

APPROVED BY GRADUATE COUNCIL

IDAHO STATE UNIVERSITY
ACTIONS OF THE GRADUATE COUNCIL

Memorandum No. 838

Meeting of 04 October 2006

MEMBERS PRESENT: Jessica Winston, Chuck Peterson, Gregory Leavitt, Kenneth Khang, Stephanie Peterson, Chikashi Sato, Ellen Rogo, Fred Risinger, Chuck Humphrey, Alex Urfer, Paul Hathaway (Graduate Student Representative), Lawrence Ford (ex officio), Tom Jackson (presiding)

MEMBERS EXCUSED/ABSENT: Cynthia Pemberton (ex officio)

GUESTS: None

I. MINUTES

Memorandum # 837 was approved by general consent.

II. COUNCIL BUSINESS

A. Curriculum issue—Department of Music (B.M. Degree Requirements, MUSC g420, g419). It was MSC (10y, 0n) to approve both Form B proposals.

- **Change CREDITS from 2 to 3:**
MUSC g519 Voice Literature 3 credits.
MUSC g520 Voice Pedagogy 3 credits.

B. Curriculum issue—Department of Political Science (Public Lands Policy, POLS g418, g445). It was MSC (11y, 0n) to approve both Form B proposals. It was MSC (11y, 0n) to approve the Form D proposal with suggested formatting changes.

- **ADD courses:**
POLS g518 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 g545 Jurisprudence 3 credits. Nature, source, and theories of law; the role of law in modern society; and the application of legal philosophy to the political system.
- See **Appendix A** for Form D changes.

- C. Curriculum issue–Department of Physics (PHYS g416). It was MSC (11y, 0n) to approve the Form B proposal.
- **Change TITLE:**
PHYS g516 Radiation Detection and Measurement 3 credits.
- D. Graduate Faculty Nomination–Department of Sociology. It was MSC (11y, 0n) to approve **Dr. Gesine Hearn’s** nomination to the Graduate Faculty. Council noted Dr. Hearn’s impressive publication record.
- **Hearn, Gesine K.**, Assistant Professor, Sociology. R.N., 1986, School of Nursing, Chirurgische Klinik an der Universität Erlangen-Nürnberg, Germany; M.A., 1993, Universität Tübingen, Germany; Ph.D., 2006, Universität Erlangen-Nürnberg, Philosophische Fakultät, Germany. (2003)
- E. Graduate Faculty Nomination–Department of Health and Nutrition Sciences. It was MSC (11y, 0n) to approve **Dr. Hilary Flint-Wagner’s** nomination to the Graduate Faculty. Council noted Dr. Flint-Wagner’s impressive publication record.
- **Flint-Wagner, Hilary**, Assistant Professor, Health and Nutrition Sciences. B.A., 1991, University of Redlands; M.P.H., 1995, University of Arizona; Ph.D., 2005, University of Arizona. (2005)
- F. Graduate Faculty Nomination–Department of Educational Leadership. It was MSC (11y, 0n) to approve **Dr. Mark Neill’s** nomination to the Graduate Faculty. Council noted Dr. Neill’s impressive publication record.
- **Neill, Mark W.**, Assistant Professor/Assistant Chair, Educational Leadership. B.S., 1977, Western Montana College; M.Ed., 1995, University of Montana; Ed.D., 1999, University of Montana. (2004)
- G. Graduate Faculty Nomination–Department of Geosciences. It was MSC (11y, 0n) to approve **Dr. Temuulen Tsagaan “Teki” Sankey’s** nomination to the At-Large Graduate Faculty.
- **Sankey, Temuulen Tsagaan "Teki"**, Post-Doctoral Research Associate, Geosciences.. B.A., 1996, Foreign Language University, Ulaanbaatar, Mongolia; M.S., 2001, Montana State University; Ph.D., 2005, Montana State University. (2006)
- H. Graduate Faculty Nomination–Department of Geosciences. It was MSC (11y, 0n) to approve **Dr. Jérôme Théau’s** nomination to the At-Large Graduate Faculty.
- **Théau, Jérôme**, Post-Doctoral Research Associate, Geosciences. B.S., 1996, Université de Sherbrooke, Canada; M.S., 1999, Université du Québec A Rimouski, Canada; Ph.D., 2004, Université Laval, Canada. (2006)
- I. Graduate Faculty Nomination–Department of Geosciences. It was MSC (11y, 0n) to approve **Dr. Benjamin Crosby’s** nomination to the Graduate Faculty.
- **Crosby, Benjamin T.**, Assistant Professor, Geosciences. B.A., 1999, University of California, Berkeley; Ph.D., 2006, Massachusetts Institute of Technology. (2006)

III. ANNOUNCEMENTS

- A. Dr. Jackson informed Council of an upcoming advertising campaign for graduate education at Idaho State University. He explained that the current campaign will be generally advertising graduate education at ISU, rather than targeting specific programs or degrees. Ads will be appearing in many venues (except TV, which is cost-prohibitive), and asked Council for suggested venues. Several suggestions were given. Dr. Jackson said that his goal is to “brand” ISU as an addition to a choice set for prospective students. The ads will indicate high quality and sophistication in graduate education, and ISU’s excellent faculty and programs will fully compete with other institutions for prospective graduate students.

Dr. Jackson explained that he and Dr. Pemberton held a focus meeting with graduate students to create a slogan for the advertising campaign. “Your Next Opportunity,” at this point, appears to be the chosen slogan.

- B. Dr. Jackson distributed an enrollment report that describes more specifically the impact of decreased enrollment at ISU. He pointed out that enrollment in doctoral programs is actually up, and that the drop in master’s enrollment is primarily in part-time students. It would be helpful if programs could find ways to make it easier to be a part-time graduate student at ISU. There exists a regional population that is interested in taking graduate-level courses, as non-degree seeking students, that can contribute a great deal of revenue for ISU.

Dr. Jackson also noted that graduate student applications represents the only area that is up from last year, albeit by only a small number.

Meeting adjourned: 4:13 pm

/rm

4. Graduates will promote ethical organizations.
5. Graduates will develop distinctive public administration skills.
6. Graduates will strive for professional excellence and updating of skills throughout their professional careers.

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 the 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 in upper-division undergraduate course work, or a 3.5 GPA in previous graduate courses, submit official GRE scores, submit three letters of recommendation from individuals who are qualified to evaluate the applicant's academic potential, and submit a statement of the student's personal goals. The letters and statement of goals will be weighted equally with the applicant's GPA and GRE scores. Please contact the Department for specific guidelines for letters of recommendation and statement of goals.

The program employs an admission scoring system which awards MPA applicants points based on the evaluation and scoring of four components: (1) upper-division undergraduate GPA or GPA in an M.A. program; (2) scores on the Graduate Record Examination (GRE); (3) the quality of letters of recommendation; and (4) the quality of the applicant's goal statement.

Requirements

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. Eighteen credit hours must be completed in courses selected from prescribed "core areas" with 12 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

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|----------|--|
| 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

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|----------|--|
| POLS 622 | Public Administration Research Methods |
| POLS 553 | Public Policy Analysis |

Area 3 Public Policy, Organizational Theory, and Grantwriting

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|----------|--|
| POLS 551 | Organizational Theory & Bureaucratic Structure |
| POLS 505 | The Administrative Process |
| POLS 557 | 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 four 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

Required course:

- | | |
|----------|------------------------------------|
| POLS 555 | Politics of Environmental Problems |
|----------|------------------------------------|

Choose three courses:

- | | |
|----------|------------------------|
| POLS 553 | Public Policy Analysis |
| POLS 566 | Public Lands Policy |
| POLS 541 | Administrative Law |
| GEOL 503 | Principles of GIS |

Students may take other graduate-level courses with an environmental emphasis from Biology, Geology, or Engineering, or other departments as approved by student's MPA committee.

Specialized Area 3 Public Health Administration:

Choose four courses:

- | | |
|----------|------------------------|
| POLS 553 | Public Policy Analysis |
| POLS 557 | Grantwriting |

You must take other graduate-level courses from Health Care Administration (HCA), Health Education (HE), Master of Public Health (MPH), and Philosophy (Philosophy 600, Ethics in Health Care), as approved by your graduate chair. A class in health care ethics is strongly recommended.

Specialized Area 4 The Legal Environment of Administration

Required courses:

- | | |
|----------|---|
| POLS 531 | Criminology |
| POLS 543 | Constitutional Law (Separation of Powers) |

CHANGE

APPROVED BY GRADUATE COUNCIL

IDAHO STATE UNIVERSITY
ACTIONS OF THE GRADUATE COUNCIL

Memorandum No. 837

Meeting of 20 September 2006

MEMBERS PRESENT: Jessica Winston, Robert Van Kirk (for Chuck Peterson), Gregory Leavitt, Kenneth Khang, Stephanie Peterson, Marco Shoen (for Chikashi Sato), Ellen Rogo, Fred Risinger, Chuck Humphrey, Alex Urfer, Paul Hathaway (Graduate Student Representative), Cynthia Pemberton (ex officio), Tom Jackson (presiding)

MEMBERS EXCUSED/ABSENT: Lawrence Ford (ex officio)

GUESTS: None

I. MINUTES

It was MSC (11y, 0n) to approve Memorandum # 836.

II. ANNOUNCEMENTS

The agenda was revised so curriculum issues would be discussed together, and faculty nominations would be discussed together. Dr. Jackson explained that his Graduate Faculty nomination (Item B) will be postponed until the end of the meeting so that he can be excused while Council discusses and votes on his nomination.

III. COUNCIL BUSINESS

A. Curriculum issue—Department of English and Philosophy (Program in Folklore). It was MSC (11y, 0n) to approve the proposal.

- **Change title, content:**

- **ENGL g590 Topics in Folklore 3 credits.** Focused study of an issue in folkloristics or a particular genre of folklore, including history of the scholarship concerning that issue or genre. Rotating topics. May be repeated up to 9 credits with different topics. Cross-listed as ANTH g590.
- **ANTH g590 Topics in Folklore 3 credits.** Focused study of an issue in folkloristics or a particular genre of folklore, including history of the scholarship concerning that issue or genre. Rotating topics. May be repeated up to 9 credits with different topics. Cross-listed as ENGL g590.

- **Add new courses:**

- **ENGL g592 Folklore and Literature 3 credits.** Study of cross-influences between oral and written literatures. Emphasis may be on a written genre that imitates and draws upon oral genres, a movement or period in which oral tradition strongly influences written forms, or a particular writer who incorporates motifs and storytelling patterns from folklore. Rotating topics. May be repeated up to 9 credits.
- **ENGL g596 Folklore and Mythology of the World 3 credits.** Beliefs, customs, music, dance, oral traditions including tales, legends, myths, arts, crafts, costuming and folk technology of a particular cultural group. Rotating topics. May be repeated up to 9 credits. Cross-listed as ANTH g596.
- **ANTH g596 Folklore and Mythology of the World 3 credits.** Beliefs, customs, music, dance, oral traditions including tales, legends, myths, arts, crafts, costuming and folk technology of a particular cultural group. Rotating topics. May be repeated up to 9 credits. Cross-listed as ENGL g596.

F. **(Moved forward)** Curriculum issue—Department of Human Resource Training and Development (HRD 632, Form D). It was MSC (11y, 0n) to approve the proposal.

- **Change title, content:**

- **HRD 632 Research Methods in HRD 3 credits.** Examination of methods for designing and conducting research in both educational and workplace settings. Introduction to procedures for summarizing and analyzing quantitative and qualitative data with proper style and format requirements for formal report writing. PREREQ: HRD g509 OR PERMISSION OF INSTRUCTOR.
- **See Appendix A for Form D changes.**

Addenda

Curriculum issue—Department of Educational Foundations (Curriculum is CFS Master). After removing this item from the table, and following discussion regarding minor changes to the proposal, it was MSC (11y, 0n) to approve the proposal.

- **Change credits, content:**

- **CFS 669 Case Study/Project in Child and Family 1-6 credits.** Under faculty supervision, student is responsible for development and oral presentation of a comprehensive case study or a comprehensive graduate field project. May be repeated up to 6 credits.
- **See Appendix B for Form D changes.**

C. Graduate Faculty Nomination—The Idaho Center for Disabilities Evaluation. It was MSC (11y, 0n) to approve **Dr. Emilie “Leigh” Cellucci’s** nomination to the Graduate Faculty.

- **Cellucci, Emilie "Leigh" W.,** Assistant Professor, Health Care Administration. B.S., 1981, College of Charleston; M.A., 1983, College of William and Mary; Ph.D., 1989, University of Virginia; M.B.A., 2002, Idaho State University. (2004)

D. Graduate Faculty Nomination–Department of Psychology. It was MSC (11y, 0n) to approve **Dr. Tera Letzring’s** nomination to the Graduate Faculty.

- **Letzring, Tera D.**, Assistant Professor, Psychology. B.A., 1999, University of Puget Sound; M.A., 2002, University of California, Riverside; Ph.D., 2005, University of California, Riverside. (2005)

E. Graduate Faculty Nomination–Idaho Dental Education Program (IDEP). Council felt that the faculty member should be approved to teach graduate-level courses, but that there wasn’t sufficient evidence to support the nomination for graduate faculty status at this time. It was **MSF** (0y, 11n) to approve.

G. Graduate Faculty Nomination–Department of Theatre and Dance. It was MSC (11y, 0n) to **TABLE** the nomination for further clarification from the department regarding the peer-review process.

*** [Following the meeting, Dr. Sherri Dienstfrey, Chair, explained that external adjudicators will be evaluating several plays this year, and she will request that a review be conducted in this case. She asked that the nomination be held until next spring in order to allow time for the adjudicators’ feedback.]

H. Graduate Faculty Nomination–Department of Theatre and Dance. It was MSC (11y, 0n) to approve **Prof. Melanie Kloetzel’s** nomination to the Graduate Faculty.

- **Kloetzel, Melanie J.**, Assistant Professor, Theatre and Dance. B.A., 1993, Swathmore College; M.A., 2002, University of Montana; M.F.A., 2004, University of California. (2004)

B. (See II., above) Graduate Faculty Nomination–Department of Psychology. It was MSC (11y, 0n) to approve **Dr. Thomas Jackson’s** nomination to the Graduate Faculty.

- **Jackson, Thomas T.**, Professor, Psychology. B.A., 1967, California State College at Fullerton; M.A., 1969, California State College, Fullerton; Ph.D., 1974, Texas Tech University. (2006)

Meeting adjourned: 3:47 pm
/rm

College of Technology

Marilyn Davis, Ph.D., Interim Dean
Debbie Thompson, Associate Dean

Geomatics Technology

Assistant Professors: Bajracharya, Wissa

Geomatics Graduate Courses

(No graduate degrees are offered)

GEMT g530 Principles and Applications 3 credits. Introduction to theory and use of GPS for mapping and survey quality application. Includes basic and advanced principles of GPS positioning, Differential GPS, types of GPS receivers, static, kinematics and RTK procedures, vector processing and adjustment using least squares concept, OPUS processing, coordinate creation and export results for use in specific application. PREREQ: CET/GEMT 224 OR PERMISSION OF INSTRUCTOR.

GEMT g532 Principles of Photogrammetry 3 credits. Introduction to vertical photo geometry and its scale, relief and tilt displacement, stereoscopic viewing, parallax measurement, mosaics, orientations, development of planimetric and topographic maps, flight planning, softcopy photogrammetry and introduction to aerial triangulation. PREREQ: CET/GEMT 224 OR PERMISSION OF INSTRUCTOR.

Department of Human Resource Training and Development

Chair and Professor Croker
Professors: Johnson
Professor: Humphrey
Assistant Professor: Wilson-Scott
Emeritus Faculty: Bobell

Master of Training and Development

The Masters of Training and Development, aligned with State educational standards, provides the adult learner with opportunities to engage in the processes of inquiring, learning, and applying known competencies within the fields of Human Resource Development and Professional Technical Education.

The Master of Training and Development is designed to strengthen the student's understanding, knowledge, and skills in three major areas—Professional Core Requirements, Training Management Studies, and Integrative Field Research Studies—as they relate to Training and Development. The master's degree program in Training and Development has two options:

- **Professional-Technical Program Management** for those pursuing a career in administration of professional-technical programs in public schools.
- **Training Management** for those who plan a career in the management of training programs in business, industry, public sector, or military.

Individuals applying for admission to the Master of Training and Development program must meet the following admission requirements:

- Bachelor's degree from a college or university accredited in the United States or its equivalent from a school in another country.
- Grade point average of 3.0 or higher for all upper division credits taken at the undergraduate level.
- Submit official GRE or MAT scores within the first semester or summer session of enrollment. Applicants who have achieved at least the 35th percentile in one of the aptitude sections of the Graduate Record Examination (Verbal, Quantitative, Analytical), or the 35th percentile on the Miller Analogies Test are eligible for admission if the earned grade point average for all upper division credits taken at the undergraduate level is 2.5 or higher.

- Submission of admission forms and application fee to the Graduate School.

Students must complete a minimum of 36 semester credit hours for the Master of Training and Development. All candidates completing a thesis will orally defend the thesis, but will not complete written comprehensive examinations. All candidates completing a thesis will orally defend the thesis. All candidates not completing a thesis will be required to orally defend the findings of their field research. In addition, the Department of Human Resource Training and Development requires candidates to have a knowledge of statistical procedures.

Students seeking Idaho certification in the area of their training must meet any requirements of the State Board of Education for certification.

Professional Studies Core

HRD 504	Evaluation in Corporate Training and Professional-Technical Education	3 cr
HRD 505	Learning Styles Fundamentals	3 cr
HRD 509	Professional Readings and Writing in HRTD	3 cr
HRD 632	✓ <u>Research Methods in HRD</u>	3 cr

Training Management Studies

HRD 633	Program Planning and Development in HRTD	3 cr
HRD 634	Administration of HRTD	3 cr

An additional 12 semester hours must be taken from department courses or courses outside the department approved by student's major advisor.

Integrative Field Research Studies

HRD 650	Thesis OR	6 cr
HRD 635	Practicum in Training Administration	3 cr
HRD 645	Field Research Project in Training Management	3 cr

Training and Development Graduate Courses

HRD g501 Foundations of Professional-Technical Education 3 credits. Acquaints the student with the various aspects of professional-technical (formerly vocational) education: history, legislation, philosophy and organization of professional-technical education.

HRD g502 Occupational Analysis and Course Construction 3 credits. Analysis of components of occupations to determine instructional content. Development of instructional materials based on performance objectives and competency identification.

Master of Education with Child and Family Studies Emphasis

Family Studies Early Childhood Education Early Childhood Special Education

Candidates for the Master's of Education with Child and Family Studies Emphasis must meet all college and university requirements for admission and retention.

The goal of the Early Childhood Education Program is to prepare professionals who have the necessary knowledge, dispositions, and abilities to:

1. Enhance learning and development of young children, with and without disabilities, between the ages of birth and third grade.
2. Establish collaborative relationships with families, and other professionals in ways that produce outcomes for your children.
3. View their own professional development as a lifelong endeavor.
4. Advocate for children, families, and the early childhood profession.

The Master of Education with Child and Family Studies Emphasis is designed to strengthen the student's understanding, knowledge, and skills in three major areas—Core Professional Studies, Integrative Field Research Studies, and Specialty Studies—as they relate to Child and Family Studies. The student must select one of the following option areas for the Master of Education with Child and Family Studies Emphasis:

Emphasis:

- Family Studies
- Early Childhood Education
- Early Childhood Special Education

Applicants enter the program after completion of the Bachelors degree. All candidates completing a Master of Education with Child and Family Studies Emphasis must complete a written comprehensive examination and an oral examination; AND either a case study/project, a case study/project/internship combination, OR a thesis.

Required Core Professional Studies

EDUC 601	Research and Writing	3 cr
EDUC 602	Theories of Learning	3 cr
EDUC 610	Applied Educational Statistics	3 cr

Integrative Field Research Studies

(must total 6 credits)

EITHER THESE TWO COURSES:

CFS 647	Internship in Child and Family Studies	3 cr
CFS 669	Case Study/Project in Child and Family Studies	3 cr
OR		
CFS 669	Case Study/Project in Child and Family Studies	6 cr
OR		
EDUC 650	Thesis	6 cr

Additional Requirements for Family Studies Option

CFS 531	Family Resource Management	3 cr
CFS 535	Relationships Within Families	3 cr
CFS 600	Issues and Trends in Child and Family Studies	3 cr
CFS 632	Theoretical Frameworks for Understanding Families	3 cr
CFS 659	Seminar in Child and Family Studies	3 cr

Additional elective credits to total a minimum of 36 credit hours must be approved in advance by the student's major advisor.

Additional Requirements for Early Childhood Education Option

CFS 500	Foundations of Early Childhood Special Education	3 cr
CFS 501	Foundations of Early Childhood Education	3 cr
CFS 600	Issues and Trends in Child and Family Studies	3 cr
CFS 621	Learning and Development in Early Childhood Education	3 cr
CFS 622	Curriculum in Early Childhood Education	3 cr
CFS 632	Theoretical Frameworks for Understanding Families	3 cr

Additional Requirements for Early Childhood Special Education Option

CFS 500	Foundations of Early Childhood Special Education	3 cr
CFS 501	Foundations of Early Childhood Education	3 cr
CFS 600	Issues and Trends in Child and Family Studies	3 cr
CFS 632	Theoretical Frameworks for Understanding Families	3 cr
CFS 642	Assessment in Early Childhood Special Education	3 cr
CFS 643	Curriculum and Intervention in Early Childhood Special Education	3 cr
CFS 644	Working with Families in Early Childhood Special Education	3 cr

Additional elective credits to total a minimum of 36 credit hours must be approved in advance by the student's major advisor.

Planned Fifth-Year Program

The purpose of the planned Fifth-Year Program in Teacher Education is to provide an opportunity for candidates to further their own professional growth and career goals through planning processes and guidelines which allow for maximum flexibility and increased autonomy by candidates in program design. Candidates' professional development goals may related to (a) extending and refining their cognitive background and skills related to their current professional assignment, (b) seeking improvement and/or modification in their professional career status within a teaching staff or institution, or (c) seeking an additional endorsement or advanced certification.

Prospective candidates must:

1. Possess a baccalaureate degree from an accredited institution.
2. Meet standard certification requirements in the area and at the level of their planned Fifth-Year Program.
3. Apply for admission to graduate study.
4. See an advisor/sponsor as soon as possible, preferably at the time of application for admission to graduate study.
5. Establish with the advisor a proposal for the planned Fifth-Year Program that reflects the candidates professional development goals and/or career ladder goals.
6. Work with the advisor to submit and gain approval of the proposal.

Requirements of the Planned Fifth-Year Program:

1. A minimum of 30 semester credits. At least 2/3 of the credits included in the program must be graduate level course work (500-600 level).
2. A minimum of 15 credits to be taken following approval of the planned Fifth-Year Program proposal.
3. A maximum of 1/3 of the credits may be undergraduate work.
4. A maximum of 10 credits of EDUC 397/597.
5. A maximum allowance of 8 transfer credits (graduate transfer credits must meet requirements of the Office of Graduate Studies.)

CHANGED

APPROVED BY GRADUATE COUNCIL

IDAHO STATE UNIVERSITY
ACTIONS OF THE GRADUATE COUNCIL

Memorandum No. 836

Meeting of 6 September 2006

MEMBERS PRESENT: Jessica Winston, Chuck Peterson, Gregory Leavitt, Kenneth Khang, Stephanie Peterson, Chikashi Sato, Ellen Rogo, Fred Risinger, Chuck Humphrey, Alex Urfer, Paul Hathaway (Graduate Student Representative), Lawrence Ford (ex officio), Cynthia Pemberton (ex officio), Tom Jackson (presiding)

MEMBERS EXCUSED/ABSENT: None

GUESTS: Drs. Terry Engebretsen (Chair) and Alan Johnson, Department of English
Drs. Kandi Turley-Ames (Chair), Linda Enloe, and Erin Rasmussen, Department of Psychology

I. MINUTES

No Minutes (Memorandum # 834 was approved last spring).

II. ANNOUNCEMENTS

Dr. Tom Jackson, newly appointed Dean of Graduate Studies, introduced himself to the Council, and each Council member was introduced.

III. COUNCIL BUSINESS

A. Graduate Council Meetings - Fall 2006. The Fall 2006 Meeting Schedule was reviewed.

B. Graduate Council Membership, 2006-2007. The list of this year's Graduate Council Members and Alternates was reviewed. Dr. Jackson reminded members to ask their alternate to attend if they will be absent.

C. Bylaws of the Graduate Faculty. The bylaws were distributed. Dr. Jackson noted that changes to the bylaws may be needed, and a careful review will be conducted this year. Any changes will require a quorum vote of the Graduate Faculty.

- D. Appointment of Representative to the Research Coordinating Council (RCC). Dr. Jackson asked Council for volunteers to serve on the RCC Council. Dr. Fred Risinger volunteered. It was MSC (10y, 0n) to approve Dr. Risinger to serve as the Graduate Council's RCC representative.
- E. NOI–Department of English and Philosophy (Doctor of Philosophy in English and Pedagogy). Dr. Terry Engebretsen (Chair) and Dr. Alan Johnson were present to discuss the NOI. Discussion included: 1) Interest in the Doctor of Arts (DA) degree has decreased nationally during the last decade until only two other programs in English remain; 2) the department is finding it difficult to recruit students into this relatively unknown degree (it should be noted that the difficulty lies in recruiting, not in placing students after degree completion–students are being placed well, albeit with much explanation about the degree to employers); 3) the department wishes to preserve the pedagogical aspect as part of the PhD, hence keeping “English and Pedagogy” in the degree title, and the degree would remain a generalist degree; 4) the current DA papers that the DA student produce would be reconfigured to serve as a dissertation; 5) the department did discuss offering two degrees, the DA and the PhD, but felt that resource commitment prohibits this as an option; 6) differentiation between a generalist and a specialist is made in job announcements in the field of English, and the department feels that confusion in job placement would not be a problem; 7) the impact this change might have on the National Center for the Doctor of Arts (currently housed at ISU's Graduate School), and whether saving the Center is worth preserving a dying degree. After Dr. Engebretsen and Dr. Johnson were excused, Council's continued discussion included: 1) Recruitment is the trouble area, and the DA degree does appear to be dying; 2) recruitment does not justify creating a PhD; a PhD is a *specialized* degree, and making the same DA degree a PhD is troublesome (however, there is precedence for a similar change on the basis of recruitment in another college); 3) requiring a research component would improve Council members' view of the proposal; 4) the DA degree is a *good* degree, and ignorance of the degree is the root problem; 5) the proposal was put forth without a Routing Sheet and appropriate signatures. A motion was made to approve the NOI; there was no second. A new motion was made to table the NOI. It was MSC (10y, 0n) to **TABLE** the NOI on these grounds: 1) The NOI must be properly sent forward with a Routing Sheet and appropriate signatures (see http://www.isu.edu/acadaff/noi_instructions.shtml for instructions); 2) the proposal should discuss what impact this change might have on the National Center for the Doctor of Arts; 3) the proposal should discuss funding implications–The NOI should clearly specify how the current DA Fellowships will be managed under the new degree (they could no longer be called Doctor of Arts Fellowships).
- G. (**Moved forward**) NOI–Department of Psychology (PhD in Experimental Psychology). Dr. Kandi Turley-Ames (Chair) and Drs. Linda Enloe, and Erin Rasmussen were present to discuss the NOI. Discussion included: 1) When the master's degree in clinical psychology was changed to a PhD, only a master's degree in experimental psychology remained; 2) faculty wish to continue with research, and the department would now like to institute the experimental psychology PhD program; 3) students will earn the master's degree en route to the PhD; they will

apply directly to the PhD program; 4) there appears to be a need for this program among students and other state programs; 5) the department is requesting two new faculty lines, but the program could go forward without them; 6) the PhD would involve a cohort, but INL students could work through the program because they would likely hold a master's degree coming into the program; 7) the department was commended for sending forth a very thorough proposal. After Drs. Turley-Ames, Enloe, and Rasmussen were excused, it was MSC (11y, 0n) to recommend approval of the NOI. It will be forwarded to Academic Council.

- F. Curriculum issue–Department of English and Philosophy (Program in Folklore). It was MSC (11y, 0n) to **TABLE** the proposal until Curriculum Council approves it.
– Upon clarification from the Curriculum Council secretary, the need for Curriculum Council approval prior to Graduate Council review of the proposal is not necessary due to differences in meeting schedules and deadlines. This proposal will be brought back to Graduate Council as soon as possible.
- H. Curriculum issue–Office of Graduate Studies (Various Graduate Catalog changes). It was MSC (11y, 0n) to approve the proposal.
- See Appendix A for the M.A.M.S.T. program in Mathematics
 - See Appendix B for the Health Care Administration courses in MBA
 - See Appendix C for various course changes that will make the Graduate Catalog match the Undergraduate Catalog.
 - See Appendix D for a change in GRE requirement for the CLS program in Biological Sciences
- I. Graduate Faculty Nomination–Department of Physician Assistant Studies. It was MSC (11y, 0n) to approve **Dr. David Hachey's** nomination to the Graduate Faculty.
- **Hachey, David M.**, Clinical Associate Professor, Physician Assistant Studies. PharmD, 1998, University of Rhode Island. (1998)
- J. Curriculum issue–Department of Pharmaceutical Sciences (Course Changes: PSCI 613-636; Faculty Title Changes).
- It was MSC (11y, 0n) to approve the proposal.
 - **Drop PSCI courses: 613, 615, 616, 617, 618, 619**
 - It was MSC (11y, 0n) to approve the proposal for PSCI 620 with one change: the title will be “Drug Discovery.”
 - **Change title, credits, content, add prereq:**
PSCI 620 Drug Discovery 2 credits. An overview of the process of drug discovery and the regulatory process of drug development, infrastructure of FDA and the process of clinical trials for approval of drugs, biologics, and medical devices. PREREQ: PERMISSION OF INSTRUCTOR.

- It was MSC (11y, 0n) to approve the proposal for PSCI 634.

- **Change title, content:**

PSCI 634 Current Topics in Oncology 1 credit. Study of current topics in cancer research. Emphasis on novel approaches to understand and treat cancer. PREREQ: PERMISSION OF INSTRUCTOR.

- It was MSC (11y, 0n) to approve the proposal for PSCI 636.

- **Add new course:**

PSCI 636 Concepts and Tools in Pharmacogenomics 2 credits. The role of genetic factors in the development and evaluation of drugs, basic principles of microarray analysis, introduction to proteomics. PREREQ: PERMISSION OF INSTRUCTOR.

- It was MSC (11y, 0n) to approve the Form D proposal.

- **See Appendix E for Faculty update for the Department of Pharmaceutical Sciences**

K. Curriculum issue–Department of Child and Family Studies (CFS 669; Program/Catalog Copy Changes). It was MSC (11y, 0n) to **TABLE** the proposal for further information.

Meeting adjourned: 5:20 pm
/rm

be released to any outside party without the written consent of the student.

A student may restrict release of all directory information by filing a Declaration of Non-disclosure of Educational Record Information form in the Office of Registration and Records. Student may choose to restrict release of their address and telephone listings only. This may be done through their MyISU portal by accessing the Student Address Change Request form under Student Records information. This restriction will apply to the students' address and telephone listings only; all other directory listings will continue to be available for release.

Students must request complete directory information restriction or address/phone listing restrictions during the first week of fall term to prevent their information from being published in the Student Directory. Any restriction is permanent and remains in place even after the student has stopped attending or has graduated from the University unless the student requests, in writing, that it be removed. Additional FERPA information may be found on the web at: <http://www.isu.edu/areg/ferpafacts.shtml>

Course Levels, Credits, and Grading

Course Levels

Courses numbered 6xx and 7xx are for students admitted into Graduate Studies only. Courses numbered g5xx also provide graduate credit (except 597 and 598P, see "Professional Development for K-12 Teachers" and "Admission Requirements for Professional Development Students"). However, undergraduate students may be enrolled in these courses; the undergraduate counterpart will be designated as g4xx. Extra work is required of graduate students enrolled in g5xx courses (see below). Applicability of g5xx courses to degree requirements is determined by the department offering the degree. Credit by examination (course challenge) is not permitted in graduate programs. Credit is not generally granted toward a graduate degree for g5xx courses when the corresponding g4xx course was taken at the undergraduate level.

Activities Instructors May Require to Meet the "Additional Work" Requirement to Receive Graduate Credit in Those Courses Offered as g5xx:

The Graduate Council expects instructors to require specific work to be done in a graduate level course to justify graduate credit being given. This is particularly true for courses which may be used to count toward a degree. For students to receive graduate credit in those courses designated at the g5xx level, specific and evaluated activities and performances must be identified. Listed below is a suggested list of activities which an instructor may use to meet this requirement.

1. An additional scholarly activity such as:
 - a. term paper(s)
 - b. substantive report(s) which may be one of the following: survey, analysis and report; laboratory investigation and report; library research and report
 - c. attendance at a significant regional or national meeting with an analysis and report
2. Classroom activities that are beyond that required of undergraduates and are evaluated:
 - a. special presentation of some subject
 - b. provision of leadership on discussion of some significant topic in the classroom
 - c. any other classroom activity which is evaluated and not required of undergraduates
3. Examinations: Special examinations which are different from those given to undergraduates and are more demanding than those given to undergraduates. Such exams may be those which require greater performance at the higher cognitive level such as interpretation, synthesis and evaluation.

Credits

For a master's degree, a minimum of 30 credits in approved course work, including thesis credits if required, must be completed. Except in the cases of the M.N.S., M.A.M.S.T., and M.P.A. degrees, a master's degree student must complete at least 15 credits in 600-level courses. Credit requirements for doctoral degrees vary by program.

A credit hour in graduate courses requires:

1. 50 minutes in class each week for 16 weeks (or equivalent in summer sessions and in courses offered in special formats), or
2. Approximately two and one-half hours in laboratory work each week for 16 weeks (or equivalent).

Students who, because of exceptional circumstances, want to take more than the maximum number of credits, must request permission in person from the Dean of Graduate Studies. They must also have support in writing from the graduate program director or chairperson of their department.

Thesis or dissertation credits are not awarded to the student until after completion and final approval by the examining committee. At this time, the advisor reports a grade of S or U for all previous thesis registrations. The student may register for thesis credits any semester she/he is enrolled as a degree-seeking student, subject to the approval of the department chair or program director, but the letters IP (in progress) are recorded on the transcript in place of a grade for all such registrants until final approval is obtained.

Semester Credit Limits

The maximum number of credits obtainable in a semester is 16, including courses taken at the undergraduate level. In a **summer semester**, a student may earn a number of credits equal to the number of weeks enrolled plus two, and the total number of summer semester credits may not exceed 12 (e.g., a student taking classes for eight weeks may earn up to 10 credits). Graduate Assistants may register for no more than 12 credits per semester.

Grading

A 3.0 GPA for the courses listed on the program of study is required for any graduate degree or certification at Idaho State University. A grade of C+ or lower is essentially failing at the graduate level. However, some departments may accept a C+ grade in one or two courses as long as the minimum overall 3.0 GPA is maintained. C+ or lower grades may cause departments/colleges to dismiss students from a graduate degree program. (See section entitled **Restricted Registration**) NOTE: Due to Grading changes approved during the 1998-1999 academic year, any restrictions or requirements in this catalog referring to a grade of C also include a C+ grade.

Idaho State University uses a graduated letter grading system to indicate the instructor's evaluation of a student's performance in a course. These letter grades are converted to a numerical value for computing a student's semester and cumulative grade point averages. At the beginning of each course, an instructor should inform students of the criteria to be used in evaluating their performance through the class syllabus or other written means.

CHANG 20

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 in upper-division undergraduate course 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

The Master of Science program in Mathematics provides thesis and non-thesis options. Students choosing either option must take 15 credits in mathematics at the 600 level, including two full-year sequences. Of the remaining 15 graduate credits required for the degree, at least 9 must be in mathematics. The entire program of study must be approved by the departmental graduate committee.

Students must pass a written examination on one of the 600-level sequences in their programs of study. Those who choose the thesis option must also complete and defend an expository or research thesis, for which they will receive 6 credits of MATH 649. Those who choose the non-thesis option must pass a final oral examination over all courses in their program of study.

Master of Arts in Mathematics for Secondary Teachers

The degree Master of Arts in Mathematics for Secondary Teachers (MAMST) is designed for people with a bachelor's degree who hold a secondary school teaching certificate for the teaching of mathematics and have at least three years of full-time teaching experience. 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 MAMST program in mathematics, the applicant (1) must hold a bachelor's degree and a standard secondary school teaching certificate in mathematics; (2) must have at least three years' full-time teaching experience; (3) must have a GPA of at least 3.0 for the last two years of undergraduate work; (4) must have taken the Graduate Record Examination (GRE), achieving at least the 50th percentile on the quantitative part of the general aptitude test; and (5) must have completed undergraduate work equivalent to that required for the ISU Teaching Major in Mathematics.

Requirements

Candidates for the MAMST degree must meet the following criteria:

1. Possession of a bachelor's degree and a secondary teaching certificate in mathematics.
2. Completion of a program of study approved by the Graduate Committee of the Department of Mathematics and the Dean of Graduate Studies.
3. Completion of a minimum of 30 credits beyond the bachelor's degree in courses numbered 500 or above.
4. Approval of semester papers as required by the Graduate Committee of the Department of Mathematics.
5. Satisfactory performance on comprehensive written and oral examinations on the student's program of study.

Mathematics Graduate Courses

MATH g507-408 Modern Algebra 3 credits each. Rings, fields, groups, algebras, and selected topics in abstract algebra. PREREQ: MATH 287 AND MATH 330.

MATH g521 Advanced Engineering Mathematics I 3 credits. Analysis of complex linear and nonlinear engineering systems using advanced techniques, including Laplace transforms, Fourier series and classical partial differential equations. Cross-listed as ENGR g521. PREREQ: MATH 360.

MATH g522 Advanced Engineering Mathematics II 3 credits. Cross-listed as ENGR g522. Analysis of complex linear and nonlinear engineering systems using advanced techniques, including probability and statistics, advanced numerical methods and variational calculus. PREREQ: ENGR g521 OR MATH g521.

MATH g523-g524 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 326, MATH 330, AND MATH 360.

MATH g535 Elementary Number Theory 3 credits. Diophantine equations, prime number theorems, residue systems, theorems of Fermat and Wilson, and continued fractions. PREREQ: MATH g507.

MATH g541 Introduction to Numerical Analysis 3 credits. Introduction to standard numerical techniques for solving problems dealing with nonlinear equations, systems of linear equations, differential equations, interpolation, numerical integration, and differentiation. PREREQ: MATH 326, MATH 330, AND MATH 360 OR PERMISSION OF INSTRUCTOR.

MATH g542 Introduction to Numerical Analysis 3 credits. Extension of MATH g541 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 g541. PREREQ: MATH g541.

MATH g550-g551 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 326.

MATH g557 Applied Regression Analysis 3 credits. Simple and multiple linear regression, polynomial regression, diagnostics, model selection, models with categorical variables. PREREQ: MATH 352 OR PERMISSION OF INSTRUCTOR.

MATH g558 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 352 OR PERMISSION OF INSTRUCTOR.

MATH g559 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 352 OR PERMISSION OF INSTRUCTOR.

MATH g565 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 360 AND EITHER MATH 326 OR MATH g521.

MATH 526 Elementary Analysis 3 credits. Rigorous calculus on the real line. Completeness, compactness and connectedness. Continuity, images of compact and connected sets. Series, uniform convergence. Differentiability, inverse functions, chain rule. Integration, fundamental theorem, improper integrals. Enrollment restricted to students admitted to the MAMST program and approved by the departmental graduate committee.

MATH 527 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. Enrollment restricted to students admitted to the MAMST program and approved by the departmental graduate committee.

MATH 530 Linear Algebra 3 credits. Rigorous treatment of vector spaces and the relationship between linear transformations and matrices. Inner product spaces, eigenvectors, and selected topics. Enrollment restricted to students admitted to the MAMST program and approved by the departmental graduate committee.

MATH 543 Modern Geometry 3 credits. Planar Euclidean geometry. Rigid motions and symmetry in the plane. Enrollment restricted to students admitted to the MAMST program and approved by the departmental graduate committee.

MATH 544 Modern Geometry 3 credits. Transformation groups. Topics from hyperbolic, projective, and other geometries. Enrollment restricted to students admitted to the MAMST program and approved by the departmental graduate committee.

MATH 552 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. Enrollment restricted to students admitted to the MAMST program and approved by the departmental graduate committee.

MATH 555 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. Enrollment restricted to students admitted to the MAMST program and approved by the departmental graduate committee.

MATH 556 Operations Research II 3 credits. Probabilistic models oriented towards business are treated. Selections from stochastic processes, Markov chains, queuing theory, inventory theory, reliability, decision analysis and simulation. Enrollment restricted to students admitted to the MAMST program and approved by the departmental graduate committee.

MATH 560 Differential Equations 3 credits. Theory and applications of ordinary differential equations. Enrollment restricted to students admitted to the MAMST program and approved by the departmental graduate committee.

MATH 562 Introduction to Complex Variables 3 credits. Introduction to the study of functions of a complex variable including the algebra and geometry of complex numbers, analytic functions, power series, integral theorems, and applications. Enrollment restricted to students admitted to the MAMST program and approved by the departmental graduate committee.

MATH 597 Professional Education Development Topics. Variable credit. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be repeated. 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 g524.

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 330 AND g508 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 330 AND MATH 424.

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 g523 AND MATH g541.

MATH 649 Thesis (M.S.) 1-6 credits. Graded S/U.

MATH 650 Thesis (D.A.) 1-6 credits. Graded S/U.

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 g550.

MATH 653 Advanced Topics in Probability and Statistics 3 credits. Topics such as experimental design, regression analysis, multivariate statistical analysis. PREREQ: MATH 352 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 326, MATH 327, AND MATH 360.

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 330 AND MATH g565.

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 g523 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 g573 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 327 AND MATH 330.

MATH 691 Directed Reading 1-3 credits. Reading and problems arranged on an individual basis with a faculty supervisor.

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.

FIN g550 Advanced Corporate Financial Management II 3 credits. Advanced development of financial statement analysis, financial planning, working capital management, and special topics emphasizing analysis and application to financial management decisions. PREREQ: FIN 315 AND MGT 216.

FIN g564 Entrepreneurial Finance 3 credits. This course develops financial and managerial skills important to students who are interested in pursuing careers in an entrepreneurial setting. Topics include: financial issues unique to entrepreneurial firms, development of skills with wide application in entrepreneurial situations, and financing sources available to entrepreneurial companies. PREREQ: FIN 315.

FIN g575 International Corporate Finance 3 credits. Study of financing investment projects abroad including the tapping of overseas capital markets, financing export transactions, hedging foreign exchange risks, and the control alternatives of international business. PREREQ: FIN 315, FIN 317, AND MGT 216.

FIN g578 Investments 3 credits. Fundamental principles in the risk-return valuation of financial instruments. Topics include the institutional framework in which securities are traded, modern portfolio theory, asset pricing, derivatives, and portfolio management. PREREQ: FIN 315, FIN 317 AND MGT 216.

FIN g584 Options and Futures 3 credits. Examination of the pricing and use of options, financial futures, swaps, and other derivative securities. PREREQ: FIN 315, FIN 317 AND MGT 216.

FIN g591 Seminar in Finance 3 credits. Reading, discussion and preparation of reports on selected topics. Restricted to senior and graduate students in business who have the consent of the instructor. May be repeated with instructor's permission for up to 6 credits.

FIN g592 Special Problems in Finance 2-3 credits. Research and reports on selected problems or topics in finance. Restricted to senior and graduate students in business who have the consent of the Dean. May be repeated under different title for a maximum of 9 credits with the permission of the major advisor and the Dean.

Health Care Administration Graduate Courses

HCA 625 Healthcare Law and Bioethics 3 credits. Comprehensive coverage of legal issues and the ethical implications of the law as applied to regulation and licensure, healthcare financing, Medicare and Medicaid, healthcare reform, and other relevant current issues. PREREQ: HCA 610 AND HCA 620.

HCA 665 Managed Care 3 credits. Introduction to, and analysis of, the evolving managed care industry. Select topics include managed care's relationship to traditional health care delivery models and the insurance industry; patient satisfaction and care delivery modes; clinical and managerial quality. PREREQ: HCA 382.

HCA 680 Applied Topics in Health Care 3 credits. Advanced readings and analysis in the areas of health economics, health finance, social aspects of medicine, bioethics, public health, and epidemiology. PREREQ: HCA 382.

Management Graduate Courses

MGT g510 Entrepreneurship 3 credits. Developing new business ideas, initiating a new enterprise, bringing new technology to the market; applying sound business practices involving management, marketing, accounting, finance and CIS to accommodate changing market opportunities. PREREQ: FIN 315, MGT 312, AND MKTG 325 OR PERMISSION OF INSTRUCTOR.

MGT g530 Advanced Operations/Production Management 3 credits. Study of problems on line management in organizations. Major sections include strategy, process analysis, manpower planning, inventories, scheduling, and control of operations. Emphasizes both behavioral and technical aspects of problem solving in the area of operations management. PREREQ: MGT 329 AND MGT 312.

MGT g534 Productivity and Quality 3 credits. Study of the factors involved in an organization's productivity and quality of product or service. PREREQ: MGT 329 AND MGT 312.

MGT g541 Organizational Behavior 3 credits. Case study approach designed to encourage independent thought in the application of behavioral theories and concepts of organizational problems. Emphasis on integrating theoretical concepts with patterns of organizational direction, control, communications and decision-making. PREREQ: MGT 312 OR PERMISSION OF INSTRUCTOR.

MGT g550 Manufacturing Strategy 3 credits. Study of the various production alternatives as critical factors in a company's competitive strategies. PREREQ: MGT 329 AND MGT 312.

MGT g562 Issues in Business and Society 3 credits. Seminar course designed to focus thinking on critical issues facing managers in making decision choices regarding employees and other stakeholder groups, the community, and the environment. PREREQ: SENIOR STANDING OR PERMISSION OF INSTRUCTOR.

MGT g565 International Business 3 credits. Special emphasis on managerial functions and critical elements of the management process in a firm operating under foreign economic, technological, political, social and cultural environments. PREREQ: ECON 201 AND FIN 317.

MGT g573 Human Resource Management 3 credits. Introduction to the methodology of employee selection, employment and development; personnel supervision and management; financial compensation; job analysis; behavioral tools and techniques employed to deal with personnel problems and contemporary problems of manpower management. PREREQ: MGT 312.

MGT g574 Advanced Human Resource Management 3 credits. In-depth study of selected personnel/human resources management topics, including employee selection, performance evaluation, and compensation administration. PREREQ: MGT 217 AND MGT g573.

MGT g580 Labor and Employment Law 3 credits. Study of state and federal laws, domestic and foreign, governing employment relationships, including labor-management relations, discrimination and employee rights, work place safety, compensation and benefits, and related topics. PREREQ: MGT 261 OR MGT g573.

MGT g582 Project Management 3 credits. Philosophy and tools of project management focusing on applied methodologies. Addresses project scope, breakdown structure, schedules, and closure following professionally accepted industry standards. PREREQ: MGT 329 OR PERMISSION OF INSTRUCTOR.

MGT g583 Industrial Relations 3 credits. Integrated study of principles and practices of collective bargaining and industrial relations. Discussion of methods and techniques in dealing with labor-management problems arising out of contract negotiations and administrations. PREREQ: MGT 312.

MGT g591 Seminar in Management and Organization 3 credits. Reading, discussion, and preparation of reports on selected topics. Restricted to senior and graduate students in business who have the consent of the instructor. May be repeated with instructor's permission for up to 6 credits.

MGT g592 Special Problems in Management and Organization 2-3 credits. Research and reports on selected problems or topics in management and organization. Restricted to senior and graduate students in business who have the consent of the Dean. May be repeated under a different title for a maximum of 9 credits with the permission of the major advisor and the Dean.

MGT 675 Environmental Management 3 credits. The study of environmental issues in managerial decision making. Total cost/benefit analysis, political ramifications, publicity, ethical considerations, global issues. Analysis of various business functions and their impact on short- and long-term concerns.

Marketing Graduate Courses

MKTG g505 Sales Force Management 3 credits. Determination of the amount and allocation of personal sales effort to be applied to the market and methods of organization, evaluating, and controlling this effort. PREREQ: MKTG 325.

MKTG g521 Services Marketing 3 credits. Examines the development, promotion, and management of services. Topics covered include strategic planning, delivery channels and promotional challenges inherent to services. PREREQ: MKTG 325.

ADD BACK INTO CATALOG - C.O.B. INADVERTENTLY REMOVED LAST YEAR

CE 665 Finite Element Methods 3 credits. Introduction to finite element methods applied to linear one- and two-dimensional problems. Application of the concept to specific problems in various fields of engineering and applied sciences. Cross-listed as ME 665. PREREQ: ENGR 264, ENGR 350, AND MATH 360.

CE 667 Structures and Mechanics Laboratory 3 credits. Strain gauge installation and circuitry. Strain measurements and analysis of variety of structural and mechanical systems. Dynamic measurements of various structures. COREQ: CE 531 OR PERMISSION OF INSTRUCTOR.

Computer Science Graduate Courses

CS g520 Computer Security and Cryptography 3 credits. Public key and private key cryptography, key distribution, cryptographic protocols, requisite mathematics and selected topics in the development of security and cryptography. PREREQ: CS 385.

CS g542 GUI Development 3 credits. Planning and construction of Graphical User Interfaces and essential software engineering concepts. Includes the use of a modern toolkit language. COREQ: CS 385. - CHANGE FROM CS 386.

CS g544 Image and Audio Processing 3 credits. Image/audio acquisition, quantization, spatial and spectral filters, sharpening, smoothing, restoration, compression, segmentation, Fourier and Wavelet transforms. PREREQ: CS 287, MATH 352, MATH 360.

CS g545 Data Compression 3 credits. A survey of modern techniques of data compression, both lossy and loss-less, and encryption. PREREQ: CS 386.

CS g551 Database Implementation 3 credits. Data models, relational algebra, SQL, data storage, index structures, query compilation and execution, concurrency control. PREREQ: CS 263, CS 385. COREQ: CS 386.

CS g560 Comparative Programming Languages 3 credits. Design of historical and contemporary programming languages, concentrating on promoting understanding of structural organization, data structures and typing, name structures, and control structures. PREREQ: CS 385. COREQ: CS g576. CHANGE THIS PREREQ TO "COREQ"

CS g570 Parallel Processing 3 credits. Topics in high performance computing: parallel architectures, SIMD, MIMD, SMP, NUMA models, message passing, cache coherency issues, MPI, PVM, parallel programming languages, the Beowulf cluster approach, applications. PREREQ: CS 386.

CS g576 Microprocessors 3 credits. Introduction to microprocessor architecture. Programming principles using machine and assembly languages, addressing modes, memory mapping, number representation and processing. Cross-listed as EE g526. PREREQ: CS 374.

CS g577 Operating Systems 3 credits. Processes description and control, threads, concurrency, memory management scheduling, I/O and files, distributed systems, security, networking. PREREQ: CS 263. COREQ: CS g576.

CS g580 Theory of Computation 3 credits. Finite representations of languages, deterministic and nondeterministic finite automata, context free languages, regular languages, parsing, Turing Machines, Church's Thesis, uncomputability, computational complexity classes. COREQ: CS 386. CHANGE PREREQ TO COREQ

CS g581 Compilers and Lexical Analysis 3 credits. Covers lexical analysis; syntax analysis; top-down, bottom-up, and LR parsing; syntax directed translation; type checking; code generation and optimization; and writing a compiler. PREREQ: CS g580.

CS g587 Topics in Computer Science 3 credits. Selected topics in Computer Science will be chosen depending on the instructor's interests. PREREQ: CS 386.

Electrical Engineering Graduate Courses

EE g513 Techniques of Computer-Aided Circuit Analysis and Design 3 credits. Automatic formulation of equations and fundamental programming techniques pertinent to computer-aided circuit analysis, design, modeling. May include sensitivity calculations, system analogies, optimization. PREREQ: CS 370, ENGR 340, 342.

EE g517 Probabilistic Signals and Systems 3 credits. Introductory probability theory. Density functions, moments, random variables. Normal, exponential distributions, Estimation of mean and variance. Correlation, spectral density. Random processes, response of linear systems to random inputs. PREREQ: EE 345.

EE g518 Communication Systems 3 credits. Basic principles of analysis and design of modern analog and digital communication systems, including transmission and reception. PREREQ: EE 329 AND EE 345.

EE g525 Mechatronics 3 credits. Basic kinematics, sensors, actuators, measurements, electronics, microprocessors, programmable logic controllers, feedback control, robotics and intelligent manufacturing. Cross-listed as ME g525. PREREQ: ENGR 340, ENGR 342, MATH 360.

EE g526 Microprocessors 3 credits. Introduction to microprocessor architecture. Programming principles using machine and assembly languages, addressing modes, memory mapping, number representation and processing. PREREQ: ENGR 374.

EE g527 Embedded Systems Engineering 2 credits. Integration of algorithms, software and hardware to design real-time and embedded systems for signal processing and control. PREREQ: EE g526. COREQ: EE g527L.

EE g527L Embedded Systems Engineering Laboratory 1 credit. Lab activities include the

complete process of design and implementation of embedded signal processing and control systems through the integration of algorithms, software, and hardware. COREQ: EE g527.

EE g529 Advanced Electronics 2 credits. Introduction to operational amplifiers and their applications, current mirrors, active loads, differential amplifiers, feedback and stability, filters, oscillators, Schmitt triggers, power amplifiers and voltage regulators. PREREQ: EE 329, 345. COREQ: EE g529L.

EE g529L Advanced Electronics Laboratory 1 credit. Laboratory course emphasizing transistor biasing, amplifiers and other basic analog circuit designs. COREQ: EE g529.

EE g532 Introduction to VLSI Design 3 credits. Photolithography, CMOS fabrication, MOSFET operation, CMOS passive elements, design rules and layout, CAD tools for IC design, invertors, static logic and transmission gates, dynamic logic. PREREQ: EE 329.

EE g533 Mixed Signal Design 3 credits. Analog IC design. Passive components, parasitic elements, component matching, IC layout techniques, amplifiers, current sources, comparators, op amps, noise, switched capacitor circuits. Includes lab work using design tools. PREREQ: EE g532.

EE g572 Electrical Machines and Power 3 credits. Theory and application of electrical machinery and transformers. Power and energy relationships in power systems, transmission lines, network solutions and symmetrical components. Includes 1-credit laboratory component. PREREQ: ENGR 340, ENGR 342, MATH 360.

EE g572L Electrical Machines and Power Laboratory 1 credit. Laboratory course emphasizing an experimental study of the fundamental physical phenomena and characteristics of transformers, induction motors, synchronous and direct current machines. COREQ: EE g572.

EE g573 Automatic Control Systems 3 credits. Study of continuous-time and discrete-time control systems using both frequency-domain and state-space techniques; topics include design methodology, performance specifications, analysis and design techniques. PREREQ: EE 345.

EE g574 Advanced Circuit Theory 3 credits. Methods of analog electrical circuit analysis and synthesis. Topics include signal flow graphs, multiport networks, simulation techniques, and topological methods for formulation of network equations. PREREQ: ENGR 340, ENGR 342 AND EE 345.

EE g575 Digital Signal Processing 3 credits. Design of recursive and non-recursive digital filters; frequency-domain analysis, fast Fourier transform techniques, spectral analysis; applications. Includes 1-credit laboratory component. PREREQ: EE 345.

EE g576 Semiconductor Processing and Fabrication 3 credits. Silicon semiconductor processing and basic integrated circuit fabrication. Physics, chemistry and technology in basic pro-

man performance. Relationship of engineering to corporate issues such as R&D, maintenance, training, operations, safety.

ENGR 501 Methods of Engineering 3 credits. Introduction to fundamental concepts of engineering related to hazardous waste management. Not counted toward graduation. PREREQ: PHYS 111.

ENGR 510 Introduction to Environmental Engineering 3 credits. Introduction to physical, chemical, and biological principles of solid and hazardous waste management, water and wastewater treatment, air pollutant control, and national environmental regulation. PREREQ: CHEM 112 AND ENGR 309, OR PERMISSION OF INSTRUCTOR.

ENGR 570 Survey of Hazardous Waste Management Problems 3 credits. Environmental, technical, political and economic aspects of hazardous waste management. Credit not given if UI ChE 570 or ISU ENVE 607 taken. PREREQ: ENGR 501 OR EQUIVALENT.

ENGR 572 Waste Treatment Technologies 3 credits. Procedures for characterization of hazardous waste sites, identification and application of physical, chemical, biological and thermal treatment. PREREQ: PERMISSION OF INSTRUCTOR.

ENGR 589 Principles of Hazardous Waste Site Remediation 3 credits. Restoration technologies for waste sites. Site characterization and clean-up methods for chemical, radioactive, mixed wastes in soils and water. Practical methodologies. Credit not granted if ENVE 614 taken. PREREQ: ENGR 570 OR ENVE 607.

ENGR 606 Environmental Law and Regulations 3 credits. Federal, state, local environmental regulations addressing environmental impact assessment; water and air pollution control, hazardous waste, resource recovery, reuses, toxic substances, occupational safety and health, radiation, siting, auditing, liability. Cross-listed with POLS 606. PREREQ: PERMISSION OF INSTRUCTOR.

ENGR 607 Hazardous Waste Management 3 credits. Management of hazardous and solid wastes, emphasis on CERCLA (Superfund) process for cleaning of uncontrolled hazardous waste sites and RECRA process for industrial treatment, storage, disposal facilities. PREREQ: MATH 508.

ENGR 609 Advanced Transport Phenomena 3 credits. Advanced theory and applications of heat, mass, and momentum transport; gases for correlation in engineering design of a variety of process equipment. PREREQ: ME/NE g576, CE/ME/NE 341, MATH g521.

ENGR 650 Thesis 1-6 credits. Thesis research must be approved by the student's advisory committee. Six credits may be used to satisfy the research requirements for the degree. Graded S/U.

ENGR 651 Seminar 1 credit. Current topics in engineering. Invited speakers will be used when possible. Students presentations required. May

be taken a maximum of four times. PREREQ: PERMISSION OF INSTRUCTOR. Graded S/U.

ENGR 652 Special Problems 1-3 credits. Special experimental, computational, or theoretical investigation leading to development of proficiency in some area of engineering. Formal report required. PREREQ: PRIOR PROJECT APPROVAL REQUIRED BY AN ENGINEERING FACULTY. May be graded S/U.

ENGR 655 Environmental Topics Seminar 1 credit. Environmental engineering and science topics related to hazardous waste characterization, cleanup, regulations. Includes case histories and presentations by graduate students and visiting speakers. PREREQ: PERMISSION OF INSTRUCTOR. Graded S/U.

ENGR 660 Special Project 3 credits. A significant project, involving engineering applications, toward the completion of M.S. program with non-thesis option. Includes a report and oral examination. Graded S/U.

Civil Engineering Graduate Courses

CE g531 Advanced Mechanics of Solids 3 credits. An introduction to elasticity, plasticity, and energy foundations, stability, plates. PREREQ: ENGR 350 AND MATH 360.

CE g534 Geotechnical Design 3 credits. Application of soil mechanics to design of foundations, retaining wall, stable slopes, buried conduits and pavement structures. Computer methods utilized. PREREQ: ENGR 350, AND CE 332.

CE g535 Hydraulic Design 3 credits. Hydraulic design of water control and transport structures, pipelines, and distribution systems. Computer methods utilized. PREREQ: CE/ME 341.

CE g536 Roadway Design 3 credits. Fundamentals of earthwork, route location, drainage, and pavement materials with application to geometric and pavement design of highways, streets and rural roads. PREREQ: ENGR 223; CE 301 OR 302. COREQ: CE 332.

CE g537 Geotechnical Engineering Laboratory 1 credit. Field and laboratory work on site investigation, soil sampling classification and testing. Evaluation of soil properties. Design of experiment. PREREQ: CE 332.

CE g540 Vibration Analysis 3 credits. Free vibration and forced response of single and multiple degree of freedom systems, normal modes, random vibrations. Cross-listed as ME g540. PREREQ: MATH 360, ENGR 220, AND ENGR 350.

CE g554 Basic Engineering Geology 3 credits. Geology applied to civil engineering projects; rock engineering classification systems and geotechnical parameters such as joint set orientation; ground behavior and underground construction. Preparation of baseline geotechnical reports. Cross-listed as GEOL g554. COREQ: GEOL 314 OR CE 332.

CE g555 Geologic Data Methods 3 credits. Geotechnical investigations for civil works projects. Geologic mapping for civil engineering purposes. Development of engineering geologic profiles. Core logging. Preparation of Geotechnical Data Reports for civil works projects. Cross-listed as GEOL g555. PREREQ: CE g554.

CE g561 Advanced Structural Analysis 3 credits. Analysis of statically indeterminate structures. Continuation of the use of classical methods. Introduction to computer methods in structural analysis including the use of commercially available software, and lateral load effects. PREREQ: CE 362.

CE g562 Design of Steel Structures 3 credits. Design of steel members and connections with emphasis on the AISC specifications. PREREQ: CE 362.

CE g564 Design of Concrete Structures 3 credits. Design of reinforced concrete beams, columns, and slabs. Introduction to pre-stressing. PREREQ: CE 362.

CE g565 Prestressed Concrete Structures 3 credits. Basic concepts in prestressed concrete design, full versus partial prestressing, flexural design, ultimate load design, beams with constant and variable tendon eccentricity, design of reinforcement for shear and torsion. PREREQ: CE g564.

CE g566 Design of Wood Structures 3 credits. Design of solid and laminated wood members and connections. Includes the design of wooden diaphragms for resisting lateral loads. PREREQ: CE 362.

CE g567 Structural Engineering Laboratory 1 credit. Measurement of stresses and load distribution through concrete, steel and wood components and structures. Design of experiment. PREREQ: CE 362.

CE g568 Behavior of Composite Materials 3 credits. Macro and micromechanical behavior of laminae and laminates; bending, buckling and vibration of laminated beams and plates. Cross-listed as ME g568. PREREQ: ENGR 350 AND MATH 230.

CE g575 Essentials of Geomechanics 3 credits. Essentials of rock fracture relevant to geological engineering including stress and strain, properties and classification of rock masses, rock fracture mechanisms. Cross-listed as GEOL g575. PREREQ: GEOL 421 OR ENGR 350.

CE g576 Engineering Geology Project 1 credit. Team projects studying actual problems in engineering geology. Cross-listed as GEOL g576. PREREQ: GEOL g554 OR CE g554.

CE g580 Earthquake Engineering 3 credits. Topics include: mechanism and characterization of earthquakes; seismic risk analysis; site and structural response; applications from points of view of engineer and geologist. PREREQ: GEOL 313 OR CE 332, OR PERMISSION OF INSTRUCTOR.

CHANGE CREDITS FROM 13 TO 3

CHANGE PREREQ FROM CE 361 TO CE 362

CE 652 Advanced Topics in Civil Engineering 3 credits. Discussion of current research topics conducted by engineering faculty from ISU and elsewhere. Topics can be arranged with instructor and advisor. PREREQ: PERMISSION OF INSTRUCTOR.

CE 664 Dynamics of Structures 3 credits. Evaluation of response of structures subjected to dynamic forces including earthquake-induced forces and deformations. Applications include single- and multi-degree of freedom systems, and continuous systems. PREREQ: CE/ME g540 OR PERMISSION OF INSTRUCTOR.

CE 665 Finite Element Methods 3 credits. Introduction to finite element methods applied to linear one- and two-dimensional problems. Application of the concept to specific problems in various fields of engineering and applied sciences. Cross-listed as ME 665. PREREQ: ENGR 264, ENGR 350, AND MATH 360.

CE 667 Structures and Mechanics Laboratory 3 credits. Strain gauge installation and circuitry. Strain measurements and analysis of variety of structural and mechanical systems. Dynamic measurements of various structures. PREREQ: CE 531 OR PERMISSION OF INSTRUCTOR.

Computer Science Graduate Courses

CS g520 Computer Security and Cryptography 3 credits. Public key and private key cryptography, key distribution, cryptographic protocols, requisite mathematics and selected topics in the development of security and cryptography. PREREQ: CS 385.

CS g542 GUI Development 3 credits. Planning and construction of Graphical User Interfaces and essential software engineering concepts. Includes the use of a modern toolkit language. COREQ: CS 385.

CS g544 Image and Audio Processing 3 credits. Image/audio acquisition, quantization, spatial and spectral filters, sharpening, smoothing, restoration, compression, segmentation, Fourier and Wavelet transforms. PREREQ: CS 287, MATH 352, MATH 360.

CS g545 Data Compression 3 credits. A survey of modern techniques of data compression, both lossy and loss-less, and encryption. PREREQ: CS 386.

CS g551 Database Implementation 3 credits. Data models, relational algebra, SQL, data storage, index structures, query compilation and execution, concurrency control. PREREQ: CS 263, CS 385. COREQ: CS 386.

CS g560 Comparative Programming Languages 3 credits. Design of historical and contemporary programming languages, concentrating on promoting understanding of structural organization, data structures and typing, name structures, and control structures. PREREQ: CS 385. COREQ: CS g576.

CS g570 Parallel Processing 3 credits. Topics in high performance computing: parallel archi-

tections, SIMD, MIMD, SMP, NUMA models, message passing, cache coherency issues, MPI, PVM, parallel programming languages, the Beowulf cluster approach, applications. PREREQ: CS 386.

CS g576 Microprocessors 3 credits. Introduction to microprocessor architecture. Programming principles using machine and assembly languages, addressing modes, memory mapping, number representation and processing. Cross-listed as EE g526. PREREQ: CS 374.

CS g577 Operating Systems 3 credits. Processes description and control, threads, concurrency, memory management scheduling, I/O and files, distributed systems, security, networking. PREREQ: CS 263. COREQ: CS g576.

CS g580 Theory of Computation 3 credits. Finite representations of languages, deterministic and nondeterministic finite automata, context free languages, regular languages, parsing, Turing Machines, Church's Thesis, uncomputability, computational complexity classes. COREQ: CS 386.

CS g581 Compilers and Lexical Analysis 3 credits. Covers lexical analysis; syntax analysis; top-down, bottom-up, and LR parsing; syntax directed translation; type checking; code generation and optimization; and writing a compiler. PREREQ: CS g580.

CS g587 Topics in Computer Science 3 credits. Selected topics in Computer Science will be chosen depending on the instructor's interests. PREREQ: CS 386.

Electrical Engineering Graduate Courses

EE g513 Techniques of Computer-Aided Circuit Analysis and Design 3 credits. Automatic formulation of equations and fundamental programming techniques pertinent to computer-aided circuit analysis, design, modeling. May include sensitivity calculations, system analogies, optimization. PREREQ: CS 370, ENGR 340, 342.

EE g517 Probabilistic Signals and Systems 3 credits. Introductory probability theory. Density functions, moments, random variables. Normal, exponential distributions, Estimation of mean and variance. Correlation, spectral density. Random processes, response of linear systems to random inputs. PREREQ: EE 345.

EE g518 Communication Systems 3 credits. Basic principles of analysis and design of modern analog and digital communication systems, including transmission and reception. PREREQ: EE 329 AND EE 345.

EE g525 Mechatronics 3 credits. Basic kinematics, sensors, actuators, measurements, electronics, microprocessors, programmable logic controllers, feedback control, robotics and intelligent manufacturing. Cross-listed as ME g525. PREREQ: ENGR 340, ENGR 342, MATH 360.

EE g526 Microprocessors 3 credits. Introduction to microprocessor architecture. Programming

principles using machine and assembly languages, addressing modes, memory mapping, number representation and processing. PREREQ: ENGR 374.

EE g527 Embedded Systems Engineering 2 credits. Integration of algorithms, software and hardware to design real-time and embedded systems for signal processing and control. PREREQ: EE g526. COREQ: EE g527L.

EE g527L Embedded Systems Engineering Laboratory 1 credit. Lab activities include the complete process of design and implementation of embedded signal processing and control systems through the integration of algorithms, software, and hardware. COREQ: EE g527.

EE g529 Advanced Electronics 2 credits. Introduction to operational amplifiers and their applications, current mirrors, active loads, differential amplifiers, feedback and stability, filters, oscillators, Schmitt triggers, power amplifiers and voltage regulators. PREREQ: EE 329, 345. COREQ: EE g529L.

EE g529L Advanced Electronics Laboratory 1 credit. Laboratory course emphasizing transistor biasing, amplifiers and other basic analog circuit designs. COREQ: EE g529.

EE g532 Introduction to VLSI Design 3 credits. Photolithography, CMOS fabrication, MOSFET operation, CMOS passive elements, design rules and layout, CAD tools for IC design, invertors, static logic and transmission gates, dynamic logic. PREREQ: EE 329.

EE g533 Mixed Signal Design 3 credits. Analog IC design. Passive components, parasitic elements, component matching, IC layout techniques, amplifiers, current sources, comparators, op amps, noise, switched capacitor circuits. Includes lab work using design tools. PREREQ: EE g532.

EE g572 Electrical Machines and Power 3 credits. Theory and application of electrical machinery and transformers. Power and energy relationships in power systems, transmission lines, network solutions and symmetrical components. Includes 1-credit laboratory component. PREREQ: ENGR 340, ENGR 342, MATH 360.

EE g572L Electrical Machines and Power Laboratory 1 credit. Laboratory course emphasizing an experimental study of the fundamental physical phenomena and characteristics of transformers, induction motors, synchronous and direct current machines. COREQ: EE g572.

EE g573 Automatic Control Systems 3 credits. Study of continuous-time and discrete-time control systems using both frequency-domain and state-space techniques; topics include design methodology, performance specifications, analysis and design techniques. PREREQ: EE 345.

EE g574 Advanced Circuit Theory 3 credits. Methods of analog electrical circuit analysis and synthesis. Topics include signal flow graphs, multiport networks, simulation techniques, and topological methods for formulation of network equations. PREREQ: ENGR 340, ENGR 342 AND EE 345.

CHANGE COREQ TO PREREQ

PTOT 624 Cardiac and Pulmonary Systems Management 5 credits. Physical therapy management of persons with dysfunction of the cardiac and/or pulmonary systems and related pathologies. Management by other health professional team members. PREREQ: BIOL 586, PTOT 605.

PTOT 626 Neurological Systems Management 5 credits. Physical therapy management of patients with central and peripheral neural and neuromuscular dysfunction. Survey of management by other health professionals. PREREQ: PTOT 502, PTOT 605.

PTOT 631 Clinical Affiliation I 2 credits. Application of physical therapy manual evaluation and treatment skills in acute and rehabilitation settings. PREREQ: BIOL 574, BIOL 586, PTOT 601, PTOT 621. Graded S/U.

PTOT 632 Clinical Affiliation II 2 credits. Clinical management practicum related to orthopedics, sports medicine, and/or cardiopulmonary problems. PREREQ: PTOT 622, PTOT 623, PTPT 624, PTOT 631. Graded S/U.

PTOT 640 Clinical Procedures Lab 1 credit. Laboratory exercises designed to practice and enhance overall skills in the initial evaluation and treatment of patients. COREQ: PTOT 620.

PTOT 641 Manual Evaluation and Treatment Lab 1 credit. Laboratory exercises designed to introduce basic theoretic and applied concepts and skills of patient handling, evaluation and modalities. COREQ: PTOT 621.

PTOT 642 Musculo-Skeletal System Management Lab 1 credit. Designed to develop preclinical competency in the evaluation, treatment, and management of disorders of the musculoskeletal system. Emphasis on the trunk and lower extremities. COREQ: PTOT 622.

PTOT 643 Physical Agents Laboratory 1 credit. Designed to develop clinical competence in the use of physical agents in the treatment of patients with specific pathologies. PREREQ: PTOT 620, PTOT 640. COREQ: PTOT 623

PTOT 646 Neurological Systems Management Lab 1 credit. Designed to develop preclinical competency in the evaluation, treatment, and management of the patient with neurological disorders including stroke, spinal cord injury, degenerative disease. COREQ: PTOT 626.

PTOT 648 Graduate Special Topics 1-3 credits. Individual or group critical analysis and study of a specific area of physical therapy patient management, administration, or research. PREREQ: 2ND-YEAR STUDENTS, AND/OR PERMISSION OF INSTRUCTOR.

PTOT 681 Theories and Resources to Guide Clinical Decision Making in Physical Therapy 3 credits. Study and application of applying evidence in physical therapy practice. The *Guide to PT Practice*, Physical Therapy differential diagnosis, and legal and ethical considerations will be addressed.

PTOT 682 Promoting Behavioral Change in Physical Therapist Practice 2 credits. Study of the theories of learning, compliance, and behavior modification as related to the application of prevention and wellness in physical therapy practice. PREREQ: PTOT 681.

PTOT 693 Contemporary Musculoskeletal System Management for Physical Therapists 2 credits. Applying evidence and elements of accepted practice to PT management of patients across the lifespan with musculoskeletal diagnoses. PREREQ: PTOT 682.

PTOT 694 Contemporary Cardiopulmonary System Management for Physical Therapists 2 credits. Applying evidence and elements of accepted practice to PT management of patients across the lifespan with cardiac and/or pulmonary diagnoses. PREREQ: PTOT 693.

PTOT 695 Contemporary Neurological System Management for Physical Therapists 2 credits. Applying evidence and elements of accepted practice to PT management of patients across the lifespan with neurological diagnoses. PREREQ: PTOT 694.

PTOT 696 Patient Case Seminar 2 credits. Selection and development of a patient case with which the student has worked to demonstrate application of evidence and the *Guide to Physical Therapist Practice* to Physical Therapy practice. PREREQ: PTOT 695. Graded S/U.

PTOT 701 Contemporary Multiple System Management for Physical Therapists 2 credits. Applying evidence and accepted clinical practice to PT management of patients across the lifespan with diagnoses affecting multiple systems. PREREQ: PTOT 696.

PTOT 705 Clinical Case Management 3 credits. Advisor guided development and completion of a patient case study demonstrating the application of evidence for PT examination, diagnoses, medical management, treatment and discharge. Oral presentation required. PREREQ: PTOT 701. Graded S/U.

PTOT 715 Physical Therapy Resource Management 4 credits. Application of business and health care administration principles to the practice of physical therapy; resource management strategies with emphasis on rural health care delivery. PREREQ: PTOT 612, PTOT 613, PTOT 621, PTOT 632.

PTOT 725 Multi-Systems Management 4 credits. Physical therapy management of persons with problems affecting multiple systems; burns, wounds, amputations, neoplasms, metabolic disorders. PREREQ: PTOT 621, PTOT 622, PTOT 623, PTOT 624.

PTOT 727 Geriatric Management 1 credit. Examination, evaluation and treatment of the elderly population with emphasis on the management of normal and pathological conditions. PREREQ: PTOT 626, PTOT 646. COREQ: PTOT 728.

PTOT 728 Lifespan Development 4 credits. Normal and abnormal development of neuromuscular, musculoskeletal, cardiopulmonary systems;

cognitive/perceptual and psychosocial behavior associated with life through adolescence. Evaluation, program planning and treatment strategies are introduced. PREREQ: BIOL 574, BIOL 586.

PTOT 733 Clinical Affiliation III 4 credits. Clinical management practicum related to patients with orthopedic, neurological, and multi-system problems. PREREQ: PTOT 615, PTOT 626/PTOT 646, AND PTOT 632. Graded S/U.

PTOT 734 Clinical Affiliation IV 4 credits. Clinical management practicum related to patients with orthopedic, neurological, cardiopulmonary, pediatric, and multisystem problems. PREREQ: PTOT 633. Graded S/U.

PTOT 735 Clinical Externship 4 credits. Clinical management experiences related to patient care, administration, or research in a variety of practice environments. PREREQ: PTOT 734. Graded S/U.

Department of Physician Assistant Studies

Chair and Program Director Schroeder
Medical Director D'Souza
Assistant Professors: Bunnage, Martin,
Phelps, Whitaker

Outcome Objectives:

Graduates of the ISU PA Program will, using appropriate evidence-based principles, achieve the following objectives:

1. History: Elicit an appropriate complete, interval or acute history from any patient in any setting.
2. Physical Examination: Perform complete and focused physical examination on a patient of any age, gender, or condition in any setting.
3. Diagnostic Studies: Identify, order, perform and interpret, cost-effective, diagnostic procedures, based on a history and physical examination findings, and assist the physician with other diagnostic procedures as directed.
4. Clinical Knowledge: Explain the etiology, diagnosis, and management options of health problems within the scope of PA practice.

CHANGE CREDITS FROM 5 TO 4.

HRD g503 Methods for Teaching Professional-Technical Education 3 credits. Teaching methods and techniques applicable to professional-technical education.

HRD g504 Evaluation in Corporate Training and Professional-Technical Education 3 credits. Designing and conducting evaluations at four levels in professional-technical education, and in business and industry training, including data analysis and preparation of evaluation reports.

HRD g505 Learning Styles Fundamentals 3 credits. Examination of the research related to learning styles and implications for curriculum and instruction. Includes presentation of an eight-step approach for teaching instructional content.

HRD g506 Grantwriting in Human Resource Training and Development 3 credits. Reasons for requesting a grant, goal setting, sample projects, identifying funding agencies, submitting a Request for proposal (RFP), elements of a good proposal, library resources, websites, and other references for grantwriting.

HRD g507 Technology in Human Resource Training and Development 3 credits. Using computers in HRTD: hardware, software, and peripherals. Advanced word processing, database development, spreadsheets, and presentations software. How to access and use the Internet. Web-based instruction software will be introduced.

HRD g509 Professional Readings and Writing in HRTD 3 credits. Exposure to the professional literature and websites of professional-technical education and corporate training, including practice in writing abstracts of journal articles using APA Style.

HRD g520 Selected Topics 1-8 credits. Examination and analysis of special topics for professional-technical education teachers/trainers. May be repeated up to 8 credits with different content. PREREQ: PERMISSION OF INSTRUCTOR.

HRD g531 Workforce Leadership 3 credits. Supervising in a professional-technical education or corporate training setting. Study human relation factors: planning, organizing, evaluation, staff development, labor relations, and personnel policies/practices.

HRD g544 Career Guidance and Special Needs in Professional-Technical Education 3 credits. Examine career guidance concepts, specialist services, special needs legislation, abilities and inabilities (both mental and physical), job seeking skills, and information sources.

HRD g550 Principles of Adult Education 3 credits. Provides an understanding of adult education as a field of academic inquiry and profes-

sional practice. Examines current and past trends and practices of adult learning.

HRD g557 Facilitating Adult Learning 3 credits. Study of the needs and interests of adult learners in business and industry using Andragogy. Planning of conferences and workshops for adult learners.

HRD g561 Directed Studies 1-4 credits. Individual work under staff guidance. Field research on specific occupational advances in technology. INSTRUCTOR APPROVAL REQUIRED PRIOR TO REGISTRATION.

HRD g564 Instructional Facilities Management 3 credits. Organization, safety and management of professional-technical education training facilities. An in-depth study of laboratory requirements and total facility planning.

HRD g565 Practicum in Corporate Training 3 credits. Development of training competencies in an actual business and industry settings. Actual participation as a trainer is required. PREREQ: PERMISSION OF INSTRUCTOR. Graded S/U.

HRD g568 Teaching Cooperative Education and School-to-Work 3 credits. Coordinating cooperative programs and school-to-work programs, occupational and job analysis, utilizing professional-technical advisory committees, organizing and advising vocational student organizations.

HRD g580 Advanced Technical Competency 1-4 credits. Advanced occupational skills and knowledge obtained from modern practice in selected field. For experienced professionals seeking advanced techniques in specialized areas of vocational education. PREREQ: INTERMEDIATE LEVEL STUDY IN THE SPECIALTY. PERMISSION OF INSTRUCTOR REQUIRED PRIOR TO REGISTRATION.

HRD 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. Must be graded S/U.

HRD 632 Curriculum Assessment and Research Applications in Training Management 3 credits. Examine factors affecting training curriculum and sources of information for these. Attention to available training research and action research for the training manager.

HRD 633 Program Planning and Development in HRTD 3 credits. Preparing local plans for professional-technical education or training programs for business and industry. State, federal and private sector guidelines for program implementation, and effectiveness explored.

HRD 634 Administration of HRTD 3 credits. Examination of the executive functions of the professional-technical or training administrator. Attention to budgeting, reporting, facility and equipment management, negotiations, advisory committees, and community relations.

HRD 635 Practicum in Training Administration 3 credits. An individually designed internship under the supervision of the faculty and an experienced local professional-technical administrator or training manager. PREREQ: PERMISSION OF INSTRUCTOR.

HRD 637 Practicum 3 credits. An individually designed practicum under the supervision of the HRTD faculty and an experienced practitioner in the field of Human Resource Training and Development. May be repeated for maximum of 6 credits.

HRD 640 Seminar in Training Management 1-2 credits. Current topics in the management of human resource development presented by department faculty and visiting lecturers. Maximum of 2 credits applied to the degree. Graded S/U.

HRD 645 Field Research Project in Training Management 3 credits. An individual field research project must be completed; a written report and oral explanation of the report will be required. Graded S/U.

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

HRD 660 Contemporary Issues in HRD 3 credits. Exploration of issues relating to the functions of HRTD - Individual Development, Career Development and Organizational Development. Emphasis on how these functions relate to the industrial/business environment.

HRD 661 Management Issues in HRD 3 credits. Critical analysis and discussion of contemporary issues relating to management in HRD. Includes review of current research and theory.

HRD 662 Distance Learning Delivery Practices 3 credits. Exploration of the distance delivery medium including on-screen practices, media development, curriculum planning, instructional strategies, technical support. Includes review of research and theory relating to distance learning.

HRD 663 Instructional System Evaluation 3 credits. Critical analysis and discussion of the roles of evaluation in corporate training. Emphasis on theories of program and curriculum evaluation.

HRD 664 Topics in Human Resource Development 3 credits. Critical analysis of current topics in human resource development. Opportunities will be provided for students to study independently with specialists in topic areas.

REMOVE PREREQ

REMOVE PREREQ

HRD 634 PREREQ

REMOVE PREREQ

REMOVE PREREQ

REMOVE PREREQ

NEW

ences must serve on the committee. The GFR is approved by the Office of Graduate Studies, though students may recommend to the Dean of Graduate Studies a faculty member from another department to serve as GFR. The initial committee meeting should be held in the first semester of the program. However, the GFR need only attend the final oral comprehensive examination.

Written and Oral Comprehensive Examination

The comprehensive examination consists of a written and an oral portion. The written examination tests the student's knowledge of biological and educational topics commensurate with the student's program of study. The oral examination assesses the student's capability to communicate answers effectively to areas of weakness indicated by the written examination.

The written comprehensive examination must be completed no later than six weeks before the end of the student's last semester. Each member of the student's committee (excluding the GFR) will submit a section of the examination on which the student will be expected to write. The entire examination should be designed to require no more than 10 hours for completion. Each committee member will individually determine whether the student passed his/her section of the examination; the student must pass at least 75% of these sections. If the written examination is not passed, the committee may recommend that the student not proceed further in the program, or that the student re-take those portions of the written examination that were not passed.

The oral comprehensive examination should be scheduled within two weeks of satisfactory completion of the written examination, and no later than three weeks prior to the end of the semester. The oral examination will consist of questions posed by the student's advisory committee after they have reviewed the results of the written examination. Failure to pass the oral examination can result in the recommendation that the student not proceed further in the program, or that the oral examination be re-taken at a later date. Failure to pass the comprehensive examination twice results in automatic termination from the program.

Master of Clinical Laboratory Science

The M.S. program in Clinical Laboratory Science requires an original research project that culminates in a thesis, a minimum of 32 credits earned in graduate courses (including research and thesis), and expertise in core conceptual areas of Clinical Laboratory Science.

Requirements

Candidates must have a 3.0 GPA for upper division credits taken at the undergraduate level. Scores in the verbal, quantitative and analytical writing portions of the GRE must be submitted; scores of at least the 35th percentile on the verbal and quantitative sections of the GRE are required. If either the GPA or the GRE requirement is not met, the department may choose to admit the candidate to Conditional status.

In addition, admission into the M.S. program will require meeting one of the two following conditions:

1) Professionals already credentialed as Clinical Laboratory Scientists or Medical Technologists: completion of a B.S. or B.A. degree in a related science from an accredited university or college and certification by either NCA or ASCP as a Clinical Laboratory Scientist or Medical Technologist. Categorical certification by either of these registries does not wholly satisfy this requirement

OR

2) Professional entry-level M.S. completing certification requirements while pursuing the M.S. degree: completion of a B.S. or B.A. degree from an accredited institution and completion of the following requirements either prior to entry or during the M.S. program:

- a) at least 16 semester hours of chemistry to include inorganic chemistry and some combination of organic, biochemistry and analytical chemistry
- b) 16 semester hours of biology, to include at least one semester in microbiology
- c) one semester of calculus

The core curriculum in the Clinical Laboratory Science program is accredited by NAACLS (National Accrediting Agency for Clinical Laboratory Science). Successful completion qualifies the candidate to take the national credentialing examinations offered by NCA and ASCP.

Core Curriculum Areas

The three core areas for Clinical Laboratory Science that all students must include in their programs of study are:

Scientific subject core area including pathology, hematology, immunohematology, clinical chemistry, genetics microbiology and molecular biology.

Management core area including information management, statistics, Westgard rules, predictive value theory, personnel, financial organizational and regulatory concepts.

Educational core area including educational design and adult learning for professionals within and outside the clinical laboratory setting.

Students are expected to have significant exposure to these core areas by the time they complete their degree requirements. Students coming in with NCA or ASCP credentials have already demonstrated mastery of the core scientific subject area; those who do not have these credentials will be expected to demonstrate mastery by an examination administered by the program before they finish their M.S. studies.

Students may opt to gain expertise through a variety of mechanisms including independent readings, formal course work, seminars or special projects. For those students who are not already credentialed, an additional 6 credits at the undergraduate level, BIOL 411N Clinical Experience, must be taken. This is usually during the summer semester. This does not count toward the 32 graduate credit requirement.

Required Courses for the M.S. in CLS used to satisfy the core areas described above:

BIOL 411N	Clinical Laboratory Site Experience	6 cr
OR		
NCA/ASCP certification (does not count for graduate credit)		
BIOL 511S	Laboratory Analysis and Management	3 cr
BIOL 691-692	Seminar	2 cr
BIOL 648	Graduate Problems (research)	4 cr
BIOL 650	Thesis	6 cr

The remaining credits are to be taken from graduate-level courses (a minimum of 16 at the 600 level) in one or more of the core areas with the approval of the candidate's committee.

Three graduate-level courses (6 to 9 credits) approved by the graduate student's committee may be taken from outside the department (to be taken at Boise State University, Idaho State University, or other approved university) and may include adult education, management, and/or medical informatics.

The thesis project may be in a core scientific subject, management or education or a combination thereof.

ences must serve on the committee. The GFR is approved by the Office of Graduate Studies, though students may recommend to the Dean of Graduate Studies a faculty member from another department to serve as GFR. The initial committee meeting should be held in the first semester of the program. However, the GFR need only attend the final oral comprehensive examination.

Written and Oral Comprehensive Examination

The comprehensive examination consists of a written and an oral portion. The written examination tests the student's knowledge of biological and educational topics commensurate with the student's program of study. The oral examination assesses the student's capability to communicate answers effectively to areas of weakness indicated by the written examination.

The written comprehensive examination must be completed no later than six weeks before the end of the student's last semester. Each member of the student's committee (excluding the GFR) will submit a section of the examination on which the student will be expected to write. The entire examination should be designed to require no more than 10 hours for completion. Each committee member will individually determine whether the student passed his/her section of the examination; the student must pass at least 75% of these sections. If the written examination is not passed, the committee may recommend that the student not proceed further in the program, or that the student re-take those portions of the written examination that were not passed.

The oral comprehensive examination should be scheduled within two weeks of satisfactory completion of the written examination, and no later than three weeks prior to the end of the semester. The oral examination will consist of questions posed by the student's advisory committee after they have reviewed the results of the written examination. Failure to pass the oral examination can result in the recommendation that the student not proceed further in the program, or that the oral examination be re-taken at a later date. Failure to pass the comprehensive examination twice results in automatic termination from the program.

Master of Clinical Laboratory Science

The M.S. program in Clinical Laboratory Science requires an original research project that culminates in a thesis, a minimum of 32 credits earned in graduate courses (including research and thesis), and expertise in core conceptual areas of Clinical Laboratory Science.

Requirements

Candidates must have a 3.0 GPA for upper division credits taken at the undergraduate level. Scores in the verbal, quantitative and analytical writing portions of the GRE must be submitted; an average score above the 50th percentile on the verbal and quantitative portions of the GRE is required. If either the GPA or the GRE requirement is not met, the department may choose to admit the candidate to Conditional status.

In addition, admission into the M.S. program will require meeting one of the two following conditions:

1) Professionals already credentialed as Clinical Laboratory Scientists or Medical Technologists: completion of a B.S. or B.A. degree in a related science from an accredited university or college and certification by either NCA or ASCP as a Clinical Laboratory Scientist or Medical Technologist. Categorical certification by either of these registries does not wholly satisfy this requirement

OR

2) Professional entry-level M.S. completing certification requirements while pursuing the M.S. degree: completion of a B.S. or B.A. degree from an accredited institution and completion of the following requirements either prior to entry or during the M.S. program:

- a) at least 16 semester hours of chemistry to include inorganic chemistry and some combination of organic, biochemistry and analytical chemistry
- b) 16 semester hours of biology, to include at least one semester in microbiology
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Students may opt to gain expertise through a variety of mechanisms including independent readings, formal course work, seminars or special projects. For those students who are not already credentialed, an additional 6 credits at the undergraduate level, BIOL 411N Clinical Experience, must be taken. This is usually during the summer semester. This does not count toward the 32 graduate credit requirement.

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BIOL 650	Thesis	6 cr

The remaining credits are to be taken from graduate-level courses (a minimum of 16 at the 600 level) in one or more of the core areas with the approval of the candidate's committee.

Three graduate-level courses (6 to 9 credits) approved by the graduate student's committee may be taken from outside the department (to be taken at Boise State University, Idaho State University, or other approved university) and may include adult education, management, and/or medical informatics.

The thesis project may be in a core scientific subject, management or education or a combination thereof.

College of Pharmacy

Joseph F. Steiner, Pharm.D., Dean
Paul S. Cady, Ph.D., Associate Dean

Degree Programs

The College of Pharmacy offers two graduate degrees: the Master of Science (M.S.) in Pharmaceutical Sciences and the Doctor of Philosophy (Ph.D.) in Pharmaceutical Sciences. The College also offers a professional doctorate degree, Doctor of Pharmacy (Pharm.D.). The Pharm.D. is described in the College of Pharmacy section of the Idaho State University Undergraduate Catalog.

Department of Pharmacy Practice and Administrative Sciences

Chair and Professor Culbertson

Professors: Adamcik, Cady, Erramouspe, R. Force, Hurley, Mason, Rhodes, Steiner

Associate Professors: Gould, Hefflinger, Heyneman, Liday, Lott, Madaras-Kelly, Oliphant

Assistant Professor: Carr

Clinical Professor: Jue

Clinical Associate Professor: Woon

Clinical Assistant Professors: Bailey, Brandt, Casperson, Cleveland, Hachey, Johnson, Murdock, Owens, Pettinger

Clinical Instructor: W. Force

Visiting Associate Professor: Hunt

Adjunct Associate Professor: Hoagland

Clinical Affiliate Faculty: Bryon, Flowers, Gundlach, Munkelt, Payne, Reed, Robinson, Sawyer, Shea, Silcock, Stander, Vanden Bosch, Wilson, Young

Emeritus Faculty: Galizia, Higgins, Sharp

Department of Pharmaceutical Sciences

Chair and Professor Risinger

Professors: Daniels, Devaud, Diedrich, Dodson, Lai

Associate Professors: Bhushan, Bigelow, Eley, Olah, Wilson

Assistant Professor: Selvage

Program Goal:

- To train and prepare students to succeed in their chosen career path in the variety of areas in pharmaceutical sciences.

Program Objectives:

- To vigorously train students in the department focus areas;
- To train students to be effective communicators of their knowledge and scientific findings;
- To expose students to multidisciplinary approaches to problem-solving so that they can use them to solve scientific problems;
- To educate students to be competent practitioners of the scientific method;
- To expose students to a variety of professional strategies so that, upon finishing their training, they become adaptable and successful in achieving their long-range goals.

Doctor of Philosophy

Programs of study leading to the Doctor of Philosophy (Ph.D.) degree are offered through the Department of Pharmaceutical Sciences (emphasis areas of Pharmacology, Pharmacokinetics, Biopharmaceutics, and Biopharmaceutical Analysis) and through the Department of Pharmacy Practice and Administrative Sciences (emphasis in Pharmacy Administration). The Ph.D. degree is a research degree and will be conferred upon the completion and report of a substantial body of original work.

Admission Requirements

1. Professional degree in pharmacy or a baccalaureate degree in a related field with a GPA of not less than 3.0 for the final two years;

2. Achieve at least the 50th percentile in two of the Graduate Record Examination aptitude section scores (Verbal, Quantitative or Analytical). Requirements may differ within the College of Pharmacy's two Departments; check with the Department of Pharmaceutical Sciences or the Department of Pharmacy Practice and Administrative Sciences for specific requirements; and

3. Three letters of recommendation.

Students not meeting the minimum admission requirements for the Ph.D. program may reapply to continue on for the Ph.D. degree following successful completion of the M.S. in Pharmaceutical Sciences program.

Each beginning graduate student will have a graduate advisor/program committee assigned from the graduate faculty upon entry into the program. The student's advisor/graduate program committee will assist the student in preparing an appropriate program of study of course work. While there is no fixed credit requirement for the Ph.D. in Pharmaceutical Sciences, the overall program of study will include at least 72 semester hours of graduate course work. The student is expected to have selected a major advisor from the graduate faculty no later than the end of his/her third semester in residence.

A grade below B is unsatisfactory and will not be counted toward fulfilling the minimum requirements for the degree. Upon recommendation of the student's advisor/graduate program committee and with the approval of the Head of the Graduate Program, a student may be required to withdraw at any time for failure to maintain satisfactory progress toward the degree.

When course work is essentially complete candidates for the Ph.D. degree complete a series of written and oral comprehensive examinations which may include the defense of a written research proposal. Upon completion of all proposed research, the student's findings will be reported in the form of a dissertation to be prepared in accordance with Department and Graduate School guidelines. While the dissertation must be defended to the graduate faculty of the College, acceptability only requires the affirmative vote of a majority of the student's committee members.