transportation problems, network analysis, PERT, dynamic programming, and elementary game theory. PREREQ: MATH 130, MATH 230, OR PERMISSION OF INSTRUCTOR.

MATH g356 Operations Research II 3 credits. Probabilistic models oriented towards business. Selections from stochastic processes, Markov chains, queuing theory, inventory theory, reliability, decision analysis, and simulation. PREREQ: MATH g355.

MATH g360 Differential Equations 3 credits. Theory and applications of ordinary differential equations. PREREQ: MATH 230 AND MATH 275 OR PERMISSION OF INSTRUCTOR.

MATH g407-408 Modern Algebra 3 credits each. Rings, fields, groups, algebras, and selected topics in abstract algebra. PREREQ: MATH 287 AND MATH g330.

MATH g421 Advanced Engineering Mathematics I 3 credits. Analysis of complex linear and non-linear engineering systems using advanced techniques, including Laplace transforms, Fourier series and classical partial differential equations. Cross-listed as ENGR g421. PREREQ: MATH g360.

MATH g422 Advanced Engineering Mathematics II 3 credits. Cross-listed as ENGR g422. Analysis of complex linear and non-linear engineering

systems using advanced techniques, including probability and statistics, advanced numerical methods and variational calculus. PREREQ: ENGR g421 OR MATH g421.

MATH g423-g424 Introduction to Real Analysis 3 credits each. The real number system, limits, sequences, series, and convergence; metric spaces; completeness; and selected topics on measure and integration theory. PREREQ: MATH 287, MATH g326, MATH g330, AND MATH g360.

MATH g435 Elementary Number Theory 3 credits. Diophantine equations, prime number theorems, residue systems, theorems of Fermat and Wilson, and continued fractions. PREREQ: MATH g407.

MATH g441 Introduction to Numerical Analysis 3 credits. Designed to offer students in any applied science a reasonably broad introduction to standard numerical techniques for solving problems dealing with non-linear equations, systems of linear equations, differential equations, as well as techniques of interpolation, numerical integration, and differentiation. PREREQ: MATH g326 AND MATH g360 OR PERMISSION OF INSTRUCTOR.

MATH g442 Introduction to Numerical Analysis 3 credits. Extension of MATH g441 for students who wish to pursue more advanced techniques with emphasis on analysis. Typical topics covered include numerical methods applied to partial differential equations, integral equations, and in-depth treatment of topics covered in MATH g441. PREREQ: MATH g441.

MATH g450-g451 Mathematical Statistics 3 credits each. Probability, random variables, discrete and continuous distributions, order statistics, limit theorems, point and interval estimation, uniformly most powerful tests, likelihood ratio tests, chi-square and F tests, nonparametric tests. PREREQ: MATH g326.

MATH g457 Applied Regression Analysis 3 credits. Simple and multiple linear regression, polynomial regression, diagnostics, model selection, models with categorical variables. PREREQ: MATH g352 OR PERMISSION OF INSTRUCTOR.

MATH g458 Experimental Design 3 credits. The linear model for experimental designs, analysis of variance and covariance, block designs, factorial designs, nested designs, choice of sample size. PREREQ: MATH g352 OR PERMISSION OF INSTRUCTOR.

MATH g459 Applied Multivariate Analysis 3 credits. Matrix computation of summary statistics, graphical analysis of multivariate procedures, multivariate normal distribution, MANOVA, multivariate linear regression, principal components, factor analysis, canonical correlation analysis. PREREQ: MATH g352 OR PERMISSION OF INSTRUCTOR.

MATH g462 Introduction to Complex Variables 3 credits. Introduction to the study of functions of a complex variable including analytic functions, power series, integral theorems, and applications. PREREQ: MATH g360 AND EITHER MATH g326 OR MATH g421.

MATH g465 Partial Differential Equations 3 credits. Equations of the first and second orders, methods of solution, Laplace's Equation, heat equation, and the wave equation. Emphasis on applications to problems in the physical sciences and engineering. PREREQ: MATH g360 AND EITHER MATH g326 OR MATH g421.

MATH g473 Introduction to Topology 3 credits. Metric spaces; convergence; notions of continuity; connected, separable and compact spaces. PREREQ: PERMISSION OF INSTRUCTOR.

MATH g481 Special Problems 1-3 credits. Reading and conference in an area not usually covered by a regular offering. Individual work under the supervision and guidance of a professor whose specialty includes the chosen area. Open to seniors and graduate students in good standing and with the consent of the instructor. May be repeated until 6 credits are earned.

MATH g491 Mathematics Seminar 1-3 credits. Advanced reading and discussion on selected topics in mathematics. May be taken for credit more than once. PREREQ: SENIOR STANDING OR EQUIVALENT.

MATH 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

MATH 625-626 Real Analysis 3 credits each. Structure of the Real number system, measures and measurable functions, the Lebesgue integral, other integrals, L_p spaces, differentiable functions, the Radon-Nikodym Theorem, Fubini's Theorem. PREREQ: MATH g424.

MATH 627-628 Complex Analysis 3 credits each. Classical theorems of Cauchy, Goursat, Mittag-Leffler, Weierstrass, Riemann, and Picard involving analytic functions, representation theorems, conformal mappings, entire and meromorphic functions, analytic continuation, and other topics. PREREQ: PERMISSION OF INSTRUCTOR.

MATH 631-632 Abstract Algebra 3 credits each. Categories, groups, rings and ideals, polynomials, and fields through Galois Theory, modules, lattices, advanced linear and multilinear algebra. PREREQ: MATH g330 AND g408 OR PERMISSION OF INSTRUCTOR.

MATH 633 Matrix Analysis 3 credits. Eigenvalues, special matrices, normal forms, matrix polynomials, matrix functions, matrix norms, Kronecker products, stability, matrix equations, generalized inverses, nonnegative matrices. PREREQ: MATH g330 AND MATH g441.

MATH 641-642 Numerical Analysis 3 credits each. Topics selected from approximation theory, optimization, numerical linear algebra, differential and integral equations, spline analysis, computer algorithms, and other areas of current research in numerical analysis. PREREQ: MATH g423 AND MATH g441.

MATH 650 Thesis (D.A.) 1-6 credits.

MATH 652 Stochastic Processes 3 credits. Topics from conditional probability and expectation, martingales, Kolmogorov's Theorem, Markov processes, random walks, Brownian motion, diffusions, dynamic programming, stochastic differential equations. Applications to modeling physical and/or social dynamical systems. PREREQ: MATH g450.

MATH 653 Advanced Topics in Probability and Statistics 3 credits. Topics such as experimental design, regression analysis, multivariate statistical analysis. PREREQ: MATH g352 AND MATH 230, OR PERMISSION OF INSTRUCTOR.

MATH 655-656 Combinatorics 3 credits each. Theory and applications of: choice and enumeration techniques, generating functions, partitions, designs and configurations, graph theory including digraphs, algebraic graph theory and extremal problems. PREREQ: PERMISSION OF INSTRUCTOR.

MATH 662-663 Differential Equations 3 credits each. Existence, uniqueness, and dependence of solutions upon initial conditions; linear equations; autonomous equations; dynamical systems and stability; partial differential equations of first and second order, with applications. PREREQ: MATH g326, MATH g327, AND MATH g360.

MATH 664-665 Applied Mathematics 3 credits each. Differential operators, variational formulations, transform theory, spectral theory, Green's functions, bifurcations, stability, integrability, perturbation methods, applications to physical problems stressing construction and analysis of ODE and PDE models. PREREQ: MATH g330 AND MATH g465.

MATH 667-668 Functional Analysis 3 credits each. Major results of functional analysis, such as the Hahn-Banach, open mapping, and closed graph theorems; study of Hilbert and Banach spaces; spectral analysis. PREREQ: MATH g423 OR MATH 625 OR PERMISSION OF INSTRUCTOR.

MATH 671-672 Topology 3 credits each. Fundamental theorems and examples from point-set topology; emphasis on general and metric topologies and continuous mappings; introduction to topology of manifolds, covering spaces, homotopy, homology, and cohomology. PREREQ: MATH g473 OR PERMISSION OF INSTRUCTOR.

MATH 681-682 Differential Geometry 3 credits each. Differentiable manifolds and mappings; bundles, connections, geodesics, and curvature; Lie groups; topics from Riemannian, Hermitian, or symplectic geometry. PREREQ: MATH g327 AND MATH g330.

MATH 691 Seminar 1-3 credits. Advanced readings, problems, and discussion on selected topics in mathematics. May be taken for credit more than once on distinct topics.

MATH 692 Doctor of Arts Seminar 2 credits. Topics include the nature and practice of mathematical research, grants, public speaking, professionally and classroom related software, information media, issues in mathematical pedagogy, standards, and curricula, university organization, history of mathematics. Graded S/U.

MATH 693 Mathematical Exposition 1 credit. Presentation of mathematics in a seminar setting. Small group practice in and critique of mathematical exposition. Requirements include presentation of a departmental colloquium on an assigned topic. Graded S/U.

MATH 699 Special Topics in Mathematics 1-3 credits. Each offering will deal with a topic selected from such fields of mathematics as algebra, analysis, geometry, number theory, topology, applied analysis, probability, and mathematical logic. May be taken for credit more than once. PREREQ: PERMISSION OF INSTRUCTOR.

MATH 700 Supervised Teaching Internship. Credit variable up to 9 credits. Graded S/U.

Museum

Director Jackson
Professors and Curators Holte, Keller,
Peterson, Trost
Associate Professors and Curators
Akersten, Lohse
Curator and Research Associate
Professor Sommer

Museum Graduate Courses

(No graduate degrees are offered)

MUSE g411 Basic Museology and Museography 2 credits. History, philosophy, purposes, organization and administration of museums. Practical work in collections management and museum interpretation.

MUSE g450 Independent Study in Museum Methods 1-3 credits. Individual projects based on student's background and interests. Could include, but not limited to, advanced work in collections management, exhibit design and construction, museum education, or administration. May be repeated up to 6 credits. PREREQ: MUSE 411 OR PERMISSION OF INSTRUCTOR.

Department of Music

Chair and Professor Stanek
Professor T. R. George
Associate Professor Anderson, Brooks,
Earles, Lane, Remy, Swansbourne
Assistant Professors Kalantarian, Zhong
Adjunct Instructors Dunmire, P. George,
Knutson, LoPiccolo, Mosher,
O'Brien, Redd, Smith, Stone

Music Graduate Courses

(No graduate degrees are offered)

MUSC g406 Opera Literature 2 credits. Masterworks of operatic literature. PREREQ: MUSC 306.

MUSC g407 Symphonic Music Literature 2 credits. Masterworks of symphonic literature. PREREQ: MUSC 306.

MUSC g408 Chamber Music Literature 2 credits. Masterworks of chamber music literature. PREREQ: MUSC 306.

MUSC g415 Seminar in Band Music 2 credits. Analysis and study of instrumental works from the Baroque to the present era with particular attention to performance practice. PREREQ: MUSC 305-306 OR EQUIVALENT.

MUSC g416 Seminar in Choral Music 2 credits. Analysis and study of choral works from the Renaissance through the present era with particular attention to performance practice. PREREQ: MUSC 305-306 OR EQUIVALENT.

MUSC g417 Advanced Conducting 2 credits. Designed for secondary school music teachers, this course provides opportunity to discover and analyze technical conducting problems in music of the various historical eras. PREREQ: MUSC 319-320 OR EQUIVALENT.

MUSC g419 Major Performance Literature 2 credits. A study of instructional materials and literature pertinent to the performing medium. PREREQ: JUNIOR LEVEL STANDING IN APPLIED MUSIC.

MUSC g420 Major Performance Pedagogy 2 credits. A survey and comparative study of pedagogical materials, principles and procedures. Application of pedagogical techniques in teaching situations. PREREQ: JUNIOR LEVEL STANDING IN APPLIED MUSIC.

MUSC g433-g434 Composition 2 credits each. Organization of musical ideas into logical and homogeneous form with an emphasis on contemporary styles. May be repeated twice. PREREQ: MUSC 204 OR PERMISSION OF INSTRUCTOR.

MUSC g491 Independent Study 1-4 credits. Supervised study in selected areas, primarily research, writing, or analysis. PREREQ: PERMISSION OF INSTRUCTOR AND DEPARTMENT CHAIR.

MUSC 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

MUSC 650 Thesis Project 1-4 credits. The student will present a public graduate recital, supervised by a faculty member in the music department. In addition to the recital, a paper will be submitted demonstrating extensive familiarity with research relative to the music performed in the recital. This paper will be written under the supervision of a faculty member from the College of Education and faculty members from the Music Department. The completed paper and recital are to be accepted by the examining committee and the paper filed with the dean of the College of Education. A recording of the recital will be filed with the music department.

Applied Music— Private Lessons

MUSC g421 Piano 1 or 2 credits each.

MUSC g431 Voice 1 or 2 credits each.

MUSC g441 Organ 1 or 2 credits each.

MUSC g461 Strings 1 or 2 credits each. Section 1, Violin; 2, Viola; 3, Cello; 4, String Bass; 5, Classical Guitar.

MUSC g465 Brass Instruments 1 or 2 credits each. Section 1, Trumpet; 2, French Horn; 3, Baritone; 4, Trombone; 5, Tuba.

MUSC g475 Woodwind Instruments 1 or 2 credits each. Section 1, Flute; 2, Clarinet; 3, Oboe; 4, Bassoon; 5, Saxophone.

MUSC g485 Percussion Instruments 1 or 2 credits each.

Department of Physics

Chair and Professor Knox

Professors Gesell, Harmon

Associate Professors Schilk, Shropshire,
Vizkelethy

Assistant Professors Brey, Keeter, Wells
Instructors Hackworth, Johnson

Adjunct Faculty Abbott, Graham, Harker,
Herbst, Nieschmidt, Oberg, Otis,

Paulson, Rood

Emeritus Professors Parker, Price, Vegors

Doctor of Philosophy in Engineering and Applied Science

A PhD program, shared with the College of Engineering, is available in the areas of Radiation Science, Accelerator Applications, Applied Nuclear Physics and Health Physics. The complete program description is given under the College of Engineering catalog entry.

Admission

A complete graduate application for classified status in the ISU Physics Department consists of:

- GRE aptitude scores (a minimum of 35 percentile on verbal, quantitative or analytical is required for classified students);
- an ISU Graduate School Application form and official copies of transcripts;
- three letters of recommendation

Applicants must hold the degree of Bachelor of Science or Bachelor of Arts in Physics or the equivalent as determined by the department. The student's course of study will be determined by consultation and possibly an entrance examination. Students will normally be required to complete as deficiencies any courses required for the B.S. in Physics at ISU which they have not already taken. Continued enrollment in the program is contingent upon maintaining a 3.0 grade point average and upon making satisfactory progress toward the degree.

Master of Science in Physics

A satisfactory score on physics examination(s) may be required before admission to candidacy. Required courses are:

PHYS 611-612	Electricity and Magnetism	6 cr
PHYS 621	Classical Mechanics	3 cr
PHYS 624-625	Quantum Mechanics	6 cr

5-9 additional credits in courses approved by the student's advisor, department Chair, and the Graduate School.

PHYS 650	Thesis	6-10 cr
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6-10 credits for the thesis option or 6-10 credits in additional courses approved by the graduate faculty in the department for the non-thesis option. In addition to the

oral examination required of the thesis and non-thesis options, the non-thesis option will include a written comprehensive examination.

Master of Science (Health Physics Emphasis)

The Health Physics Emphasis of the M.S. in Physics is a thesis program that will prepare students for radiation protection careers leading to upper technical and management levels in industry, universities, medicine, national laboratories, government, nuclear power, and radioactive waste management.

The minimum admission requirements are admission to the Graduate School and a baccalaureate degree in a physical or biological science or engineering. The basic program requirements are 30 credits of which 15 credits must be at the 600-course level. Six of the fifteen 600-level credits may be thesis. The normal core program is listed below. Students who are prepared with some education and experience in health physics will likely not need all of the elective health physics courses. Therefore, the program of the student will be determined in consultation with the student's advisor and committee and can include electives to meet their needs. An oral examination in defense of the thesis is required.

Required Courses

PHYS 601	Quantitative Methods in Physics	3 cr
PHYS 605	Radiological Environmental Monitoring and Surveillance	3 cr
PHYS 610	Radiation Regulations	3 cr
PHYS 650	Thesis	6 cr

Electives - may be required if not taken at the undergraduate level.

PHYS 509	Introductory Nuclear Physics	3 cr
PHYS 516	Introduction to Nuclear Measurements	3 cr
PHYS 533	Advanced Health Physics I	3 cr
PHYS 534	Advanced Health Physics II	3 cr
PHYS 555	Topics in Health Physics I	2 cr
PHYS 556	Topics in Health Physics II	2 cr
PHYS 592	Colloquium in Physics (may be repeated)	1 cr

Master of Natural Science in Physics

The Master of Natural Science in Physics is designed primarily for teachers and prospective teachers who want to improve their understanding of the subject matter of physics. Emphasis is upon the subject mat-

ter and is generally not a thesis program. Individuals interested in this degree should hold a teaching certificate or be working toward one. The program of the student will be determined in consultation with the student's advisor and committee. The program requires a minimum of 30 credits, 22 of which must be in residence. A final oral examination is required.

Physics Graduate Courses

PHYS g301 Modern Physics 3 credits. A one-semester course surveying 20th century physics including elements of special relativity and quantum mechanics as applied to atoms. A continuation of the Engineering Physics sequence. PREREQ: PHYS 212; COREQ: MATH g360.

PHYS g313 Intermediate Laboratory I 2 credits. Modern and historical experiments in atomic physics, nuclear physics, and optics. COREQ: PHYS g301, MATH g360.

PHYS g314 Intermediate Laboratory II 2 credits. Modern and historical experiments in atomic physics, nuclear physics, and optics. PREREQ: PHYS g313.

PHYS g331 Principles of Health Physics I 3 credits. A lecture course detailing atomic and nuclear structure, radioactive serial decay, and interactions or radiation with matter. PREREQ: JUNIOR STANDING IN HEALTH PHYSICS OR PERMISSION OF INSTRUCTOR.

PHYS g332 Principles of Health Physics II 3 credits. A continuation of g331 covering dosimetric units, the principles of radiation detection and measurement, and summarizing deterministic and stochastic biological effects. PREREQ: PHYS g311 OR PERMISSION OF INSTRUCTOR.

PHYS g352 Intermediate Optics 3 credits. Topics covered include fundamental wave theory, interference, diffraction, polarization, and selected topics from the electromagnetic theory of light. PREREQ: PHYS 212; COREQ: MATH g360.

PHYS g353 Topics in Astrophysics 2 credits. Laboratory oriented course covering various selected topics in astronomy. Projects on and work with telescopes will be included. PREREQ: PERMISSION OF INSTRUCTOR.

PHYS g370 Analytical Geochemistry 3 credits. A survey of geochemical analysis techniques. All aspects of analysis, including sample collection, preparation, instrumental analysis, QA/QC procedures, interpretation and presentation are discussed. PREREQ: CHEM 112 AND PHYS 112.

PHYS g383 Theoretical Mechanics 4 credits. Mechanics of particles, planetary motion, rigid bodies; vibrating particles and strings; Lagrange's Equations and Hamiltonian methods. PREREQ: PHYS 212 AND MATH g360.

PHYS g403-g404 Advanced Modern Physics 3 credits. Study of the elementary principles of quantum mechanics and an introduction to atomic, solid state and nuclear physics. Quantum mechanics will

be used as much as possible. PHYS g403 is a PREREQ for g404. PREREQ: MATH g360 OR EQUIVALENT, AND PHYS g301.

PHYS g405 Advanced Laboratory 2 credits. Experiments in radiation detection and measurement, nuclear spectroscopy including x-ray and gamma spectroscopies, neutron activation and ion beam methods. Available to Geology, Engineering, Health Physics, and Physics majors. PREREQ: PERMISSION OF INSTRUCTOR.

PHYS g406 Advanced Physics Laboratory 2 credits. Senior projects providing a capstone to the physics major curriculum. Written and oral presentation of the project procedures and results are required. PREREQ: PHYS g405.

PHYS g408 Accelerator Health Physics 3 credits. Fundamentals of particle accelerator design and operation. Examination of the potential radiation environment associated with accelerators and health and safety issues of their operation. PREREQ: SENIOR STANDING IN HEALTH PHYSICS OR PERMISSION OF INSTRUCTOR.

PHYS g409 Introductory Nuclear Physics 3 credits. A course in Nuclear Physics with emphasis upon structural models, radioactivity, nuclear reactions, fission and fusion. PREREQ: KNOWLEDGE OF ELEMENTARY QUANTUM MECHANICS AND DIFFERENTIAL EQUATIONS OR PERMISSION OF INSTRUCTOR.

PHYS g410 Science in American Society 2 credits. Observational basis of science; technology's historical influences on scientific developments; perceptions of science in contemporary America; tools/strategies for teaching science. Cross-listed as GEOL g410. PREREQ: JUNIOR STANDING AND PERMISSION OF INSTRUCTOR.

PHYS g415 Statistical Physics 3 credits. Topics covered may include kinetic theory, elementary statistical mechanics, random motion and the theory of noise. Choice of topics will depend upon the interest of the students and instructor. PREREQ: PHYS 212, MATH g360.

PHYS g416 Introduction to Nuclear Measurements 3 credits. Lecture/laboratory course emphasizing practical measurement techniques in nuclear physics. PREREQ: CHEM 112, AND EITHER (PHYS 111 AND PHYS 113) OR (PHYS 121 AND PHYS 123).

PHYS g421-422 Electricity and Magnetism 3 credits. Intermediate course in fundamental principles of electrical and magnetic theory. Free use will be made of vector analysis and differential equations. PHYS g421 is a PREREQ for g422. PREREQ: PHYS 212 AND MATH g360.

PHYS g433 External Dosimetry 3 credits. A lecture course emphasizing external radiation protection including study of point kernel techniques, monte carlo modeling, and NCRP-49 methods. Also discussed are external dosimetry measurement techniques. PREREQ: PHYS g332 OR PERMISSION OF INSTRUCTOR.

PHYS g434 Internal Dosimetry 3 credits. A lecture course emphasizing internal radiation protection including studies of ICRP-2, ICRP-26&30, ICRP-60&66, and MIRD methods of

internal dosimetry. PREREQ: PHYS g433 OR PERMISSION OF INSTRUCTOR.

PHYS g442 Solid State Physics 3 credits. Introduction to the field of solid state physics emphasizing the fundamental concepts. Topics usually covered are crystal structure, X-ray diffraction, crystal binding energies, free electron theory of solids, energy bands. PREREQ: PHYS g301, g383, MATH g360 OR PERMISSION OF INSTRUCTOR.

PHYS g455 Topics in Health Physics I 2 credits. A lecture/seminar course covering special topics in Health Physics such as state and federal regulations, waste disposal methodology, and emergency procedures. PREREQ: PHYS g332 OR PERMISSION OF INSTRUCTOR.

PHYS g456 Topics in Health Physics II 2 credits. A continuation of g455. A lecture/seminar course covering special topics in Health Physics such as state and federal regulations, waste disposal methodology, and emergency procedures. PREREQ: PHYS g332 OR PERMISSION OF INSTRUCTOR.

PHYS g461-g462 Introduction to Mathematical Physics 3 credits. Introduction to the mathematics most commonly used in physics with applications to and practice in solving physical problems; includes vector analysis, ordinary and partial differential equations. PHYS g461 is a PREREQ for g462. PREREQ: PHYS 212 AND MATH g360.

PHYS g492 Colloquium in Physics 1 credit. Faculty and student lectures in current research topics in physics. Open to upper division and graduate students in physics.

PHYS g497 Professional Education Development Topics. Variable credit. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to undergraduate or graduate degrees. May be repeated. May be graded S/U.

PHYS 601 Quantitative Methods in Physics 3 credits. A review of the principles of physics and quantitative methods used: calculus, elementary differential equations and statistics. Designed for graduate students in the biosciences, chemistry, geology and interdisciplinary sciences.

PHYS 603 Particle and Nuclear Physics 3 credits. Basic properties of particles and nuclei; principles of high energy accelerators, particle and radiation detectors; nuclear masses and systematics of nuclei; nuclear models; nuclear interactions; high energy physics. COREQ: PHYS 624.

PHYS 605 Radiological Environmental Monitoring and Surveillance 3 credits. Advanced considerations in the design of monitoring programs. Sampling and analytical measurement programs for specific radionuclides and sources with emphasis in quality assurance.

PHYS 610 Radiation Regulations 3 credits. Dovers regulation of ionizing and non-ionizing radiation. Historical, biological, and legal foundations; federal regulations; state regulations; nuclear fuel cycle; emergency response; academic and medical facilities; transportation; accelerators; NORM/NARM; non-ionizing radiation. PREREQ: PERMISSION OF INSTRUCTOR.

PHYS 611-612 Electricity and Magnetism 3 credits. Applications of Maxwell's equations to problems involving antennas, waveguides, cavity resonators, and diffraction. Includes the solution of problems by the classical methods of retarded potentials and orthogonal expansions. PHYS 611 is a PREREQ for 612. PREREQ: PHYS g383, g421-g422, g461-g462, OR PERMISSION OF INSTRUCTOR.

PHYS 615 Neutron Activation Analysis 4 credits. Theory and use of neutron activation methods for quantitative chemical analysis of natural and synthetic materials. Applications in geologic systems with be emphasized. Cross-listed as CHEM 615, GEOL 615. PREREQ: PERMISSION OF INSTRUCTOR.

PHYS 621 Classical Mechanics 3 credits. Lagrange equations, small vibrations; Hamilton's canonical equations; Hamilton's principal, least action; contact transformation; Hamilton-Jacobi equation, perturbation theory; non-linear mechanics. PREREQ: PHYS g383, g461-g462, OR PERMISSION OF INSTRUCTOR.

PHYS 624-625 Quantum Mechanics 3 credits. Schrodinger wave equation, stationary state solution; operators and matrices; perturbation theory, non-degenerate and degenerate cases; WKB approximation, non-harmonic oscillator, etc.; collision problems. Born approximation, method of partial waves. PHYS 624 is a PREREQ for 625. PREREQ: PHYS g461-g462, 621 OR PERMISSION OF INSTRUCTOR.

PHYS 630 Accelerator Physics 3 credits. The physics of direct voltage accelerators, betatrons, synchrotrons, linear induction acceleration; high current accelerators; electromagnetic particle optics, free electron lasers and synchrotron light sources. PREREQ: PHYS 612, PHYS 624 OR EQUIVALENT.

PHYS 631 Accelerator Technology 3 credits. Topics will include high voltage and pulsed power techniques, wave guide and R.F. structures, ion and electron beam sources and beam measurements as applied to particle beam machines. PREREQ: PHYS 612 OR EQUIVALENT.

PHYS 632 Particle Beam Laboratory 1-4 credits. Laboratory projects in particle beam and ion optics, radiation detectors, ion source operation, etc. May be repeated up to 4 credits. PREREQ: PERMISSION OF INSTRUCTOR

PHYS 640 Statistical Mechanics 3 credits. Statistical ensembles; the Maxwell-Boltzmann law; approach to equilibrium, quantum statistical mechanics; application of statistical mechanics to thermodynamic processes. PREREQ: PHYS 415 AND 621.

PHYS 641 Field Theory, Particles, and Cosmology I 3 credits. Topics may include Dirac theory, group theory, Feynman diagrams, superstrings, supergravity, relativity and cosmology. PREREQ: PERMISSION OF INSTRUCTOR.

PHYS 642 Field Theory, Particles, and Cosmology II 3 credits. A continuation of 641. Topics may include Dirac theory, group theory, Feynman

diagrams, superstrings, super gravity, relativity and cosmology. PREREQ: PERMISSION OF INSTRUCTOR.

PHYS 648 Special Topics in Physics 1-3 credits. Survey, seminar, or project (usually at an advanced level) in one area of physics. Content varies depending upon the desires of the students and faculty. May be repeated until 6 credits are earned. PREREQ: PERMISSION OF INSTRUCTOR.

PHYS 650 Thesis 1-10 credits.

Department of Political Science

Chair and Professor Foster
Professors Adler, Bowen, Hjelm,
Maughan

Associate Professors Anderson, Gabardi,
Nilson
Assistant Professors Burns, McBeth
Affiliate Faculty Pulling
Adjunct Faculty Box, Chambers, Israel,
Winmill

Doctor of Arts in Political Science

This program is intended for students interested in careers teaching political science in a variety of higher education settings from community colleges to universities. Doctor of Arts recipients are prepared to teach a variety of political science courses including those in American politics and in two additional specialties selected from among the fields of public law, political theory, comparative/international politics, and public administration. The program features an interdisciplinary component with nine credit hours of coursework required from Economics and nine credit hours from Sociology. Two required interdisciplinary seminars further strengthen the interdisciplinary orientation of the program.

The D.A. in political science is generalist in nature. The emphasis is on a thorough grounding in political science supported by work in two other social science disciplines. The program places emphasis on teaching political science rather than on the development of a narrow research specialty. A nine-credit-hour component of the program includes the development of pedagogical skills as well as sustained experience in the classroom.

Admission

For full admission to the Doctor of Arts program, the applicant must have a cumulative GPA of 3.0 for the last two years of undergraduate study, an average score in the 50th percentile or above on the aptitude section of the GRE and a 3.5 GPA in all previous graduate study. At the time of application, the candidate must submit to the Department of Political Science three letters of recommendation and a statement of his/her personal goals.

A candidate entering with a B.A. or B.S. degree must fulfill a minimum of 79 credit hours including the teaching internship and up to a maximum of six dissertation credits. No more than nine credit hours in Sociology and nine credit hours in Economics (exclusive of interdisciplinary seminars) count toward the 79 credit hour minimum requirement. Candidates have the option of completing the M.A. or M.P.A. in political science en route to the D.A.; if they choose the non-thesis M.A. or M.P.A. program, only 30 hours of course work from the M.A. or M.P.A. will apply to the Doctor of Arts program. Candidates entering the Doctor of Arts program with M.A. degrees must complete a minimum of 49 credit hours, including two full-time consecutive semesters in residence, including a maximum six hours of dissertation credit. The total length and number of credit hours of a student's program, above the minimum, is dependent upon the student's academic preparation and his/her committee's recommendations.

Requirements

Political Science

Doctoral students are examined in three fields of political science. For all doctoral students the major field of American politics is required.

1. American Politics, and
2. Any two of the following fields:
 - a. Public Law
 - b. Political Theory
 - c. Comparative/International Politics
 - d. Public Administration

Doctor of Arts students are required to take nine hours of 600-level seminar courses (not including POLS 694) selected from the following courses: POLS 611, POLS 612, POLS 613, POLS 614 and POLS 615 plus a methodology course, POLS 519, 519L.

Doctor of Arts students are also required to take POLS 699, Dissertation, for a minimum of 3 credits.

Doctor of Arts students write a doctoral dissertation which may deal with either substantive disciplinary issues or pedagogical innovations or techniques. A draft of the dissertation must be approved by each D.A. candidate's committee before sitting for comprehensive examinations. Faculty and students are invited to the formal presentation of the dissertation.

Pedagogy

Students must complete a nine-credit component of pedagogy to include POLS 694, POLS 702, and POLS 703.

Economics

Nine graduate credits (specific courses to be determined in consultation with each candidate's graduate committee).

Sociology

Nine graduate credits (specific courses to be determined in consultation with each candidate's graduate committee).

Interdisciplinary Classes

A minimum of six credits in interdisciplinary classes which integrate concepts from political science, economics, and sociology. Three credits must be selected from among the following courses: POLS 620, ECON 620, or SOC 620; three credits must be selected from among the following courses: POLS 621, ECON 621, or SOC 621. Interdisciplinary courses taken as Sociology or Economics do not count toward the nine (9) credit hour requirement in those disciplines.

Examinations

A comprehensive written and oral examination is administered at the conclusion of the program which tests the candidate's knowledge of three fields of political science.

Master of Arts in Political Science

This program emphasizes general preparation in political science and research. It is designed to:

1. Provide the first phase of graduate study for students seeking terminal degrees such as the Ph.D. or D.A. and who plan

to complete their studies at Idaho State University or at another institution.

2. Train individuals who plan to seek employment upon completion of the M.A. degree in non-teaching governmental positions.
3. Provide in-service opportunities for enhancing the conceptual and research capabilities of persons who are employed in teaching or public positions.

Thesis/non-thesis options are available.

Areas of emphasis in the M.A. program are limited, because of the research nature of the degree, to American governmental institutions and political behavior, public law, political theory, public administration and comparative/international politics.

Requirements

M.A. candidates are required to present themselves for comprehensive examination on their thesis and/or in three of the five areas of emphasis mentioned above.

In addition to meeting the general requirements of the Graduate School, a student must have achieved a cumulative GPA of 3.0 for the last two years of undergraduate study and an average score in the 35th percentile or above on the aptitude section of the GRE to be eligible for admission to the graduate program and to candidacy for the M.A. degree in political science. At the time of application, the candidate must submit to the Department of Political Science three letters of recommendation and a statement of his/her personal goals.

A thesis (six credits), 24 additional credits approved by the Department of Political Science and the Graduate School, and a reading knowledge of one foreign language are the basic requirements of the graduate program in political science. Subject to department approval, a non-thesis program is available. Subsequent to the approval of the Department of Political Science, the student may elect to satisfy the language requirement by satisfactory completion of a course in methodology, demonstrating a comprehensive theoretical and practical understanding of a relevant research method.

Thesis Program

Required courses are POLS 519 and POLS 519L, Political Research Methods, 4 credits, and POLS 650, Thesis, 6 credits. Other requirements include a total of 30 credit hours in graduate level courses approved by the Department of Political Science and

the Graduate School; a minimum of 15 credit hours taken at the 600 level and a comprehensive oral examination in government covering the student's graduate course work, the literature of the field, and the M.A. thesis.

Non-thesis Program

Required courses are the same as the thesis program with the exception of deleting POLS 650, Thesis, 6 credits. Other requirements include a total of 36 credit hours in graduate level courses approved by the Department of Political Science and the Graduate School; a minimum of 15 credit hours taken at the 600 level; a comprehensive written examination in political science covering the student's graduate course work and the department's graduate bibliography; and a final oral examination which, like the final written exam, may be taken no more than twice.

Master of Public Administration

The Master in Public Administration degree is an inter-university cooperative graduate program offered jointly by Boise State University, Idaho State University and the University of Idaho. The purpose of the program is to provide present and prospective public administrators with the basic intellectual preparation necessary to understand and to adjust to a changing and challenging environment, through an introduction to the theories and practices of administration, management and social science research as these relate to effective performance in public organizations.

The inter-university MPA program has been designed in accordance with the Guidelines and Standards for Professional Master's Degree Programs in Public Affairs and Public Administration prescribed through the National Association of Schools of Public Affairs and Administration (NASPAA).

Admission to the MPA Program

Students may enroll in the MPA program by applying to one of the participating universities. Acceptance by any one of the three universities admits a student into the MPA program. New and transfer students admitted to ISU's MPA program must meet the standards set by ISU Graduate School. This includes scoring at an acceptable level on the GRE's. A matriculated student should

complete graduate studies at the institution which offers the area of specialization which s/he wishes to emphasize. Each student's program will be established by an advisory committee consisting of three faculty members. It is anticipated that students will come from widely differing academic preparations, since no specific undergraduate program is required in preparation for the MPA program. However, some course work in humanities and social sciences is essential to the foundation of the MPA program for all students.

In addition to the general requirements of each graduate school, students seeking admission must have completed a baccalaureate degree from an accredited institution, demonstrate satisfactory academic competency by attaining a cumulative GPA of 3.0 for the last two years of undergraduate study, achieve an average score placing them at or above the 35th percentile (current norms) on the aptitude section of the GRE, and submit three letters from individuals who are qualified to evaluate the applicant's academic potential. Students must also submit to the Department a personal statement of goals.

The MPA degree may be achieved through the successful completion of at least 30 semester credit hours of approved course work plus 6 credits of public service internship. Fifteen credit hours must be completed in courses selected from prescribed "core areas" with 15 additional credit hours completed in designated optional areas of emphasis. Students may follow a thesis or non-thesis option in pursuing the MPA. Students choosing to write a thesis (POLS 650 - 6 credits) do so in addition to normal MPA course work and internship requirements. The thesis is written in lieu of the comprehensive written examinations. All MPA candidates must complete final examinations. Those following the thesis option will complete an oral examination covering the thesis and program course work. The non-thesis option requires a written and an oral examination over program course work. The academic program of each student must satisfy the general requirements of an integrated program designed to meet career objectives of the student in public administration.

Core and Optional Area Requirements

The specific course requirements of the MPA program are set forth in a list of courses which has been approved by the inter-university committee. This list is

available through each of the cooperating universities. Courses are available at each institution in the "core areas." The optional "areas of emphasis" may vary among the universities according to the resources and competence which exist in the respective departments. A description of those areas of emphasis which are presently operational at each institution and admission forms to the MPA program are available through the Political Science Department at Idaho State University or the departments of Political Science at Boise State University or the University of Idaho.

I. Core Area Requirements

All students must take 18 credit hours of core area courses. Each student must choose at least one course from each area; Political Science 551 is required for **all** students.

Area 1 Management of Public Service Organizations

POLS 554	Public Personnel Administration
POLS 552	Financial Administration and Budgeting
POLS 558	Public Administration Ethics
POLS 541	Administrative Law

Area 2 Methodology and Policy Analysis

POLS 519 & 519L	Political Science Research Methods and Lab
POLS 553	Public Policy Analysis

Area 3 Public Policy, Organizational Theory, and Public Grantwriting

POLS 551	Organizational Theory & Bureaucratic Structure
POLS 505	The Administrative Process
POLS 557	Public Grantwriting

II. Specialized Areas

All students must take 12 credit hours in a specialized areas listed below. Courses that are used to fulfill a core requirement cannot also be counted as a specialized course. (Students should follow instructions under each specialized area.)

Specialized Area 1 State, Local, and Non-Profit Administration

(Choose 4 courses)

POLS 503	The Presidency
POLS 506	Intergovernmental Relations
POLS 509	Community and Regional Planning
POLS 612	Seminar: State and Local Politics
POLS 557	Grantwriting
POLS 541	Administrative Law
POLS 669	Independent Problems
SOC 566	Sociology of Community
ECON 539	State and Local Finance
GEOL 503	Principles of GIS

Specialized Area 2 Environmental Administration

(Choose 4 courses - POLS 555 is required)

Group I: Each student must take two courses from Group I

POLS 555	Politics of Environmental Problems (required)
ECON 552	Environmental Economics
POLS 553	Public Policy Analysis
ENGR 606	Environmental Law & Regulations
MGMT 575	Environmental Management
BIOS 521	Ecological Concepts
POLS 541	Administrative Law

Group II: Each student must take two courses from Group II

POLS 542	Constitutional Law
HIST 530	Environmental History
BIOS 687	Environmental Science & Pollutants
ENGR 570	Survey of Hazardous Waste Management Problems
GEOL 506	Environmental Geology
GEOL 530	Principles of GIS
ANTH 581	Biodiversity Conservation & Indigenous Peoples
POLS 669	Independent Problems

Special Topics: Special courses with an environmental focus may be allowed with the permission of your advisor

Specialized Area 3 Public Health Administration:

(Choose 4 courses)

POLS 553	Public Policy Analysis
POLS 557	Grantwriting
HCA 575	Health Care Law
HCA 582	Health Services Organization & Policy
HCA 583	Epidemiology
HE 520	Health Program Planning & Evaluation
HE 599	Research Ethics
SOC 530	Sociology of Health
MPH 602	Introduction to Biostatistics
PHIL 600	Ethics in Health Care
POLS 669	Independent Problems

Specialized Area 4 The Legal Environment of Administration

(Each student must choose 4 courses. SOC 531 and POLS 543 **are** required)

POLS 504	Legislative Process
SOC 531	Criminology (required)
POLS 542	Constitutional Law (Separation of Powers)
POLS 543	Constitutional Law (Civil Liberties) (required)
POLS 541	Administrative Law
POLS 506	Intergovernmental Relations
POLS 669	Independent Problem

III. Public Administration Internship

Each student must complete 6 credit hours of an approved internship.

American Politics Graduate Courses

POLS g301 Political Parties and Interest Groups 3 credits. The nature and development of political parties and interest groups as exemplified in the United States.

POLS g371 Historical Geography of Idaho 4 credits. Influences of geography and geology on Idaho's economic, political and cultural history. May be team taught. Includes labs, field trips, discussion sections. Cross-listed as HIST g371 and GEOL g371.

POLS g403 The Presidency 3 credits. Evolution and development of the office of the president; its major responsibilities in domestic and foreign affairs, with emphasis on particular power problems that confront the president.

POLS g404 The Legislative Process 3 credits. Nature and functions of the U.S. Congress. Topics covered: Legislative campaigns, the politics of law-making, congressional investigations, and major problems facing the Congress.

POLS g406 Intergovernmental Relations 3 credits. Analysis of patterns of intergovernmental relations including changing patterns of program and fiscal responsibility in the federal system. The emerging role of new federal structures, state and substate regional organizations will be reviewed in the context of "new" federalism and its implications for intergovernmental relationships.

POLS g408 Metropolitan and Urban Studies 3 credits. Analysis of metropolitan and smaller urban systems with emphasis on relationships among general groups, political organizations and institutions. Federal, state and interlocal programs will serve as a focus for analyzing particular problems of metropolitan and urban systems in the 20th century.

POLS g409 Community and Regional Planning 3 credits. Steps involved in planning will be analyzed in the context of community and regional decision-making processes. Two perspectives will be stressed—that of the decision-maker, the social structure within which the decision-maker operates and strategies for implementing decision; and that of the citizen or group interest which lies outside the power structure of the community. Each perspective will be used as a framework for analyzing power configurations, techniques of identifying patterns of decision making, and various forms of citizen participation.

POLS g427 Voting and Public Opinion 3 credits. Analysis of the way citizens and government communicate with each other. Elections, public opinion, and media influence are studied.

POLS g453 Public Policy Analysis 3 credits. Theoretical and practical analyses of public policies, including theories of policy formation and their political implementation through governmental institutions. Case studies will provide the means of analyzing specific policy problems.

POLS g455 Environmental Politics and Policy 3 credits. Study of the political forces affecting environmental policy and investigation of several specific policies affecting the environment,

such as pollution control, energy production, hazardous chemicals, and the public lands.

POLS g456 Labor Organization 3 credits. Evolution of economic systems and labor's response to changing patterns of production is studied, and a counter perspective to traditional management views of "efficiency" is presented. Emphasis is on governmental employee unions.

Political Analysis Graduate Courses

POLS g412 Modern Political Analysis 3 credits. Methods of political inquiry and theories and doctrines of politics, with emphasis on modern developments.

POLS g419 Political Research Methods 3 credits. This class investigates the theory and application of various research methods and statistical techniques common to the social sciences, with particular reference to their use in political inquiry.

POLS g419L Political Research Methods Lab 1 credit. Application of, and practice in research methods.

Administrative Graduate Courses

POLS g405 Administrative Process 3 credits. Analysis of the principles of public administration with an introduction to theories of organization and administration.

POLS g441 Administrative Law 3 credits. Introductory survey of the legal principals defining governmental administrative processes. Topics include judicial review, tort liability of governments and offices, rules and rule-making, due process, and the limits of administrative discretion.

POLS g451 Organizational Theory and Bureaucratic Structure 3 credits. Introduction to the study of complex organizations and organizational behavior in the administration of public policy. Emphasis on public institutions.

POLS g452 Financial Administration and Budgeting 3 credits. Emphasis on different approaches to financial administration, ranging from incremental and short-term planning to more recent and comprehensive emphases on management by objectives and zero-based budgeting. The development of the Office of Management and Budget and its relationship with the President, Congress and the Federal bureaucracy will be considered as well as political, organizational and behavioral constraints on budgetary decision-making.

POLS g454 Public Personnel Administration 3 credits. Operations and processes of personnel management in public institutions. Major topics include personnel processes, public employee rights and duties, employee motivation and morale, the political environment of public personnel administration, and the impact of professionalism, technology, and participatory democracy on public personnel practices.

POLS g457 Grantwriting 3 credits. Steps involved in the grantwriting process from strategic

planning, research, writing to finding appropriate grant sources.

POLS g458 Public Administration Ethics 3 credits. A course in applied ethics serving to educate students from a theoretical and a practical point of view. The course provides a historical and social perspective of ethics in public administration.

Political Theory Graduate Courses

POLS g318 Topics in Political Theory 3 credits. This course requires examination, analysis and investigation of selected texts and topics in political philosophy. May be repeated for a maximum of 6 credits.

POLS g411 American Political Theory 3 credits. Political ideas in the United States from Colonial and Revolutionary times through the controversies of the Civil War to the present.

POLS g420 Contemporary Political Theory 3 credits. Recent 20th century political philosophies and theories ranging from democratic, Marxist, and existentialist thought to Critical Theory and postmodernism.

POLS g421 Democratic Political Thought 3 credits. Historical and contemporary models of democracy as well as contemporary debates in democratic thought. Democracy is treated as a contested idea.

International Politics Graduate Courses

POLS g425 Topics in International Politics 3 credits. This course requires examination, analysis and evaluation of selected topics in international politics. May be repeated for a maximum of 6 credits.

Comparative Politics Graduate Courses

POLS g332 Comparative Politics: Change and Political Order 3 credits. The nature of political change is examined in a multifaceted framework consisting of concepts such as political order, progress and decay, revolutionary violence, and political culture. The technological and post-industrial revolutions are examined as they relate to political change and stability in developed societies.

POLS g433 Politics of Developing Nations 3 credits. Study of problems in the political analysis of rapidly changing and unstable "developing" nation states with an emphasis on problems of the political, economic, and social development of selected states.

Public Law Graduate Courses

POLS g442 Constitutional Law 3 credits. Analysis of opinions of the United States Supreme Court concerning the distribution of authority between the national government and the states and the relationship among the branches of the national government.

POLS 643 Constitutional Law 3 credits. Analysis of opinions of the United States Supreme Court with a special emphasis on criminal cases and civil liberties.

General Graduate Courses

POLS 645 Government Internship 1-9 credits. Directed student internship in government and organizations or associations related to public policy and the selection of public officials involving supervised work experience in research, staff management practices, or making and implementing public policies. The student will be placed in a supervised position commensurate with his or her abilities as determined and approved by faculty in the department. May be repeated up to 9 credits.

POLS 649-492 Seminar 1-3 credits. Research, reading, discussion, and the preparation of reports on selected topics. Ordinarily for seniors majoring in government and having the instructor's consent.

POLS 657 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

Graduate Courses

POLS 600 Environmental Law: Regulation 3 credits. The legal analysis of regulation as a method of controlling pollution and hazardous waste. PREREQ: ENGR 606.

POLS 601 Environmental Law: Natural Resources 3 credits. Federal and Idaho statutes and regulations as they apply to natural resources such as public lands, endangered species, and the EIS process. PREREQ: ENGR 606.

POLS 611 Seminar: Political Theory 3 credits. Review of the primary and recent literature of political theory.

POLS 612 Seminar: State and Local Politics 3 credits. Analysis of state, local and regional political institutions and processes from the federal and comparative perspectives.

POLS 613 Seminar: American Politics—Behavior 3 credits. Micro inquiry and analysis into political behavior. Areas relevant to such inquiry may include but are not limited to, political psychology, political socializations, attitude and opinion formation, and voting behavior.

POLS 614 Seminar: American Politics—Institutions 3 credits. Macro inquiry and analysis into the basic institutional structures and processes of the American political system. Areas of emphasis include, but are not limited to, executive, legislative and judicial processes, political parties and interest groups.

POLS 615 Seminar: World Politics 3 credits. World politics is analyzed both from the perspective of relationships between nation-states and the domestic political sources which influence and determine these relationships.

POLS 620 Seminar: Philosophy of Social Science 3 credits. The application of mathematical and scientific methods to the study of social, economic, and political life will be considered through the reading of certain seminal writings. Attention will be given to the fundamental assumptions about the nature of scientific rationality. Required of all D.A. students.

POLS 621 Seminar: Interdisciplinary Topics in Social Science 3 credits. Examination of selected topics in the social sciences from the analytic orientations and perspectives common and peculiar to the disciplines of political science economics and sociology. Required of all D.A. students.

POLS 649 Research Problems 1-6 credits. Independent research on non-thesis and non-dissertation disciplinary questions. Credit hours and subject must be approved by instructor. May be repeated to a maximum of 6 credits.

POLS 650 Thesis 1-6 credits.

POLS 669 Independent Problems-Tutorial 3 credits. A directed project emphasizing individual study, research, or the development of expository writings according to the needs of the individual student.

POLS 694 Seminar in College Teaching 3 credits. Required of all doctoral candidates. May be taken concurrently with POLS 702, but must be successfully completed before matriculation in POLS 703.

POLS 699 Dissertation 1-6 credits. May be repeated. S/U grading.

POLS 701 Supervised Administrative Internship in Higher Education variable up to 6 credits.

POLS 702 Team Teaching 3 credits. Doctor of Arts candidates team teach an entire course with a faculty member.

POLS 703 Solo Teaching 3 credits. Doctor of Arts candidates assume total responsibility for teaching a class. PREREQ: POLS 694 AND POLS 702.

Department of Psychology

Chair and Professor Joe
Professors Matthews, Roberts
Associate Professors Cellucci, Enloe,
Hatzenbuehler
Assistant Professors Berent, Dehle,
Farmer, Gordon, Guajardo,
Turley-Ames, Vik
Professor Emeritus Hartman

Master of Science in Psychology

In addition to the general requirements of the Graduate School, the candidate must have:

1. Submitted GRE quantitative, verbal, analytical and GRE advanced psychology test scores.
2. An undergraduate major in psychology or the equivalent.
3. Been recommended by the Experimental or Clinical Admissions Committee of the Department of Psychology. The Clinical Admissions Committee only admits students into the combined Master of Science and Doctor of Philosophy course of study.

Required Courses

PSYC 627	Advanced Statistics	3 cr
PSYC 632	Advanced Experimental Design I	3 cr
PSYC 650	Thesis	6 cr

Area Requirements

Each student must complete one, 3-credit course from each of the following core areas of psychology:

Area A: Biological Bases of Behavior

PSYC 504	Sensation & Perception
PSYC 531	Physiological Psychology I
PSYC 532	Physiological Psychology II

Area B: Cognitive-Affective Bases of Behavior

PSYC 642	Cognitive Psychology
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Area C: Social Bases of Behavior

PSYC 643	Advanced Social Psychology
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Area D: Individual Behavior

PSYC 501	Theories of Personality
PSYC 644	Advanced Developmental Psychology
PSYC 647	Personality and Individual Differences

Minimum Total Credits - 36

Area requirements assume the satisfactory completion of undergraduate courses which prepare the student for advanced study. Specifically, students must have completed undergraduate courses in experimental psychology, neuroanatomy, sensation, perception, learning, social psychology, developmental psychology, personality, history and systems, or the equivalent of these topic areas. Each student's records will be reviewed by the Departmental Chair in consultation with departmental staff. Students deficient in area prerequisites may be required to enroll in additional coursework and/or experience limitation of choices in Areas A and D. An Area Requirement Plan of Completion must be finalized during the student's first month following matriculation. The Chair, the student, and one or more

faculty appointed by the Chair will meet and approve each student's Plan of Completion.

In addition, each student must complete 12 elective graduate credits in psychology. A student may complete up to 6 of these elective credits in a related field approved by the student's graduate advisor. Courses identified to remediate deficiencies by the Area Requirement Plan of Completion do not satisfy any portion of the 12-credit elective requirement.

Doctor of Philosophy in Clinical Psychology

Admission requirements are as stated above with the following additions: all students must have been recommended by the Clinical Admissions Committee of the Psychology Department. Minimum entrance requirements include a 3.0 grade point average during the last two years of undergraduate study and Graduate Record Exam scores of the 50th percentile or higher on two of the three aptitude tests (verbal, quantitative, or analytical).

Doctoral training in clinical psychology is designed to meet all accreditation standards of the American Psychological Association and all requirements for state licensure as a psychologist. Theory, research, and practice are integrated into a comprehensive, five-year program. It is the goal of the doctoral training program to produce clinical psychologists who are well trained in the science of human behavior and its application to diverse clinical populations. All students are required to participate in coursework and practica that emphasize assessments and treatments in all major areas of child and adult psychopathology. Evaluations of each student's clinical-professional development and scholarship-research skills are continuous.

All doctoral students must complete the Master of Science in Psychology or its equivalent. The following requirements are all in addition to the Master of Science requirements.

Required Courses

Assessment Sequence

PSYC 620	Psychodiagnostic I	3 cr
PSYC 621	Psychodiagnostics II	3 cr
PSYC 623	Advanced Psychological Measurements	3 cr

Clinical Core

PSYC 512	Ethical & Professional Issues in Psychology	2 cr
PSYC 553	Psychosocial Child Therapy	3 cr
PSYC 634	Rural Psychology	3 cr
PSYC 648	Advanced Psychopathology	3 cr
PSYC 701	Clinical Psychology	3 cr
PSYC 702	Introduction to Psychotropic Medication	2 cr
PSYC 703	Advanced Ethics Seminar	1 cr

Practicum

PSYC 517	Interdisciplinary Evaluation Team	1 cr
PSYC 724	Community Practicum	0-3 cr
PSYC 725	Psychology Clinic Practicum	4-7 cr
PSYC 749	Clinical Internship	1 cr

Research

PSYC 750	Dissertation	12 cr
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Clinical Electives

Each student must complete 12 credits of clinical electives from the following options or other graduate courses approved by the Clinical Training Committee.

PSYC 563	Clinical Psychology and the Law	2 cr
PSYC 565	Behavioral Medicine	3 cr
PSYC 601	Family Assessment and Therapy	3 cr
PSYC 633	Psychology of Addictive Behaviors	3 cr
PSYC 635	Marital Assessment and Therapy	3 cr
PSYC 636	Neuropsychological Assessment	3 cr
PSYC 736	Advanced Clinical Assessment or Treatment	1-12 cr

Methodological Elective

Each student must complete an additional 3-credit course in advanced statistics acceptable to the Clinical Training Committee.

Minimum Total Credits - 68

The 12 elective credits earned for the Master of Science degree will satisfy course requirements for the Doctor of Philosophy, subject to the approval of the Departmental Chair.

Scholarship - Research Development

Upon completion of Area Requirements plus PSYC 627 and PSYC 632, doctoral students are required to pass a comprehensive written and oral examination over the area requirements and statistical/methodological topics

introduced during the first two years of graduate study. Students must also propose and write a scholarly review article on an evaluation, treatment, or theoretical topic in clinical psychology. The review article may serve as preparation for the dissertation. Students will present findings and implications of the review paper to departmental faculty and students at an open forum. Students may be admitted to candidacy for the doctoral degree upon satisfactory completion of the Master of Science degree or its equivalent, the written comprehensive exam, and the clinical review paper. Candidates for the doctoral degree may not propose a dissertation (PSYC 750) until admitted to candidacy.

A five-member doctoral committee will be formed by the student and his/her advisor. Three members of the doctoral committee must be full-time equivalent faculty members of the Department of Psychology, including at least one clinical and one experimental faculty member. The fourth and fifth members must meet Graduate School requirements and include the Graduate Faculty Representative.

Clinical - Professional Development

All students must complete 7 credits of PSYC 725 (Psychology Clinic Practicum) and 1 credit of PSYC 517 (Interdisciplinary Evaluation Team). Up to 3 credits of PSYC 724 (Community Practicum) may be substituted for credits of PSYC 725. Progress in the development of professional skills is evaluated by faculty supervisors and the Clinical Training Committee. Satisfactory evaluations of professional development by the Clinical Training Committee is a degree requirement.

All students must satisfactorily complete a one-year clinical internship at a site belonging to the Association of Psychology Postdoctoral and Internship Centers or comparable supervised clinical practice approved by the Clinical Training Committee. Concurrent enrollment at Idaho State University in 1 credit of PSYC 749 (Clinical Internship) is required. Application to clinical internships and acceptance into clinical internships requires the approval of the Clinical Training Committee.

Psychology Graduate Courses

PSYC 401 Theories of Personality 3 credits. Detailed study of the leading theories of personality with emphasis on the Freudian, Neo-Freudian, humanistic and existential theories. PREREQ: PSYC 225 OR 301.

PSYC g404 Sensation and Perception 4 credits. The anatomical and physiological basis of sensation will be reviewed. Moreover, traditional and contemporary theories of perception will be critically considered. Students will be expected to do laboratory work illustrating basic concepts of sensory and perceptual functions. PREREQ: PSYC 303.

PSYC 412 Ethical and Professional Issues in Psychology 2 credits. Topics include informed consent, confidentiality, deception, duty to protect, competency, malpractice, dual and collegial relationships, and impaired professionals in research and practice. PREREQ: 24 CREDITS IN PSYCHOLOGY OR PERMISSION OF INSTRUCTOR.

PSYC g417 Interdisciplinary Evaluation Team 1 credit. Introduction to the principles and techniques associated with interdisciplinary evaluation. Disciplines emphasized: Audiology, Nursing, Physical Therapy, Psychology, Social Work, Special Education, Speech-Language Pathology. Cross-listed as NURS g417, SOWK g417, SPA g417.

PSYC g431 Physiological Psychology I 3 credits. Introduction to neuropsychology with an emphasis on methods, basic neuroanatomy, and neurophysiology. PREREQ: PSYC 303.

PSYC g432 Physiological Psychology II 3 credits. Survey of the physiological bases of psychological processes, including learning, emotion, motivation, sensation, and perception. Emphasizes current research and theory concerning brain mechanisms and behavior. PREREQ: PSYC 431 OR PERMISSION OF INSTRUCTOR.

PSYC g435 Animal Behavior 3 credits. Study of experiments in animal learning that have thrown light upon the problem of understanding human learning. Course is concerned with both observation and experimental studies of habit formation, conditioning, related endocrinology, and nerve structure as they are associated with behavior capabilities. PREREQ: SIX HOURS IN PSYCHOLOGY BEYOND PSYC 101-102 OR PERMISSION OF INSTRUCTOR.

PSYC g445 Psychology of Learning 3 credits. Survey of the major principles of learning, including the processes underlying classical and instrumental conditioning and motor skills behavior. PREREQ: PSYC 303-404 OR PERMISSION.

PSYC g453 Psychosocial Child Therapy 3 credits. Review of the psychopathology, diagnosis, and treatment of the major psychosocial disorders of childhood. PREREQ: PSYC 225 OR FCS 302 OR PERMISSION OF INSTRUCTOR.

PSYC g463 Clinical Psychology and the Law 2 credits. An introduction to the field of forensic psychology by exposing students to the primary areas in which clinical psychology relates to the legal system. Emphasis will be on expert testimony by clinicians in matters of criminal responsibility, mental competency, civil commitment, and child custody.

PSYC g464 Dilemmas of Youth 3 credits. This course surveys theory and research concerned with dilemmas of identity formation. Personal accounts,

literature-classic and psychological-will serve to illustrate dilemmas and explain their resolution.

PSYC g465 Behavioral Medicine 3 credits. Psychological issues of health, disease states, and prevention. Critical evaluation of clinical research and practice including nontraditional healing techniques and current models used to understand health and disease. PREREQ: PSYC 101 OR PERMISSION OF INSTRUCTOR.

PSYC g483 Special Problems 1-3 credits. Research or readings in a special area of interest to be arranged on an individual basis with individual faculty. PREREQ: 24 HOURS IN PSYCHOLOGY.

PSYC 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

PSYC 601 Family Assessment and Therapy 3 credits. Introduction to clinical work with families, including theoretical models and intervention techniques, assessment methods, current research, and special topics relevant to families.

PSYC 611 Advanced Motivation 3 credits. Surveys current and traditional theories of motivation with emphasis on empirical research illustrating the effects of motivational systems on both human and animal models. PREREQ: PSYC 545 OR EQUIVALENT.

PSYC 612 Theories of Perception 3 credits. Theories of perception, ecological, constructive, gestalt, and motivational, will receive critical review. Students will perform measurements of perception and research guided by theoretical accounts of the perceptual process.

PSYC 620 Psychodiagnostics I 3 credits. Theory, measurement development, and current use and limitations of major tests of intelligence, academic achievement, development, and neurological function. Practice in test administration is included. PREREQ: PSYC g427 OR PERMISSION OF INSTRUCTOR.

PSYC 621 Psychodiagnostics II 3 credits. Theory, measurement development, and current use and limitations of major tests of personality, both objective and projective, with an emphasis on classification decisions. Practice in test administration is included. PREREQ: PSYC 620 OR PERMISSION OF INSTRUCTOR.

PSYC 623 Advanced Psychological Measurements 3 credits. Psychological measurement theory, the mathematical basis of reliability and validity constructs, and test construction strategies are introduced. Measurement principles are then generalized across response modes and methods, focusing on direct observation technologies.

PSYC 627 Advanced Statistics 3 credits. Critical review of the theory and the methods used to evaluate the outcome of empirical research in the life and social sciences. Chi square, correlation, regression, analysis of variance designs are considered and related to the theoretical distributions basic to statistical inference. PREREQ:

BASIC STATISTICS, COLLEGE ALGEBRA, AND/OR CALCULUS, OR PERMISSION OF INSTRUCTOR.

PSYC 632 Advanced Experimental Design I 3 credits. Basic assumptions in the philosophy of scientific investigation, principles of design and analysis of experiments, including tests of significance and factorial designs, and reporting of research, in which the student is required to prepare reports of his own work as if for publication. PREREQ: PSYC 303 AND STATISTICS.

PSYC 633 Psychology of Addictive Behaviors 3 credits. Reviews research on alcohol and other drug use within biopsychosocial framework. Included are etiological factors and natural history, assessment and diagnosis, comorbidity, motivational interviewing, treatment models, and special population issues.

PSYC 634 Rural Psychology 3 credits. Generalist practice of clinical psychology in rural communities. Topics include: multi-cultural, multi-racial populations; community networking; interdisciplinary functioning; screening and referral; primary prevention; consultation; and program evaluation.

PSYC 635 Marital Assessment and Therapy 3 credits. Introduction to assessment of marital distress, theoretical approaches to treating couples, intervention techniques, current research, and special topics in the clinical study of couples.

PSYC 636 Neuropsychological Assessment 3 credits. Introduction to the selection, administration, scoring, and interpretation of commonly used neuropsychological tests, including tests of conceptual, perceptual, and linguistic ability. PREREQ: PSYC 620 AND PSYC 621.

PSYC 637 Advanced Experimental Design II 3 credits. Continuation of research principles in design and analysis, emphasizing the use of multiple dependent variables, strategies for investigating latent variables, and testing complex causal models. PREREQ: PSYC 632 OR PERMISSION OF INSTRUCTOR.

PSYC 641 Special Problems 1-3 credits. Individual work under staff guidance. The student will pursue original research in some area of psychology of particular interest to him and write a report of his work in a form suitable for publication. PREREQ: PERMISSION OF INSTRUCTOR.

PSYC 642 Cognitive Psychology 3 credits. Examines cognitive processes underlying perception, attention, mental imagery, memory, language, and problem solving/decision making. Cognitive development and individual differences are discussed. Both theory and experimental findings are emphasized in each area.

PSYC 643 Advanced Social Psychology 3 credits. Review of current research and major theories of social psychology. Areas of emphasis include attitude, persuasion, prejudice and stereotyping, attraction, aggression, helping, and social cognition.

PSYC 644 Advanced Developmental Psychology 3 credits. Study of developmental theories, issues, and research across the life span. Emphasis is on current empirical research, highlighting the interaction of biological, cognitive, and social domains of development within and between individuals.

PSYC 645 Theory and Method of Psychosocial Adult Therapy I 3 credits. A review of theoretical models and treatment methods across major psychosocial disorders of adults, including associated psychopathology and diagnostic material.

PSYC 646 Theory and Method of Adult Psychosocial Therapy II 3 credits. Continuation of the review of theoretical models and treatment methods of the major psychosocial disorders of adults, including and diagnostic material. PREREQ: PSYC 645.

PSYC 647 Personality and Individual Differences 3 credits. This course will explore contemporary personality theory, as well as significant areas and trends in the current empirical literature.

PSYC 648 Advanced Psychopathology 3 credits. Theories and forms of psychopathology are presented, incorporating the current empirical literature. Disorders covered include substance use, affective, thought, health-related, and personality disorders. Pathology is conceptualized from biological, medical, behavioral, and cognitive perspective.

PSYC 650 Thesis 1-6 credits.

PSYC 701 Clinical Psychology 3 credits. Brief history of clinical psychology; introduction to interviewing skills and professional issues; provider standards, forensics, professional liability and private practice.

PSYC 702 Introduction to Psychotropic Medication 2 credits. Introduction to clinical psychopharmacology meeting American Psychological Association guidelines for Level 1 predoctoral training. Disorders of substance abuse, psychosis, mood, anxiety, and development are highlighted. PREREQ: PSYC 532.

PSYC 703 Advanced Ethics Seminar 1 credit. Systematic review of common ethical dilemmas encountered in clinical practice in public and private settings. PREREQ: PSYC 512 AND FOURTH-YEAR CLINICAL DOCTORAL STUDENT STATUS.

PSYC 724 Community Practicum 1-2 credits. Students work in public or private mental health agencies under qualified supervisors. Professional activities include evaluation and therapy. Six hours per week per credit. PREREQ: APPROVAL OF CLINICAL TRAINING COMMITTEE.

PSYC 725 Psychology Clinic Practicum 1-2 credits. Students are supervised in the evaluation and treatment of clients served by the Psychology Department Clinic. Four Hours per week per credit. PREREQ: APPROVAL OF CLINICAL TRAINING COMMITTEE.

PSYC 736 Advanced Clinical Assessment or Treatment 1-3 credits. A specific area of psychopathology is presented. Current theoretical and

empirical information are explored in depth, emphasizing assessment and/or treatment.

PSYC 748 Clinical Externship 1 credit. Clinical practice in regional human service agency. Minimum 10 hours per week; 1 hour supervision by Ph.D. psychologist per 20 contact hours. Repeatable up to 6 credits. PREREQ: APPROVAL OF CLINICAL TRAINING COMMITTEE. S/U Grading.

PSYC 749 Clinical Internship 1 credit. Predoctoral internship, 11-12 months, at a member site of the Association of Psychology Postdoctoral and Internship Centers, or comparable supervised clinical practice approved by the Clinical Training Committee. PREREQ: APPROVAL OF CLINICAL TRAINING COMMITTEE.

PSYC 750 Dissertation 1-12 credits. Research, analysis, and writing of a doctoral dissertation. PREREQ: ADMISSION TO CANDIDACY FOR THE DOCTORAL DEGREE. Graded S/U.

Department of Sociology, Social Work, and Criminal Justice

Chair and Associate Professor Pierson

Professors Aho, Bryan, Sarraf

Associate Professors Cowles, Cutchen,
Durham, Oakes

Assistant Professors Brackenridge

Adjunct Faculty Phoenix

Master of Arts in Sociology

Admissions

In addition to the criteria for admission to the Graduate School, students must submit GRE advanced sociology test scores.

Requirements

Required courses are: SOC 508, Advanced Sociological Methods (may be taken as SOC 408 as an undergraduate); SOC 600, Comparative Sociological Theories; SOC 603, Seminar: Topics in Methods; SOC 650, Thesis. The remaining credits are to be composed of approved electives of which no more than nine credits are to be at the 500 level. No more than one-third of the total accumulated graduate hours may come from SOC g482, SOC 649, and SOC

650. Other requirements include the successful completion of a written comprehensive examination, a thesis proposal presentation and an oral defense of the completed thesis.

Before students are formally admitted to candidacy for the M.A., they must pass the written comprehensive examination and achieve minimum specified standards on the GRE.

Sociology Graduate Courses

SOC g330 Sociology of Health 3 credits. Sociological examination of health and illness, including social and cultural variables related to illness, conceptual problems in research on health care, and a discussion of the professions associated with health care.

SOC g335 Demography and Human Ecology 3 credits. A study of the interrelationships of population trends with technology, environment, and social institutions. Consideration of world population patterns and their implications.

SOC g361 Social Stratification 3 credits. Theories and methodology of status systems; the relation of class to the social structure; analysis of class in different societies, with emphasis upon the class system in contemporary American society. PREREQ: SOC 101 OR PERMISSION OF INSTRUCTOR.

SOC g364 Industry and Society 3 credits. Summary of the scientific knowledge that is applicable to the understanding of the sociological aspects of industrialization as a culture system, the industrial work situation, and the sociopolitical and community aspects of industrialism. PREREQ: SOC 101 OR PERMISSION OF INSTRUCTOR.

SOC g366 The Community 3 credits. Development of the concept of "community." Examination of selected theories of community origins, characteristics, and consequences, internal community structure, tensions, and processes of change. PREREQ: SOC 101.

SOC g368 The Sociology of Religion 3 credits. Contemporary issues as they relate to religion. The relationship of religion to other social institutions. Religious experience and mysticism. Prophecy and its routinization. Cults and religious dissent. PREREQ: SOC 101.

SOC g403 Contemporary Sociological Theory 3 credits. Survey and appraisal of major schools of sociological thought at present, with an examination of areas of change and controversy emphasizing recent significant sociological contributions. PREREQ: SOC 101 AND 301.

SOC g408 Advanced Sociological Methods 3 credits. Emphasizes advanced techniques in research design, data measurement, and multivariate analysis utilizing computer application. PREREQ: SOC 206 AND SOC 207.

SOC g413 Mind, Self and Society 3 credits. Focus discussion of regularities in human social behavior and interaction arising from group life. Emphasizes communication, attitude, language, interpersonal perception, sexual identities, symbolic interaction and other phenomenological experiences. PREREQ: SOC 101.

SOC g431 Criminology 3 credits. Analysis of criminal law, law enforcement, judicial roles and processes, correctional approaches, the criminal offender and societal reactions. Theory and research as applicable to behavior and institutional relationships. PREREQ: SOC 231.

SOC g450 Sociology of the Third World 3 credits. Survey of pertinent literature and analysis of the socio-economic characteristics of third world countries. The quest for modernization and social change, along with the obstacles encountered by developing nations, will be emphasized.

SOC g482 Independent Problems 1-4 credits. Consultation course consisting of independent student effort under the guidance of the instructor. May be repeated for maximum of 6 credits. PREREQ: PERMISSION OF INSTRUCTOR.

SOC g491 Seminar 3 credits. Reading, discussion, and preparation of reports on selected topics. May be repeated for up to 6 credits.

SOC 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.

SOC 600 Seminar: Comparative Sociological Theories 3 credits. Comparative analysis of various theoretical perspectives in sociology with special emphasis on structural functionalism, symbolic interactionism, exchange theory, conflict theories, phenomenology, and ethnomethodology. Primary emphasis will be placed on the major propositions of each perspective and the significant contributions of scholars in each area. PREREQ: SOC 403 OREQUIVALENT.

SOC 601 Sociological Theories 3 credits. A seminar in selected topics in theory which will focus on either historical, comparative or contemporary theories. May be repeated for up to 6 credits. PREREQ: SOC 600.

SOC 603 Seminar: Topics in Methods 3 credits. In depth focus on methodological topics relevant and timely to student's needs and interests. May be repeated up to 6 credits. PREREQ: SOC g408.

SOC 605 Social Organization 3 credits. A seminar in selected topics of social organization and disorganization which will include such themes as complex organization, industrial sociology, community, and urban studies. May be repeated for up to 6 credits.

SOC 607 Social Differentiation 3 credits. A seminar in selected topics of social differentiation such as stratification, minorities, etc. May be repeated for up to 6 credits.

SOC 613 Social Behavior 3 credits. A seminar in social interaction which will consider such themes as collective behavior, social psychology, deviance, ethnography, and neo-positive approaches to behavioral analysis. May be repeated up to 6 credits.

SOC 615 Social Institutions 3 credits. A seminar in selected aspects of political sociology, law and crime, religion, education, and the family. May be repeated up to 6 credits.

SOC 620 Seminar: Philosophy of Social Science 3 credits. The application of mathematical and scientific methods to the study of social, economic, and political life will be considered through the reading of certain seminal writings. Attention will be given to the fundamental assumptions about the nature of scientific rationality. Required of all D.A. students.

SOC 621 Seminar: Interdisciplinary Topics in Social Science 3 credits. Examination of selected topics in the social sciences from the analytic orientations and perspectives common and peculiar to the disciplines of political science, economics and sociology. Required of all D.A. students.

SOC 638 Teaching Sociology 1 credit. A discussion of the philosophy and mechanics of teaching undergraduate sociology.

SOC 649 Independent Studies 1-4 credits. Consultation course consisting of independent student effort under the guidance of the instructor. Students are assigned to, or request assignment to, specific independent problems on the basis of interest and preparation. This may include preparation and presentation of a major research project, directed readings, or tutorial study.

SOC 650 Thesis 1-6 credits. Research, analysis, and writing of master's thesis.

Social Work Graduate Courses

SOWK g417 Interdisciplinary Evaluation Team 1 credit. Introduction to the principles and techniques associated with interdisciplinary evaluation. Disciplines emphasized: Audiology, Nursing, Physical Therapy, Psychology, Social Work, Special Education, Speech-Language Pathology. Cross-listed as PSYC g417, NURS g417, SPA g417.

SOWK g482 Independent Problems Consultation course which may be repeated for maximum of 6 credits. PREREQ: 12 CREDITS IN SOCIAL WORK.

SOWK g491 Seminar 3 credits. Readings, discussion, and preparation of reports on selected topics. PREREQ: PERMISSION OF INSTRUCTOR.

SOWK 597 Professional Education Development Topics. Variable credit. May be repeated. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be graded S/U.