The graduate and undergraduate catalogs are available on the Web from BYU’s homepage (www.byu.edu) or within the Route Y/AIM system.

About This Catalog
The university makes every effort to ensure the accuracy of the contents of this catalog but reserves the right to make changes at any time without prior notice. Since change is a part of university life, curriculum and program changes will likely occur during the time the 2008–2009 Graduate Catalog is in circulation. Students are advised to consult the following sources for current and specific information:
1. The appropriate university department or advisor.
2. The class schedule, which includes up-to-date information on courses offered, class hours, class locations, and the latest calendar dates, fees, and registration details. Access the class schedule on the Web from the BYU home page (www.byu.edu) or within the Route Y/AIM system.

It is the student’s responsibility to learn of and abide by current policies and requirements. In the event of change, every reasonable effort will be made to permit students affected to complete their programs or similar programs.

Policies and requirements in the General Information section of this catalog reflect standards of minimum performance and may be less stringent than those established by individual departments. Most departments have printed materials of their own describing in detail their programs, deadlines, expectations, and opportunities for financial assistance. Therefore, any potential applicants should notify prospective departments of their interest and request printed information from those departments. Because some application deadlines are as early as January for fall admission, and some departments admit new students only once a year, early inquiry is recommended.

The Law School and the Graduate School of Management require different application forms than that used for other graduate programs. Furthermore, the Law School publishes its own bulletin and follows a different calendar. Prospective applicants to these professional schools should write directly to them.

Statement of Nondiscrimination — Admission to Brigham Young University is nondiscriminatory. The university admits persons regardless of race, color, national origin, religion, age, gender, veteran status, or disability who meet university and department academic requirements and agree to abide by the university’s standards of conduct and honor code.

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THE UNIVERSITY

Brigham Young University offers an exceptional educational opportunity for the well-prepared graduate student who is seeking an environment where learning experiences with dedicated scholars characterize graduate study. Established and sponsored by The Church of Jesus Christ of Latter-day Saints, BYU is the largest privately owned university in the United States. The university president, Cecil O. Samuelson, is directly responsible to the board of trustees, led by the president of The Church of Jesus Christ of Latter-day Saints and composed of Church authorities. In a time of constantly changing human values and increased challenges for higher education, BYU holds steadfastly to a singular vision that combines reasoned and revealed learning. Along with extensive undergraduate programs, BYU offers master’s and doctoral degrees in a variety of disciplines through fifty-three graduate departments. In addition, the Law School and the Marriott School of Management offer juris doctorate and master’s graduate degrees.

Founded in 1875 as Brigham Young Academy, the campus has grown from one building to 500 buildings on more than 600 acres. Its first class of twenty-nine students was taught by the academy’s founding scholar, Karl G. Maeser. Now more than 1,500 full-time faculty instruct 33,000 students. From its modest beginnings Brigham Young University has grown to become a distinguished institution of private higher education. At BYU teaching and scholarly research are valued as essential complements of one another. Faculty and students work side by side in collegial scholarship enhanced by mutual commitment to the highest ideals of professional ethics and spiritual values.

Situated at the foot of the beautifully rugged Wasatch Range of the Rocky Mountains and bounded on the west by twenty-three-mile-long Utah Lake, the campus is the focal point of a city of 110,000 and a valley of 331,000. Beyond it to the south and east are spectacular areas of vast sandstone canyons and monoliths, several of which are national parks. Forty-five miles north is Salt Lake City.

The faculty at BYU have been schooled at some of the leading universities of the nation as well as of other countries, and many of them have achieved national and international prominence as teachers and scholars.
The mission of Brigham Young University—founded, supported, and guided by The Church of Jesus Christ of Latter-day Saints—is to assist individuals in their quest for perfection and eternal life. That assistance should provide a period of intensive learning in a stimulating setting where a commitment to excellence is expected and the full realization of human potential is pursued.

All instruction, programs, and services at BYU, including a wide variety of extracurricular experiences, should make their own contribution toward the balanced development of the total person. Such a broadly prepared individual will not only be capable of meeting personal challenge and change but will also bring strength to others in the tasks of home and family life, social relationships, civic duty, and service to mankind.

To succeed in this mission the university must provide an environment enlightened by living prophets and sustained by those moral virtues which characterize the life and teachings of the Son of God. In that environment these four major educational goals should prevail:

• All students at BYU should be taught the truths of the gospel of Jesus Christ. Any education is inadequate which does not emphasize that His is the only name given under heaven whereby mankind can be saved. Certainly all relationships within the BYU community should reflect devout love of God and a loving, genuine concern for the welfare of our neighbor.

• Because the gospel encourages the pursuit of all truth, students at BYU should receive a broad university education. The arts, letters, and sciences provide the core of such an education, which will help students think clearly, communicate effectively, understand important ideas in their own cultural tradition as well as that of others, and establish clear standards of intellectual integrity.

• In addition to a strong general education, students should also receive instruction in the special fields of their choice. The university cannot provide programs in all possible areas of professional or vocational work, but in those it does provide the preparation must be excellent. Students who graduate from BYU should be capable of competing with the best in their fields.

• Scholarly research and creative endeavor among both faculty and students, including those in selected graduate programs of real consequence, are essential and will be encouraged.

In meeting these objectives BYU’s faculty, staff, students, and administrators should also be anxious to make their service and scholarship available to The Church of Jesus Christ of Latter-day Saints in furthering its work worldwide. In an era of limited enrollments, BYU can continue to expand its influence both by encouraging programs that are central to the Church’s purposes and by making its resources available to the Church when called upon to do so.

We believe the earnest pursuit of this institutional mission can have a strong effect on the course of higher education and will greatly enlarge Brigham Young University’s influence in a world we wish to improve.
WELCOME to Brigham Young University. Our graduate study programs are designed to provide you with enriching experiences that expand your ability to make a difference in the world. In many ways, graduate study sets the expectations and standards at a university—the depth of disciplinary knowledge, the breadth of scientific and creative discovery, and the rigor and virtue of individual and collective investment.

Through graduate study you become not only a consumer but also a contributor to the world’s store of knowledge, be it artistic or scientific, applied or theoretical. At the graduate level, teacher and student work as partners in these important endeavors.

This catalog contains information about BYU’s degree requirements, policies, and course offerings, as well as its distinctive mission. I hope the resources available to you on this campus guide your efforts to observe more keenly, to contemplate more deeply, to see more insightfully, and to enjoy more thoroughly your study at BYU.

Cecil O. Samuelson

Cecil O. Samuelson
The following terms and abbreviations are used throughout the catalog.

**Course Number.** This catalog does not list courses numbered below 500. For listings of undergraduate courses, see the BYU Undergraduate Catalog. Courses numbered below 500 are undergraduate courses, courses numbered 500–599 are either graduate courses or advanced undergraduate courses, and courses numbered 600 and above (600–799) are graduate courses. Most, but not all, 500-level courses can count toward a graduate degree.

**R.** An R following the course number designates a course that may be repeated for credit.

**Credit Hour Designation.** The number that follows each course title is the number of semester hours of credit designated for the class.

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COLLEGES AND SCHOOLS

DAVID O. MCKAY SCHOOL OF EDUCATION

301 MCKB
Provo, UT 84602-5095
(801) 422-3694

Dean: K. Richard Young, Professor, Counseling Psychology and Special Education
Associate Dean, Graduate Studies: Barbara Culatta, Professor, Communication Disorders

The departments in the McKay School of Education offer the following graduate degrees:

Communication Disorders
   MS Community Disorders
Counseling Psychology and Special Education
   MS Special Education
   EdS School Psychology
   PhD Counseling Psychology
Educational Leadership and Foundations
   MEd, PhD Educational Leadership
Instructional Psychology and Technology
   MS, PhD Instructional Psychology and Technology
Teacher Education
   MA Teacher Education

IRA A. FULTON COLLEGE OF ENGINEERING AND TECHNOLOGY

270 CB
Provo, UT 84602-1345
(801) 422-4101

Dean: Alan R. Parkinson, Professor, Mechanical Engineering
Associate Dean, Graduate Studies: John N. Harb, Professor, Chemical Engineering
Associate Dean, Curriculum and Undergraduate Studies: Spencer P. Magleby, Professor, Mechanical Engineering

The departments and school in the College of Engineering and Technology offer the following graduate degrees:

Chemical Engineering
   MS, PhD Chemical Engineering
Civil and Environmental Engineering
   MS, PhD Civil Engineering
Electrical and Computer Engineering
   MS, PhD Electrical and Computer Engineering
Mechanical Engineering
   MS, PhD Mechanical Engineering
Technology, School of
   MS Technology
COLLEGE OF FAMILY, HOME, AND SOCIAL SCIENCES

990 SWKT
Provo, UT 84602-5535
(801) 422-2083

Dean: David B. Magleby, Professor, Political Science
Associate Dean, Graduate Studies and Curriculum: Elaine Walton, Professor, Social Work
Associate Dean, Faculty Development: Craig H. Hart, Professor, Marriage, Family, and Human Development
Associate Dean, Research: Stephen J. Bahr, Professor, Sociology

The departments, schools, and interdisciplinary program in the College of Family, Home, and Social Sciences offer the following graduate degrees:

Anthropology
  MA  Anthropology
  Cert  Museum Practices

Family Life, School of
  MS, PhD  Marriage, Family, and Human Development
  MS, PhD  Marriage and Family Therapy

History
  MA  History

Psychology
  PhD  Clinical Psychology
  MS, PhD  Psychology

Public Policy
  MPP  Public Policy

Social Work, School of
  MSW  Social Work

Sociology
  MS  Sociology

COLLEGE OF FINE ARTS AND COMMUNICATIONS

A-501 HFAC
Provo, UT 84602-6302
(801) 422-2819

Dean: Stephen M. Jones, Professor, School of Music
Associate Dean, Graduate Studies: Rory Scanlon, Professor, Theatre and Media Arts

The departments and school in the College of Fine Arts and Communications offer the following graduate degrees:

Communications
  MA  Mass Communications

Music, School of
  MA, MM  Music

Theatre and Media Arts
  MFA  Production Design
  MA  Theatre and Media Arts

Visual Arts
  MA  Art Education
  MA  Art History and Curatorial Studies
  MFA  Studio Art
COLLEGE OF HEALTH AND HUMAN PERFORMANCE

212 RB  
Provo, UT 84602-2113  
(801) 422-2645

Dean: Sara Lee Gibb, Professor, Dance  
Associate Dean, Graduate Studies: Gordon B. Lindsay, Professor, Health Science

The departments in the College of Health and Human Performance offer the following degrees:

Exercise Sciences  
   MS   Exercise Sciences  
   PhD   Exercise Sciences

Health Science  
   MPH   Public Health

Recreation Management and Youth Leadership  
   MS   Youth and Family Recreation

COLLEGE OF HUMANITIES

4002 JFSB  
Provo, UT 84602-6704  
(801) 422-2775

Dean: John R. Rosenberg, Professor, Spanish and Portuguese  
Associate Dean: Gregory D. Clark, Professor, English

The departments in the College of Humanities offer the following graduate degrees:

English  
   MA   English

French and Italian  
   MA   French Studies

Germanic and Slavic Languages  
   MA   German Studies

Humanities, Classics, and Comparative Literature  
   MA   Comparative Studies

Linguistics and English Language  
   MA   Linguistics  
   MA   Teaching English to Speakers of Other Languages  
   Cert   Teaching English to Speakers of Other Languages (TESOL Certificate)

Spanish and Portuguese  
   MA   Portuguese  
   MA   Spanish

The Collegewide Language Acquisition and Teaching Program offers an MA with specializations in the following languages:

Arabic   German  
Chinese   Japanese  
French   Russian
J. REUBEN CLARK LAW SCHOOL
341 JRCB
Provo, UT 84602-8000
(801) 422-4274

Dean: Kevin J Worthen
Associate Dean: James D. Gordon III
Associate Dean: James R. Rasband
Associate Dean: Scott W. Cameron
Associate Dean: Katherine D. Pullins
Assistant Dean and Graduate Coordinator: Carl Hernandez III
Assistant Dean: Mary H. Hoagland

Juris Doctorate (JD)
The J. Reuben Clark Law School offers a six-semester course of graduate professional study leading to the juris doctorate (JD) degree. Information about legal education, admissions standards and procedures, and related matters can be obtained from the admissions office of the Law School, 340 JRCB, Provo, UT 84602-8000, or by visiting the Law School’s Web site located at www.law2.byu.edu/admissions/newstudents.php.

Master of Law (LLM)
The master of law (LLM) degree is conferred upon successful completion of a minimum 24 credit hours earned during at least two semesters in residence following completion of a JD degree or its equivalent outside the United States. Information and applications are available through the admissions office of the Law School, 340 JRCB, Provo, UT 84602-8000, or by visiting the Law School’s Web site at www.law2.byu.edu/admissions/newstudents.php.

COLLEGE OF LIFE SCIENCES
301 WIDB
Provo, UT 84602-5250
(801) 422-3963

Dean: Rodney T. Brown, Professor, Nutrition, Dietetics, and Food Science
Associate Dean, Graduate Studies: John D. Bell, Professor, Physiology and Developmental Biology

The departments in the College of Life Sciences offer the following graduate degrees:

**Biology**
- MS  Biological Science Education
- MS, PhD  Biology

**Microbiology and Molecular Biology**
- MS, PhD  Microbiology
- MS, PhD  Molecular Biology

**Nutrition, Dietetics, and Food Science**
- MS  Food Science
- MS  Nutritional Science

**Physiology and Developmental Biology**
- MS, PhD  Neuroscience
- MS, PhD  Physiology and Developmental Biology

**Plant and Wildlife Sciences**
- MS  Agronomy
- MS  Genetics and Biotechnology
- MS, PhD  Wildlife and Wildlands Conservation
MARRIOTT SCHOOL OF MANAGEMENT
730 TNRB
Provo, UT 84602-3113
(801) 422-4121

Dean: Ned C. Hill, Professor, Business Management
Associate Dean: W. Steve Albrecht, Professor, Accounting
Associate Dean: Michael P. Thompson, Associate Professor, Organizational Leadership and Strategy

The Marriott School offers both undergraduate and graduate programs. The Graduate School of Management comprises four professional programs:

- Master of Accountancy
- Master of Business Administration
- Master of Information Systems Management
- Master of Public Administration

COLLEGE OF NURSING
500 SWKT
Provo, UT 84602-5532
(801) 422-4144

Dean: Beth V. Cole, Professor
Associate Dean, Graduate Affairs, Research, and Scholarship: Mary Williams, Associate Professor, Nursing

The College of Nursing offers a nationally accredited program leading to the master of science degree. Areas of specialization include Family Nurse Practitioner and Adult Medical-Surgical Clinical Nurse Specialist.

MS Nursing
COLLEGE OF PHYSICAL AND MATHEMATICAL SCIENCES

N-181 ESC
Provo, UT 84602-4605
(801) 422-2674

Dean: Scott D. Summerfeldt, Professor
Associate Dean: Tom Sederberg, Professor,
Computer Science
Associate Dean: Dana T. Griffen, Professor,
Geological Sciences

The departments in the College of Physical and Mathematical Sciences offer the following graduate degrees:

Chemistry and Biochemistry
  MS, PhD  Biochemistry
  MS, PhD  Chemistry

Computer Science
  MS, PhD  Computer Science

Geological Sciences
  MS  Geology

Mathematics
  MS, PhD  Mathematics

Mathematics Education
  MA  Mathematics Education

Physics and Astronomy
  MS, PhD  Physics
  PhD  Physics and Astronomy

Statistics
  MS  Statistics

RELIGIOUS EDUCATION

370 JSB
Provo, UT 84602-5693
(801) 422-2735

Dean: Terry B. Ball
Associate Dean: Richard D. Draper, Professor,
Ancient Scripture
Graduate Coordinator: Clyde Williams

Religious Education offers the following graduate degree:

MA  Religious Education
SCHOOL OF ACCOUNTANCY

Director: Kevin D. Stocks
Associate Director: Richard S. Dalebout
560 TNRB
Provo, UT 84602-3068
(801) 422-4959
Fax: (801) 422-0621
E-mail: soa@byu.edu
http://marriottschool.byu.edu/soa

THE PROGRAM OF STUDIES

The School of Accountancy administers one graduate program through the Marriott School: the Master of Accountancy—MAcc.

The master of accountancy program offers a general background in accounting, with an emphasis on business-related subjects and an in-depth study of one or more areas of accounting. The MAcc degree is awarded on completion of a professional program, which can begin as early as the junior year of the undergraduate program, and culminates in the Marriott School after the fifth year. Students entering the SOA program with a baccalaureate degree in accounting can complete the program in less than two years.

The objective of the program is to develop graduates who exhibit professionalism and are qualified with specialized knowledge in one or more accounting areas. The School of Accountancy seeks to educate individuals who are: (1) imbued with a strong sense of professional commitment, (2) qualified with specialized knowledge in the areas of accounting or tax, (3) committed to continued professionalism—beyond formal education, and (4) capable of becoming leaders who exhibit high standards of ethical conduct within their chosen profession.

Two emphases are offered within the MAcc program: Professional Accountancy and Tax.

The School of Accountancy admits approximately 160 students per year into its graduate program.

Professional Accountancy

The Professional Accountancy emphasis is designed for students who wish to gain a broad base of graduate accounting training. Students typically seek accounting positions in auditing, management, not-for-profit, or PhD programs.

Tax—MAcc

The Professional Accountancy emphasis is designed for students who wish to gain a broad base of graduate accounting training. Students typically seek accounting positions in auditing, management, not-for-profit, or PhD programs.

Admission and Entry.
- Semesters of entry: fall.
- Application submission deadline: March 1 (U.S. and international).
- Entrance examination: GMAT.
- Prerequisite: minimum 3.0 GPA; current SOA student (seeking BS and MAcc concurrently). Students who have received a BS degree in an area other than accounting must complete intermediate accounting 1, intermediate accounting 2, accounting systems, cost/managerial accounting, auditing, and introduction to corporate taxation at a college/university in the United States prior to applying for the MAcc degree.

Requirements for the MAcc Degree.
- Common requirements: Marriott School Graduate Core consisting of MBA 520, 530, 540, 550, 593R; MBA 509, 581; PMgt 582.
- Emphases:
  - Professional Accountancy: MBA 621–629 (choose one); Acc 515, 522, 525, 530, 531, 540, 541, 550. Elective group: 9 hours from the SOA elective course list, of which at least 6 must be nonaccounting. Acc 343 and 545 count as nonaccounting courses.
  - Tax: Acc 503, 523, 560, 561, 562, 563, 564. Elective group A: 3 hours from Acc 565R or 568. Elective group B: 9 hours from the SOA elective course list, of which at least 3 must be nonaccounting, and 3 may be selected from the Elective group A list. Acc 343 and 545 count as nonaccounting courses.

FINANCIAL ASSISTANCE

The School of Accountancy utilizes the Marriott School’s financial aid provisions. Qualified students can receive aid from the following: the Marriott School Scholarship Fund, private scholarship donations, assistantship awards, and loan assistance.

Scholarships. The Marriott School currently has over 150 private scholarships. Information and applications are available online at http://marriottschool.byu.edu/aid. In addition, limited scholarship funds are available through the School of Accountancy.

Assistantships. Research and teaching assistantships are available for qualified second-year students.

Loans. Several loans are available for Marriott School students:
- Marriott School Loans: available to full-time Marriott School day students. Marriott School loans are handled on an individual basis, dependent on financial need and standing within the participating program.
• BYU Short-Term Loans: available for up to the cost of tuition only.
• Federal Stafford Loans: subsidized by the U.S. government. Not available for international students.

More information on and applications for these loans are available from the BYU Financial Aid Office, A-41 ASB, (801) 422-4104, e-mail: financial_aid@byu.edu.

RESOURCES AND OPPORTUNITIES

The N. Eldon Tanner Building. The Tanner Building, which houses the Marriott School, is one of the finest facilities of its kind. The dramatic seven-story atrium at the building center is equipped with study tables with Ethernet connections and houses the Marketplace Cafe. Surrounding the atrium are lecture and seminar rooms, study rooms, and a computer laboratory.

The Marriott School of Management. The Marriott School is recognized as one of the outstanding management schools in the nation. Faculty are actively engaged in research and publication, and they fill leadership positions in a number of national professional organizations. The school has developed innovative educational programs that include internships, executive visitation programs, special student consulting and research projects, and other activities designed to bring management education and training closer to management practice. This is accomplished, in part, through the Marriott School’s National Advisory Council, and the Executives on Campus Program.

National Advisory Council. Consisting of sixty-five to seventy prominent business and government executives, the National Advisory Council lends major support to the Marriott School. Students benefit by interacting with council members in special campus lectures and seminars and by visiting or working with these executives in their respective organizations. Furthermore, the council assists students with placement opportunities, helps develop funding sources for scholarships, and provides professional development for faculty members.

The Executives on Campus Program. This program gives students an opportunity to interact with distinguished business and government leaders who come to campus. These executives visit classes and meet with student organizations as well as participate in the Executive Lecture Series and Entrepreneurship Lecture Series.

COURSE DESCRIPTIONS

Accounting

503. Advanced Financial Accounting. (3)
Prerequisite(s): Marriott School Graduate Core.
Advanced financial accounting topics including pensions, earnings per share, accounting changes, and deferred income taxes.

515. Accounting Research Seminar. (3)
Prerequisite(s): Admission to MAcc.
Professional standards and professional literature of accounting and auditing; related academic research. Research tools, information technologies, and critical analysis emphasized.

516. Introduction to Academic Research. (3)
Prerequisite(s): admission to the MAcc predoctoral track.
Fundamentals of academic research, including the scientific method, the philosophy of science, and the areas and methodologies of academic research.

517. Academic Research Applications. (1)
Prerequisite(s): Acc 516; admission to the MAcc predoctoral track.
Basic SAS programming; practice using Compustat and CRSP databases; performing archival research.

522. Advanced Taxation. (3)
Prerequisite(s): Marriott School graduate core.
Tax laws as they apply to selected tax entities, with an introduction to tax research methodology.

523. Tax Research Methodology. (3)
Prerequisite(s): Admission to MAcc.
In-depth treatment of research and procedures emphasizing communication and presentation of findings.

525. Accounting Information Systems Risk and Control. (3)
Prerequisite(s): Acc 401 or equivalent.
Understanding the risks involved in accounting information systems and the proper design, documentation, and validation of mitigating controls. Theory and application.

530. Advanced Financial Statement Auditing. (3)
Prerequisite(s): Acc 515 or equivalent.
Accounting methodology, professional auditing standards, and current issues.

531. Advanced Managerial Accounting. (1.5)
Prerequisite(s): Marriott School Graduate Core; Acc 515 or equivalent.
Specialized areas in cost determination and cost allocation.

540. Advanced Professional Financial Accounting. (3)
Prerequisite(s): Marriott School Graduate Core; Acc 515 or equivalent.
Advanced financial accounting topics including pensions, earnings per share, accounting changes, and deferred income taxes.

541. Financial Statement Analysis. (1.5)
Prerequisite(s): Acc 540.
545. International Accounting and Multinational Enterprises. (3)
Accounting from an international perspective: flow of information in multiple currencies, complying with reporting requirements, setting budgets and monitoring performance, and controlling corporate assets through reports and audits.

550. Fraud Prevention and Detection. (3)
Prerequisite(s): Acc 530.
Fraud prevention, detection, investigation, issues, and methodology. Examination of past frauds with hands-on cases and computer exercises to identify increased fraud risk, interrogate data, and design prevention and detection controls.

555. Data Communications and Security. (3)
Prerequisite(s): Admission to the Master of Accountancy program.
Principles of data communication and security, local- and wide-area networks, hardware, software, infrastructure, standards, policies, baseline security, web security, cryptography, operations, and security management.

557. Management Consulting and Projects. (3)
Projects-oriented course where students get hands-on experience performing consulting jobs for businesses in Utah. Class includes both in-class instruction and business experience.

560. Special Problems in Federal Taxation. (3)
Prerequisite(s): Acc 523.
Special property transactions, accounting periods and methods, tax payments and credits, tax concepts, and reporting tax liability.

561. Corporate Taxation 1. (3)
Prerequisite(s): Acc 523.
Federal income taxation of corporations and shareholders.

562. Corporate Taxation 2. (3)
Prerequisite(s): Acc 561.
Continuation of Corporate Taxation 1. Includes consolidated returns.

563. Taxation of Partnerships. (3)
Prerequisite(s): Acc 523.
Federal income taxation of general and limited partnerships and partners.

564. Taxation of Estates, Gifts, and Fiduciaries. (3)
Prerequisite(s): Acc 523.
Federal taxation of property transferred by death and gift; federal taxation of income of trusts and estates.

565R. Current Tax Policy. (0.5-3)
Prerequisite(s): Acc 523.
Intensive study of special and current tax topics and policies.

568. Taxation of Foreign Income. (3)
Prerequisite(s): Acc 561 or concurrent enrollment.
Federal taxation of foreign transactions.

591R. Readings and Conference (1-3)
Prerequisite(s): SOA director's consent.
In-depth study one-on-one with chosen professor on topic of mutual interest not currently covered in existing courses.

599R. Academic Internship: Accounting. (0.5-3)
Prerequisite(s): Internship coordinator's consent.
On-the-job experience and training in industry, government, or public accounting firms.

**Faculty**


**Barrick, John A.**, Associate Professor. PhD, University of Nebraska, Lincoln, 1998. Tax.


**Burton, F. Greg**, Associate Professor. PhD, University of South Carolina, 1994. Systems; Audit.

**Charles, Shannon L.**, Assistant Professor. PhD, Oklahoma State University, 2000. Managerial.


**Cottrell, David M.**, Teaching Professor. PhD, Ohio State University, 1992. Audit; Financial.


**Gardner, Robert L.**, Professor. PhD, University of Texas, Austin, 1979. Tax.


**Heninger, William G.**, Assistant Professor. PhD, University of Georgia, 1997. Systems; Audit; Financial.


**Spilker, Brian C.**, Professor. PhD, University of Texas, Austin, 1993. Tax.


**Stocks, Kevin D.**, Professor. PhD, Oklahoma State University, 1981. Managerial.

**Summers, Scott L.**, Associate Professor. PhD, Texas A&M University, 1995. Systems.


Zimbelman, Mark F., Associate Professor. PhD, University of Arizona, 1996. Audit; Financial.

ANTHROPOLOGY

Chair: David P. Crandall
Graduate Coordinator:
Joel C. Janetski

800 SWKT
Provo, UT 84602-5522
(801) 422-3058

THE PROGRAM OF STUDIES

The graduate program in anthropology emphasizes archaeology. Focusing on the emergence of complex societies, simple farmers, and hunter-gatherers, the program’s strength is the diversity of research opportunities it affords students, especially in Mesoamerica and the Great Basin/Southwest regions of North America.

Annual field schools in prehistoric archaeology provide training in resolving field problems. The department’s geographical specialties in archaeology are the Intermountain West (which verges into the southwestern cultural area in southern Utah), Mexico, Guatemala, and the Middle East. The university conducts field research in each of those areas, and qualified students may participate.

Rather than emphasize specialized or topical interests, the program equips the graduate with the basics of professional anthropology, including preparation for continuance in academia or a career in public archaeology.

One degree and one certificate are offered through the Department of Anthropology: Anthropology—MA and the Certificate in Museum Practices. From four to six students enter the program each year, and most take three years to complete the requirements. The number of students in the program varies between ten and fifteen.

Anthropology—MA

The aim of this program is to prepare students (1) for productive employment at a junior professional level upon receiving an MA degree or (2) for entry into PhD programs in anthropology elsewhere.

Only a broad discussion of requirements is provided here. The department sends each prospective graduate student the “Graduate Program Description,” a detailed, step-by-step outline of expectations, requirements, and guidelines for progress through the program (this description is also available online). The student must return a form indicating that he or she has read the detailed guidelines, understands them, and agrees to be governed by them. This is done because requirements sometimes change slightly in the interval between submission of catalog copy and publication of the finished catalog. By writing, calling, or visiting the department, prospective students will receive the most up-to-date and appropriate information.

Admission and Entry.

- Semesters of entry and application deadlines: fall, February 1 (U.S. and international); winter, February 1 (U.S. and international).
- Application requirements: submission of a letter of intent that specifies particular areas of interest. This letter will provide the basis for assignment of a temporary faculty advisor, who will work with the applicant until a thesis committee is organized.
- Entrance examination: GRE general test score should be entered in the online application. Foreign students who do not have English as a native language must take the TOEFL exam and submit the score (580 minimum) with the application.
- Prerequisite: undergraduate degree in anthropology. If a student’s bachelor’s degree is not in anthropology, the student may be admitted provisionally while completing appropriate background course work. Students without previous field experience may be required to take the undergraduate field school sequence of Anthr 454R, 455R, and 456R.
Requirements for Degree.
• Credit hours (30): minimum 24 hours plus 6 thesis hours (Anthr 699R); minimum 20 hours under direct instruction of professional anthropologists at BYU or in another acceptable department at the university. Thesis, reading, internship, and individual work do not count toward these 20 hours.
• Required core courses: Anthr 500, 501, 502, 512, 695R, 699R.
• Additional courses: 6 hours from Anthr 530–590R; electives.
• Examinations: (A) written comprehensive examination at or near the end of the first year of study; (B) oral presentation of thesis proposal; (C) oral defense of thesis.
• Thesis.

Museum Practices—Certificate
This program’s objective is to prepare students for a broad range of museum and collections-oriented careers. Curriculum focuses on care, management, and interpretation of collections as well as the substantial body of underlying theory. Target students are (1) those desirous of pursuing a museum career as a generalist in small- to medium-sized museums and (2) those seeking employment in larger museums whose program planning is guided by collaboration across museum disciplines.

The Museum of Peoples and Cultures is the chief learning environment for certificate students. The museum’s staff, adjunct to the Department of Anthropology, are key faculty in the program, which offers a rich, hands-on, mentored experience in museum practices.

Admission and Entry.
To be considered for admission, students must be concurrently enrolled in a master’s program in anthropology, history, art education, humanities, or other cognate field. The certificate will not be awarded until the student completes the master’s degree.
• Semesters of entry and application deadlines: fall, February 1 (U.S. and international); winter, February 1 (U.S. and international).

Requirements for the Certificate.
• Credit hours (24): 18 hours plus 6 hours of internship in an approved collections repository (Anthr 599R).
• Required core courses: Anthr 522, 524, 525, 526, 596, 599R. Anthr 524, 526, and 596 must be taken sequentially in the same academic year.
• Additional courses: one approved elective (3 hours) selected from the following: Anthr 511, 512, 590; Hist 696R; ArtHC 590R; or Hum 690R.
• Successfully pass a benchmark review (also coordinated with the cognate master’s department) no later than completion of the Anthr 524 course.
• Completion of a master’s degree in a cognate discipline such as anthropology, history, art education, or humanities.

FINANCIAL ASSISTANCE
The Department of Anthropology offers tuition assistance to all incoming graduate students.

Additional support comes through assistantships, grants, and employment offered by the department and the Museum of Peoples and Cultures, but the funds are limited. The goal is to provide some support for many students rather than generously support a few. The Office of Public Archaeology regularly provides employment and experience to students prepared to participate in contract archaeology projects.

RESOURCES AND OPPORTUNITIES

Museum of Peoples and Cultures.
Closely associated with the Anthropology Department, the Museum of Peoples and Cultures offers unique research opportunities for students and faculty, several of whom have research offices in the museum. Located south and west of campus in Allen Hall, the museum holds a number of important archaeological and ethnographic collections that have not been systematically analyzed and reported. These collections, which represent the Great Basin, the American Southwest, and Mesoamerica, as well as other parts of the world, provide material for thesis topics, professional publications, and academic credit. Museum publications include a technical series, occasional papers, and a popular series.

Office of Public Archaeology.
Housed in the Museum of Peoples and Cultures at Allen Hall, the Office of Public Archaeology (OPA) is one of the most active archaeological contracting organizations in the Intermountain area. Since its inception in 1980, OPA has carried out small- and large-scale projects throughout Utah, including recent long-term projects in Capitol Reef National Park and the Grand Staircase–Escalante National Monument. OPA staff often participate in the department archaeological field school and regularly employ experienced graduate and undergraduate students for projects. Research carried out by OPA is published in the Museum of Peoples and Cultures Technical Series and Occasional Papers.

The New World Archaeological Foundation.
This foundation is a research institution focused on formative Mesoamerican civilizations, especially in Chiapas, Mexico. Established in 1952, the NWAF maintains a staff and research facilities in San Cristobal, Chiapas. The NWAF publishes a monograph series (papers) as well as notes to disseminate research findings. Graduate student opportunities through the foundation include laboratory research on campus and limited field work in Mexico and Guatemala.

Charles Redd Center for Western Studies.
Established in 1972 under an endowment from Charles Redd, a prominent Utah stockman and philanthropist, the center is charged with promoting the study of all
aspects of the American West. The center publishes a monograph series, assists faculty and student research through grants and fellowships, and sponsors lectures each year. Examples of current faculty and graduate student research include: socio-political complexity in Chiapas and Guatemala; development of complex society among the Maya; Nabataean society in Syro-Palestine, hunter-gatherer strategies in the eastern Great Basin, and socio-economic patterns in small-scale societies in the greater Southwest.

For a more detailed description of the graduate program requirements, send for a copy of the department’s Graduate Program Description.

COURSE DESCRIPTIONS

Undergraduate BYU anthropology students may enroll for the following courses if they have completed 30 hours in their major.

500. History of Archaeology. (3)
Prerequisite(s): Acceptance into the graduate program.
Historical approach to development of archaeological knowledge, method, and theory, emphasizing North America and individual contributions.

501. Current Archaeological Method and Theory. (3)
Prerequisite(s): Acceptance into the graduate program.
Major developments in archaeological method and theory, emphasizing current perspectives.

502. Quantitative Methods for Anthropology. (3)
Methods of organizing, exploring, and presenting data, probability, and statistical inference.

511. Museums and Cultures. (3)
Museums in society. Cultural foundations of museum content and sociology of museum use. Analyzing museum studies literature with on-site visits to area museums.

512. Heritage Resource Management. (3)
Prerequisite(s): Admittance into graduate program in archaeology or certificate program in museum practices.
Legal and ethical issues for practicing archaeologists. Preservation law, collections law, public archaeology. Native American issues, and careers in archaeology and museums.

522. Museum Practices and Technologies. (3)
Core museum disciplines: collections management, curation, education, exhibition, and conservation. Supporting technologies: database, digital photography, Web design, etc. Career paths.

524. Museology: Curation and Writing. (3)
Prerequisite(s): Admission to certificate in museum practices program.
Professional practices supporting the educational, research, and reporting functions of museums, emphasizing museum writing leading to publication, cataloging, policy writing, exhibition conceptualization, etc.

525. Museum Registration and Collections Management. (3)
Managing anthropological collections: object-handling, object-tracking, accessioning, deaccessioning, collections databases, loans, valuating collections, conservation environments, ethics, and NAGPRA and other laws relating to museums.

526. Museum Exhibitions and Programming. (3)
Prerequisite(s): Admission to certificate in museum practices program; Anthr 524.
Instruction and practice in all aspects of exhibition development. Current thought and literature in museum education with practica for application.

530. Great Basin Archaeology. (3)
Prerequisite(s): Anthr 350 or equivalent.
Overview of ethnography, history of research, and prehistory of the Great Basin culture area. Current issues in archaeological research emphasized.

535. Southwest Seminar. (3)
Prerequisite(s): Anthr 350 or equivalent.
Overview of ethnography and prehistory of American Southwest. Current issues in archaeological research emphasized.

562. Formative Mesoamerica. (3)
Topics and issues concerning beginnings and development of Mesoamerican civilizations. Mexican and Mayan antecedents of classic Mayan civilization and culture.

564. Classic Mayan Civilization. (3)
Topics and issues concerning archaeological and cultural aspects of classic Mayan civilization and society.

565. Mayan Ceramic Analysis. (3)
Current approaches to classification and analysis of archaeological ceramics, particularly Maya Lowland pottery. Laboratory study of actual pottery collections from the Maya area.

566. Mayan Ethnohistory. (3)
Topics and issues of cultural change, colonization, and documentation of change processes in the Mayan region, from postclassic period and independence from Spain.

580. Near East Seminar. (3)
Current issues in Near Eastern archaeological research.
Undergraduate BYU anthropology students may enroll for the following courses if they have completed 30 hours in their major.

590R. Special Topics. (3)
Special topics in archaeology or museum studies.

596. Museum Projects. (3)
Prerequisite(s): Admission to certificate in museum practices program; Anthr 524, 526.
One or more supervised museum projects, such as producing an exhibition, developing educational materials, conducting inventory, or accessioning collections.
599R. Academic Internship: Federal Agency on Museum/Collections Repository. (1-6)
Prerequisite(s): Prior approval; completion of all course work for certificate in museum practices (may be taken concurrently with Anthr 596).
Earning credit while employed in federal agency archaeology (BLM, U.S. Forest Service, etc.); or 320 hours in collections-holding institution (sixteen weeks half-time; eight weeks full-time).

694R. Readings. (0.5-3)
Prerequisite(s): Supervising instructor’s consent.
Reading about 1,000 pages per credit hour and providing required products.

695R. Research. (0.5-6)
Prerequisite(s): Completion of 18 hours of 500-level core curriculum for MA program.
Field research, data acquisition, and data analysis. Must be thesis related.

699R. Master’s Thesis. (0.5-9)

FACULTY

ALLISON, JAMES R., Assistant Professor. PhD, Arizona State University, 2000. Archaeology; Great Basin and Southwestern U.S.; Ceramic Analysis, Quantitative Methods.

CLARK, JOHN E., Professor. PhD, University of Michigan, 1994. Archaeology; Political and Economic Institutions; Cultural Evolution; Ancient Technology.

CRANDALL, DAVID P., Associate Professor. DPhil, Oxford University, 1993. Social Anthropology; South Africa; Kinship, Ritual, and Symbols.

FORSYTH, DONALD W., Professor. PhD, University of Pennsylvania, 1979. Archaeology; Ceramic Analysis; Ethnohistory.

HARTLEY, JULIE, Assistant Professor. PhD, Columbia University, 2001. Cultural and Applied Anthropology; Western Europe and North America; Political and Economic Institutions.

HAWKINS, JOHN P., Professor. PhD, University of Chicago, 1978. Social Anthropology; Ethnicity; Kinship and Family.

JANETSKI, JOEL C., Professor. PhD, University of Utah, 1983. Archaeology; Hunter-Gatherer Studies; Small Scale Farmers.

JOHNSON, DAVID J., Associate Professor. PhD, University of Chicago, 1987. Social Theory; Culture and Mind; Medical Systems and Psychological Anthropology; Gender and Mental Health; Nationalism; Religion, American Culture and Society; India and Japan.

HAWKINS, JOHN P., Professor. PhD, University of Chicago, 1978. Social Anthropology; Ethnicity; Kinship and Family.

THE PROGRAM OF STUDIES
One degree is offered through the Department of Asian and Near Eastern Languages: Language Acquisition and Teaching (Arabic, Chinese, or Japanese)—MA. This is a collegewide program. Generally not more than two students per language are admitted each year to the acquisition program. The program is designed so that a student can complete the degree in four semesters if he or she enters with the appropriate background (see below).

Language Acquisition and Teaching (Arabic, Chinese, or Japanese)—MA

This program offers professional preparation to students seeking careers in applied linguistics, foreign language education, computer-assisted language learning and instruction, and other related areas.

Students become familiar with current theories of second-language acquisition and develop basic skills in applying that knowledge to teaching, testing, and classroom-oriented research in their language of specialization.

The program is quite flexible, with emphases varying according to students’ interests and faculty members’ expertise. It is ideally suited to the needs of the following types of students:
• Students who have completed undergraduate majors in foreign languages, applied linguistics, or related fields, and who are
contemplating eventual careers in academics.

- Foreign language teachers at the secondary school level who wish to further their professional education and acquire more specialized competency in their fields.
- Students seeking the necessary preparation for advanced research and work in the field of high technology applications to language learning and instruction.

Although the nature of the program is applied, the Department of Asian and Near Eastern Languages offers a broad range of supporting courses in modern and classical culture and literature within the various language groups.

Admission and Entry.

- Semesters of entry and application deadlines: fall, February 1 (U.S. and international).
- Application requirements: entrance examination (general test) and a fifteen-minute interview in the language of specialization addressing applicant’s academic goals. The interview may be completed in person, by telephone, or on tape in conversation with a second party.
- Prerequisite: baccalaureate degree and strong background in the language of specialization. A basic linguistics background is helpful.

Requirements for Degree.

- Credit hours (33): minimum 27 course work hours plus 6 thesis hours (699R).
- Required courses: Ling 540, 600, 641, 660, 677.
- Elective courses (12 hours):
  - advanced linguistic study of the language of specialization (3 hours), plus 9 hours as approved by the graduate committee.
- Language requirement: reading and speaking ability (202 level) in language other than English in addition to language of specialization.
- Examination: oral defense of thesis.

**FINANCIAL ASSISTANCE**

Full or partial tuition assistance is available, depending on merit. According to department needs, students may also have opportunities to serve as research or teaching assistants to help finance their studies and to gain practical experience.

**RESOURCES AND OPPORTUNITIES**

The Department of Asian and Near Eastern Languages utilizes the Humanities Research Center for world-class computer-assisted language instruction and translation. Other resources are:

The Foreign Language Student Residence. Students who desire a more intensive language study experience and practical application of the language under the direction of faculty and native residents may apply to live in the Foreign Language Student Residence. All activities in the individual apartments in the residence are conducted in the foreign language. Housing is available for men and women in Japanese, Chinese, Arabic, and Korean languages. Graduate students may participate as students or as senior residents.

For a more detailed description of the graduate program requirements, send for a copy of the department’s bulletin.

**COURSE DESCRIPTIONS**

**Chinese (Mandarin)**

599R. Academic Internship. (0.5-9)

Prerequisite(s): Coordinator’s and department’s consent.

On-the-job cultural and/or language experience.

670R. Tutorial Internship in Chinese. (0.5-3)

Individual research in cooperation with graduate faculty member in problems relating to Chinese literature and language. Writing research papers. Topics vary according to interests and expertise of faculty supervisor.

680R. Special Studies in Chinese. (0.5-3)

Individual study supervised by graduate faculty member in varying topics of specific interest in Chinese literature and language.

690R. Seminar in Chinese. (0.5-3)

Group studies supervised by graduate faculty member in varying topics of specific interest in Chinese literature and language.

699R. Master’s Thesis. (0.5-6)

**Japanese**

599R. Academic Internship. (0.5-9)

Prerequisite(s): Japan 302 or equivalent.

On-the-job cultural and/or language experience.

670R. Tutorial Internship in Japanese. (0.5-3)

Individual research in cooperation with graduate faculty member in problems relating to Japanese literature and language. Tutorial work in writing research papers. Topics vary according to interests and expertise of faculty supervisor.

680R. Special Studies in Japanese. (0.5-3)

Individual study supervised by graduate faculty member in varying topics of specific interest in Japanese literature and language.

690R. Seminar in Japanese. (0.5-3)

Group studies supervised by graduate faculty member in varying topics of specific interest in Japanese literature and language.

699R. Master’s Thesis. (0.5-6)

**Linguistics**

(See Linguistics and English Language section of this catalog for courses.)

**Near Eastern Languages and Literature**

Ancient: Akkadian, Aramaic, Coptic, Egyptian, Syriac, and Ugaritic Courses

511R. Studies in Ancient Near Eastern Languages. (0.5-4)

Grammar and reading skills.
521R. Special Topics in Ancient Near Eastern Literature. (0.5-3)
   Historical and comparative studies of ancient Near Eastern literature.

Arabic

531R. Advanced Topics in Arabic. (0.5-3)
   Prerequisite(s): Instructor’s consent.
   Advanced studies in Arabic language and literature.

670R. Tutorial Internship in Arabic. (0.5-3)
   Individual research in cooperation with graduate faculty member in problems relating to Arabic literature and language. Tutorial work in writing research papers. Topics vary according to interests and expertise of faculty supervisor.

680R. Special Studies in Arabic. (0.5-3)
   Individual study supervised by graduate faculty member in varying topics of specific interest in Arabic literature and language.

690R. Seminar in Arabic. (0.5-3)
   Group studies supervised by graduate faculty member in varying topics of specific interest in Arabic literature and language.

699R. Master’s Thesis. (0.5-6)

FACULTY

BELNAP, R. KIRK, Associate Professor.

BOURGERIE, DANA S., Associate Professor.
   PhD, Ohio State University, 1990. Chinese Linguistics; Dialect Studies and Sociolinguistics.

CHRISTENSEN, MATTHEW B., Associate Professor.
   PhD, Ohio State University, 1994. Chinese Language and Linguistics; Curriculum Development.

DAMRON, JULIE, Assistant Professor.
   PhD, Purdue University, 2000. English Language and Linguistics; Second Language Acquisition/Sociolinguistics.

GESSEL, VAN C., Professor.

HONEY, DAVID B., Professor.

MILLER, J. SCOTT, Professor.

PARKINSON, DILWORTH B., Professor.
   PhD, University of Michigan, 1982. Sociolinguistics; Arabic.

PARRY, DONALD W., Associate Professor.
   PhD, University of Utah, 1992. Modern and Biblical Hebrew.

PETERSON, DANIEL C., Associate Professor.
   PhD, University of California, Los Angeles, 1990. Medieval Islamic Philosophy; Arabic Language and Literature.

PETERSON, MARK A., Associate Professor.

RICKS, STEPHEN D., Professor.
   PhD, University of California, Berkeley, 1982. Hebrew; Near Eastern Languages, History of Religions.

RIEF, STEVEN L., Assistant Professor.
   PhD, University of California, Los Angeles, 2001. East Asian Languages and Cultures.

RUSSELL, ROBERT A., Associate Professor.

STONEMAN, JACK C., Assistant Professor.

WARNICK, J. PAUL, Associate Professor.
   PhD, Ohio State University, 1996; Japanese Linguistics and Pedagogy.

WATABE, MASAKAZU, Professor.
   PhD, University of Southern California, 1978. Linguistics; Japanese.

AUDIOLGY AND SPEECH-LANGUAGE PATHOLOGY

See Communication Disorders section of this catalog.
Foreign students whose native language is not English must submit TOEFL scores.

- Statement of intent must explicitly state field of interest and career goals.
- Prerequisites: baccalaureate degree in related discipline with research experience.

Applicants are encouraged to communicate with the Department of Biology graduate secretary for further information or to obtain a copy of the Graduate Student Handbook.

**Requirements for MS Degree Programs from Biology.**

- Credit hours (30): minimum 24 course work hours plus 6 thesis hours; 20 hours must be in the 500-level series and above (can include 691R, 699R, etc.).
- Required courses: Bio 691R (Graduate Seminar—two semesters); Bio 503 (Graduate Orientation) or equivalent.
- Additional courses as determined by student's advisory committee and approved by department graduate coordinator.
- Annual progress reviews by advisory committee and graduate committee.
- Presentation of research prospectus to advisory committee.
- Dissertation: standard university thesis or journal publication format.
- Examinations: comprehensive oral examination; grant proposal and literature review; oral defense of research; and oral defense of dissertation.

**Biology Education—MS**

The biological sciences education degree is designed to prepare students with advanced skills and knowledge for teaching in high schools and colleges. Students opting for this degree may pursue original research or library synthesis projects and present results in either formal thesis or project format. Since all research for this degree is expected to be of publication quality, theses are usually prepared in a form suitable for immediate submission for review by an appropriate scholarly journal. Original curriculum projects should be of high quality and suitable for use in the public school classroom. This degree is not an alternative teacher certification program.

**Biology—PhD**

The PhD degree in biology is structured to challenge students to develop intellectual independence. This is demonstrated by designing and implementing a research project that requires substantial work on an important question in ecological or evolutionary theory, then analyzing and synthesizing results in a way that reflects the student's maturation as a scholar. Projects might include, but are not limited to, studies in population or community ecology, population or conservation genetics, phylogeography, molecular evolution, bioinformatics, or phylogenetic systematics. Students will present and defend a dissertation project that includes chapters to be published as stand-alone manuscripts in appropriate scholarly journals.

**Financial Assistance**

Teaching and research assistantships are offered on a competitive basis by the department. Tuition assistance is also available for both the MS and PhD degrees.

**Resources and Opportunities**

**M. L. Bean Life Science Museum.** Extensive biological collections are housed in the M. L. Bean Life Science Museum and are available for supervised student research. Curators and their students often conduct fieldwork throughout the U.S., and in many other parts of the world.

**Electron Optics Laboratory.** In this lab researchers can accomplish all standard electron optics procedures. The laboratory has transmission and scanning electron microscopes equipped with X-ray microanalysis capabilities, plus accessory equipment for freeze-fracture, freeze-drying, and necessary support facilities, including confocal laser scan microscopy.
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BIOLOGY

USDA Forest Service Shrub Science Laboratory. Housed on the BYU campus, this lab supports one of the finest research programs on native shrubs in the world. Here eleven PhD research scientists with adjunct faculty appointments work with BYU faculty members and graduate students. Laboratories, greenhouses, and gardens on campus and around the state support studies on desert shrubs.

DNA Sequencing Facility. The DNA Sequencing Center was established to help researchers process DNA samples efficiently and economically. The center is equipped with an ABI 3730 96-capillary automated sequencer and an ABI 3100 16-capillary machine that run DNA sequences and microsatellite runs. Operated by a faculty director, a full-time manager, a part-time finance person, and a number of undergraduate student assistants, the center is open for use by undergraduates, graduate students, faculty, and, through special arrangements, researchers from outside the university. The centralization of equipment and expertise has dramatically reduced the expense of DNA research while increasing the efficiency and quality of the data generated.

Lytle Ranch Preserve. Graduate students are able to do year-round research on desert plants and animals at the Lytle Ranch. This large preserve is located in the moderate desert climate of southwestern Utah.

Opportunities. On the Provo campus are greenhouses, gardens, an arboretum, a small animal vivarium, and a tissue culture room. Laboratory facilities include gas chromatography–mass spectrometers, isotope ratio mass spectrometers, transmission and scanning electron microscopes, ultra centrifuges, visible ultraviolet and infrared spectrophotometers, gas chromatographs, high-performance liquid chromatographs, infrared gas analyzers, atomic absorption spectrometry, and many other items. Faculty and graduate students are engaged in a number of significant and interesting research projects, funded both externally and internally. Some of these are: ecology, and physiology; plant and animal systematics; bioinformatics; evolutionary biology; conservation biology; forage research; molecular biology of gene expression in mitochondria; marine and freshwater biology; biological science education; environmental science; conservation of rare species.

For additional information on degree programs and faculty in our department, contact the department office or visit biology.byu.edu.

COURSE DESCRIPTIONS

Biology

503. Research Orientation. (1)
Introduction to graduate school and research techniques.

510. Advanced Plant Taxonomy. (3)
Prerequisite(s): Bio 230 or equivalent.
Review of taxonomic literature and research methods. One-three day field trip required.

511. Lichenology. (3)
Classification, morphology, and ecology on lichens. Field trip required.

512. Angiosperm Phylogeny. (3)
Prerequisite(s): Bio 230 or equivalent.
Description, classification, phylogeny, and geographic distribution of flowering plant families.

525. Animal Disease, Biosecurity, and Zoonoses. (3)
Prerequisite(s): Bio 380 or instructor’s consent.
Animal disease emphasizing prevention, organ systems affected, biosecurity, and zoonotic potential.

541. Aquatic Entomology. (4)
Prerequisite(s): Bio 441 or equivalent.
Morphology, classification, biology, and functional ecology of aquatic insects. Field trips required.

550. Physiological and Chemical Ecology. (3)
Prerequisite(s): Bio 350 or equivalent.
Ecophysiological response of plants to their environment.

555. Evolutionary and Ecological Modeling. (2)
Prerequisite(s): Senior status in bioinformatics program or graduate status; Stat 511, 512, or equivalent; instructor’s consent.
Using models in ecology. Practical experience in analytical, simulation, and agent-based models.

556. Limnology. (2)
Prerequisite(s): Bio 350, Chem 106; or equivalents.
Lakes, reservoirs; their biota and physical/chemical properties.

557. Stream and Wetland Ecology. (3)
Prerequisite(s): Bio 350, Chem 106; or equivalent.
Stream and wetland ecology; their biota and their physical/chemical properties.

558. Aquatic Ecology Laboratory. (1)
Prerequisite(s): Bio 556 or 557 or concurrent registration.
Field experience in aquatic ecology, including shoreline processes, fluvial mechanics, and quantitative and qualitative assessment of lotic and lentic systems. Overnight field trips required.

559R. Advanced Topics in Ecology and Evolution. (1-6)
Prerequisite(s): Instructor’s consent.
Current topics in ecology, evolution, and systematics.

560. Population Genetics. (4)
Prerequisite(s): Bio 420 or equivalent.
Basic principles of population genetics applied to natural populations; drift, selection, and nonrandom mating; inferring population subdivision, migration, and gene flow.

580. Scanning Electron Microscopy. (3)
Prerequisite(s): Instructor’s consent.
Theoretical and practical scanning electron microscopy of biological, physical science, and engineering samples, emphasizing practical applications.
581. Transmission Electron Microscopy. (3) Prerequisite(s): Instructor’s consent. Theoretical and practical transmission electron microscopy of biological, physical science, and engineering samples, emphasizing practical applications.

590R. Advanced Science In-Service. (1-5) In-service course for science teachers. Topics vary.

640. Phylogenetic Systematics. (4) Prerequisite(s): Bio 420 or equivalent. Theoretical foundations of modern systematics, methods of phylogenetic inference, and discussion of contemporary literature.

641. (Bio - MMBio) Molecular Evolution. (4) Prerequisite(s): Bio 420 or equivalent. Theoretical foundations of molecular evolution; molecular phylogenetics, estimates of population genetic parameters, gene duplication, horizontal gene transfer, rates of evolution, molecular clocks.

652. Evolutionary Ecology. (3) Prerequisite(s): Bio 350, 420; or equivalents. Exploring the diversity of life by integrating ecological and evolutionary perspectives. Topics include theoretical population ecology, advanced evolutionary biology, and behavioral ecology.


679R. Advanced Topics in Science Education. (3) Current topics in biological science education.

681R. Electron Microscopy Laboratory. (1-6) Prerequisite(s): Instructor’s consent. Advanced research in electron microscopy.

691R. Graduate Seminar. (0.5)

694R. Special Problems in Integrative Biology. (1-6) Prerequisite(s): Supervisor’s consent. Independent student research under faculty supervision.

695R. Practicum in Biology Teaching. (4-8) Curricula, principles, concepts, and experiences in teaching biology effectively.

698R. Master’s Project. (1-6)

699R. Master’s Thesis. (1-9)

799R. Doctoral Dissertation. (1-9)

FACULTY

Belk, Mark C., Professor. PhD, University of Georgia, 1992. Evolutionary Ecology.


Hanegan, Nikki L., Assistant Professor. PhD, University of Texas, Austin, 2001. Biological Sciences Education.

Jeffery, Duane E., Professor. PhD, University of California, Berkeley, 1972. Ecological Genetics; Evolutionary Genetics.


Nelson, C. Riley, Professor. PhD, Brigham Young University, 1986. Entomology; Ecology; Systematic Biology.

Peck, Steven L., Associate Professor. PhD, North Carolina State University, 1997. Environmental Biostatistics; Biomathematics; Entomology.


Roeder, Beverly L., Professor. DVM, Ohio State University, 1982; PhD, Pennsylvania State University, 1990. Anatomy; Physiology; Medicine and Surgery; Animal Health; Prevention and Diagnoses of Metabolic Disorders.


Sites, Jack W., Jr., Professor. PhD, Texas A&M University, 1980. Evolutionary Genetics; Herpetology.


AFFILIATED MUSEUM FACULTY

Atwood, N. Duane, Collections Manager. PhD, Brigham Young University, 1972. Plant Taxonomy.

BUSINESS ADMINISTRATION - MBA

Directors: Craig Merrill & Jim Engebretsen

635 TNRB
Provo, UT 84602-3131
(801) 422-3500
Fax (801) 422-0513
E-mail: mba@byu.edu

THE PROGRAM OF STUDIES

The master of business administration program is administered by the Marriott School of Management. It is a two-year program designed to prepare the graduate student for a career in business. The program focuses on four areas—globalization, integration, technology, and entrepreneurship. Increasingly, international focus and entrepreneurship are encouraged to better prepare the student for the world of business. Currently the program presents a new and exciting approach to teaching business management. Courses are integrated across disciplines in order to use faculty expertise from different points of view. Concept days are alternated with case study days to improve practical application.

The curriculum has been designed to achieve the twofold task of giving the student (1) a general management education and (2) depth in area(s) bearing specifically on personal professional interests.

Students choose from five designed tracks: finance, marketing, supply chain management, organizational behavior/human resource management (OB/HR), or PD—product development—a track for students doing the joint MBA/MS degree. Or they can design their own track to fit their career goals.

A brief description of each track follows:

Finance
The finance track prepares students to work in corporate finance or with financial institutions. The corporate finance curriculum trains students for careers as financial analysts, controllers, and treasurers within large corporations. The financial institutions curriculum trains students for careers in investment banking, commercial banking, and securities management. The corporate finance curriculum is appropriate for students who seek general management positions with a strong finance background, whereas the financial institutions curriculum is more specialized and focused on positions in finance firms.

Marketing
The marketing track at the Marriott School builds on proven industry experience and academic achievements in the areas of marketing information systems, international brand management, and market analysis. This track prepares students for employment in product/brand management, e-commerce/database marketing, and high-technology marketing.

Supply Chain Management
The supply chain is the complete sequence of companies and value-enhancing activities required to transform basic raw materials into useful products and services for customers. Successful companies effectively manage operations within the walls of their own organization. Supply chain management is one of the fastest growing job markets for business graduates.

Organizational Behavior/Human Resource Management (OB/HR)
The OB/HR track provides a foundation for the study of organizational change and the development and strategic management of human resources. Track curriculum equips students with theoretical, analytical, diagnostic, and change agent skills. Career opportunities exist in human resource departments and organizational effectiveness or training and development positions, including responsibilities for change manage-

ment, implementing business strategies, and leading organizational change efforts.

Product Development (PD)
The PD is a joint program involving the Marriott School of Management, the Department of Mechanical Engineering, and the School of Technology. Through the PD program students can earn joint MBA and MS degrees in mechanical engineering or manufacturing engineering technology. These programs emphasize integrative work on product conceptualization, marketing assessment, engineering design, and manufacturing strategies.

Students who complete the program will have (1) acquired an understanding of business and management tools and principles that have enduring significance in a changing environment, (2) developed advanced knowledge in a field of concentration in the area of the student's major interest, (3) achieved an understanding of the utilization of quantitative methods and behavioral sciences in the solution of business problems, (4) obtained skills in critical analysis and careful reasoning, and (5) strengthened their ability to communicate effectively.

In addition to the MBA, the Marriott School offers an Executive Option MBA, a joint JD/MBA, and a joint MBA/MS in mechanical engineering.

Global Management Certificate
All MBA students regardless of which track they are in can pursue the Global Management Certificate through the Global Management Center.

The certificate is designed to educate students in a foreign business language, give students exposure to international business in a variety of disciplines, and allow them to participate in an international experience. The Marriott School currently sponsors eleven different business language courses: Arabic, Chinese (Mandarin), English (for non-native English speakers), French, German, Italian, Japanese, Korean, Portuguese,
Russian, and Spanish. Other language options are available to students who do not speak any of the students who do not speak any of the sponsored business languages.

Students desiring to participate in the Global Management Certificate program can apply online.

While Brigham Young University does not recognize the Global Management Certificate program as a college minor, it is the equivalent of a minor in international business. Students will also be able to market themselves to prospective international business employers by listing this accomplishment on their résumé. In addition, the international courses business language, and international experience will provide students with an excellent foundation to work in international business.

For further information about the Global Management Certificate program please contact the Global Management Center at 360 Tanner Building or (801) 422-6495.

Master of Business Administration—MBA
MBA classes are generally not available to students other than those in the following programs: master of business administration, juris doctor/master of business administration, master of public administration, master of accountancy, or master of information systems. All first-year and second-year MBA core classes are required for graduation and are reserved for just MBA students.

Admission and Entry.
- Semesters of entry and application deadlines: fall, December 1 (Round 1); January 15 (recommended international, Round 2 domestic); March 1 (Round 3); March 1 (final international); May 1 (final domestic).
- Application requirements: entrance examination is the GMAT.
- GPA: minimum 3.0 on 4.0 scale.
- Prerequisite: baccalaureate degree from an accredited institution.
- The MBA program recommends a minimal two years of post baccalaureate full-time work experience.

The Executive MBA Option requires a minimum five years of full-time managerial experience.

Requirements for Degree.
- Required courses:
  First-year program: courses in marketing management, operations management, strategy, management and information technology, managerial accounting, corporate financial reporting, business finance, human resource management, written and oral communication, strategic implementation, and the MBA Management Seminar.
  Second-year program: courses in ethics, designing and leading teams, and global management.
- Electives: see MBA or executive MBA policies and procedures publications. In addition to the designed tracks, students may choose an emphasis in the following areas: entrepreneurship, international business, strategic management, or consulting.

Executive Option—MBA
The executive master of business administration option is a rigorous program in general management for fully employed professionals. Designed for managers and professionals who typically have at least five years of full-time managerial work experience, it consists of courses similar to the full-time MBA program but is unique in reflecting the work and management experience of its students.

Obtaining an MBA degree through the executive MBA option requires a year-round commitment for two years. Class sessions are held Tuesday and Thursday evenings in Provo or Fridays and Saturdays every other week in Salt Lake City. Students spend one residency week on campus each year in a complex case analysis and other concentrated study. Executive MBA classes are generally not available to students in other programs. Special requests should be made to the Executive MBA Operating Committee, c/o the MBA Office.

Admission and Entry.
- Semester of entry and application deadlines: Summer, December 1 (Round 1); January 15 (Round 2); March 15 (final date). For details concerning admission requirements, consult the MBA Office, 635 TNRB, Provo, UT 84602-3012; telephone (801) 422-3500; fax (801) 422-0513; e-mail: emba@byu.edu.

Joint Programs—MBA/JD, MBA/MS
Two joint degrees are offered in connection with the MBA degree. The MBA/JD is a program in business administration and law offered with the J. Reuben Clark Law School.

The MBA/MS is a program of business administration and engineering. The Mechanical Engineering Department, the School of Technology, and the Marriott School of Management offer a joint program in product development (PD) leading to a master of science degree in mechanical engineering and a master of business administration (MBA) degree. The program takes an average of three years to complete. The degrees are approved and conferred separately by the two departments, but since course work for the two degrees may overlap and similarities between the two programs may be emphasized, the PD program offers students significant advantages to separate programs in these two fields.

The PD program addresses important needs for engineers, designers, and managers who excel in world-class product development, a cross-functional process requiring both technical and managerial skills. The program provides students with the management skills of the MBA program along with undergraduate and advanced training in engineering. Courses teach specific expertise in product and process development through projects, industrial interaction, and research in development and interdisciplinary methods.

Students must apply to both the mechanical engineering MS program or the technology MS program and the MBA program, mentioning their
intention to participate in the PD program in each statement of intent.

Inquiries about any of these programs should be directed to the MBA Office. No joint degrees are available in combination with the executive MBA option.

FINANCIAL ASSISTANCE

The MBA program utilizes the Marriott School’s financial aid provisions. Qualified students can receive aid from the following: the Marriott School of Management Scholarship Fund, private scholarship donations, assistantship awards, and loan assistance.

Scholarships. The Marriott School currently has over ninety private scholarships. Information and applications are available for second-year students in 730 TNRB (deadline: March 31). In addition, the MBA program awards scholarship funds to first-year students based on academic merit and offers several private MBA scholarships. There are scholarships designated for minority students, single parents, and international students.

Assistantships. Research and teaching assistantships are available for qualified second-year students.

Loans. Several loans are available for Marriott School students:
- Marriott School loans: available to full-time Marriott School day students. Marriott School loans are handled on an individual basis, dependent on financial need and standing within the participating program.
- BYU short-term loans: available for up to the cost of tuition only.

More information on and applications for these loans are available from the BYU Financial Aid Office, A-41 ASB, (801) 422-4104.

RESOURCES AND OPPORTUNITIES

Business administration students utilize the N. Eldon Tanner Building, which houses the Marriott School of Management. The dramatic seven-story atrium at the building center is equipped with study tables with Ethernet connections and houses the Marketplace Cafe. Surrounding the atrium are lecture and seminar rooms, study rooms, and a computer laboratory.

The Marriott School is recognized as one of the outstanding management schools in the nation. Faculty are actively engaged in research and publication, and they fill leadership positions in a number of national professional organizations. The school has developed innovative educational programs that include internships, executive visitation programs, special student consulting and research projects, and other activities designed to bring management education and training closer to management practice. This is accomplished, in part, through the Marriott School’s National Advisory Council and the Executives on Campus Program.

Consisting of sixty-five to seventy prominent business and government executives, the National Advisory Council lends major support to the Marriott School. Students benefit by interacting with council members in special campus lectures and seminars and by visiting or working with these executives in their respective organizations. Furthermore, the council assists students with placement opportunities, helps develop funding sources for scholarships, and provides professional development for faculty members.

The Executives on Campus Program gives students an opportunity to interact with distinguished business and government leaders who come to campus. These executives visit classes and meet with student organizations as well as participate in the Executive Lecture Series and the Entrepreneurship Lecture Series.

MBA Courses

501. Corporate Financial Reporting. (1.5)
- Analyzing financial accounting and reporting issues used by prospective managers.

502. Managerial Accounting 1. (1.5)
- Objectives and procedures of cost accounting. Topics include job costing, joint product costing, cost behavior analysis, standard costs, cost allocation problems, and cost data use in management.

505. Leadership 1: Interpersonal Interaction and Influence. (2)
- Developing skillful business communication techniques, particularly in writing and interpersonal influence. Learning accepted business correspondence and report-writing concepts.

509. Communication in Professional Service Firms. (3)
- Prerequisite(s): MAcc/MISM major status.
- Theory and application of written and oral communication for professional service firms.

510. Management and Information Technology. (1.5)
- Management and control with information technology. Information flow, database design, and use applied to cost controls and managerial decision making.

511. Project Management. (3)
- Prerequisite(s): Admission to a Marriott School graduate program.
- Principles and skills of project management in an information systems context, including management of risk, schedule, scope, cost, quality control, communications, human resources, and procurement.
512. Leading Change in a Technical Environment. (3)
Prerequisite(s): Admission to a Marriott School graduate program.
Principles and skills of leading information technology-enabled organization change and system implementation. Topics include leadership, change management, ERP/CRM systems implementation, knowledge management, and business process redesign.

520. Business Finance. (3)
Short-term financing of a business operation. Developing techniques for financial planning, such as analysis of ratios, profitability, and liquidity.

524. Advanced Corporate Financial Reporting. (1.5)
Prerequisite(s): MBA 501.
Areas of financial reporting where managers have considerable discretion, including pensions, leases, equity securities, earnings, dilution, employee stock options, and deferred taxes. Dynamics between auditors, managers, and financial analysts.

525. Economy of Strategy. (1.5)
Economic tools that influence the success of strategy (creation and appropriation of value). Emphasizes application of economic theory to management practice.

526. Money and Banking. (1.5)
Process whereby financial institutions, the public, the Federal Reserve, and the Treasury interact in the macroeconomy to create money and influence interest rates.

527. Financial Statement Analysis. (1.5)

528. Managerial Finance. (3)
Prerequisite(s): First-year core MBA finance course.
Elaboration on MBA 520 topics (i.e., capital budgetary, cost of capital, and capital structure). Concepts such as real options, valuation, and mergers introduced.

529. Strategic Logistics Management. (3)
Applying and integrating logistics-related topics, including materials management, physical distribution, inventory management, warehousing, logistics network design, customer service, packaging, and materials handling.

530. Operations Management. (3)
Examining issues and tools in production and operations management. Specific tools for forecasting, planning, inventory control, and project management presented and developed.

532. Purchasing and Supply Management. (3)
Prerequisite(s): MBA 530.
Upstream supply chain activities of supplier selection, management, and development. Topics will include negotiations, costing, product development, and commodity analysis.

535. Integrated Product Development (IPD) Seminar. (0.5)
Prerequisite(s): Admission to IPD program. Other interested students may attend without receiving credit.
Review of research in product and process development; reports on internships; and guest speakers on the topic of product and process development.

536. Training and Development. (3)
Analyzing learning theories, training methods and strategies, training and development applications, and production and use of current technology for training and human resource development.

537. Change Management. (3)
Theory and practice of change in organizations.

539. Theory and Practice of Third-World Development. (3)
Paradigms of economic development; strategies and applications in various societies.

540. Organizational Behavior. (3)
Analysis of individual, group, and organizational variables that inhibit or facilitate effective organizational functioning. Topics include motivation, rewards, leadership, conflict, decision making, structure, evaluation, and change.

541. Micro-Organizational Change. (3)
Introduction to development of micro-organizational behavior paradigms and their potential implications for understanding and influencing change in organizations.

542. Micro/Macro Organizational Behavior. (3)
Foundation for understanding organizations — behavior, structure, purposes, including models and diagnostic frameworks. How overall environment and societal context shape individuals and organizations.

543. Consulting. (1.5)
Consulting cycle (contracting, diagnosis, data gathering, etc.), managing a small consulting practice, and the nature and organization of consulting business and industry.

544. Teams and Work Groups. (1.5)
Prerequisite(s): MBA 505.
Group dynamics in organizations. Theory and skill development applied to effective interaction and group productivity: roles, structures, team tasks, influence, and processes.

545. Human Resource Management. (1.5)
Analysis of individual, group, and organizational variables that facilitate or inhibit effective organizational functioning. Topics include motivation, rewards, leadership, conflict, decision making, structure, evaluation, and change.

546. Human Resource Management Skills. (3)
Acquiring skills and competencies including selection, compensation, performance evaluation, training evaluation, organizational assessment, and research methodology.
547. Labor Relations and Employment Law. (3)
   U.S./International labor/industrial relations. History, labor law, union
   organizing campaigns, contract negotiations, arbitration, union avoidance.
   Employment discrimination, work policies, and workplace safety and health.

548. Strategic Human Resource Management. (3)
   HRM from manager’s perspective. Employment relationship, recruiting/
   selection, employment law, performance management, and HRM in
   emerging companies. Managing human assets within firm’s strategy,
   industry, and stakeholder environment.

549R. Professional Seminar in Organizational Behavior. (0.5-3)
   Special topics or problems varying from semester to semester, e.g.,
   conflict resolution, power and influence, intergroup relations, career
   development and planning, and management skills.

550. Marketing Management. (3)
   Development of analytical marketing tools and techniques; their
   utilization in case analysis and decision making in marketing management.

553. Pricing and Positioning Tools for Marketing. (3)
   Developing computer-based statistical analysis skills for marketing
   to enhance the decision-making and strategic thinking abilities of
   marketing managers. Topics include segmentation, targeting, positioning,
   and pricing.

554. Internet Marketing. (3)
   Marketing strategy for business on the internet: marketing research,
   sales, and promotional concepts.

555. Competitive Intelligence. (3)
   Overview of competitive intelligence process, including information
   collection, intelligence analysis, dissemination, ethics, and establishing
   the process from a managerial perspective.

556. Advertising and Promotion. (3)
   Key issues facing marketing managers when promoting products
   and services. Cases, readings, and research on the elements of effective
   communication strategies and promotional programs.

580. Introduction to Strategy. (1.5)
   Introduction to strategic planning; concepts, models, and analysis.

581. Strategic Management. (3)
   Prerequisite(s): MAcc and MISM students only.
   Top-management approach to problems of determining corporate
   strategy. Structured for accounting and information systems students.

582. Strategic Marketing Management. (3)
   The analysis of the role and function of marketing in the corporate
   planning process; analytical approaches to strategic planning and
   development of a marketing strategy.

583. Competitive Edge. (1.5)
   Developing communication skills, managing conflict, interviewing with confidence, and other essential skills of a professional environment.

584. Introduction to Global Management. (1.5)
   Foundations in global management integrating strategy, finance,
   operations, marketing, and human resource management.

590R. Consulting Field Study. (0.5-3)
   Working as a team with faculty and management in strategic consulting
   projects for local, national, and international business.

591R. Integrative Exercise. (0.5-3)
   Integrated applications of case analysis and presentation skills.
   Group work to analyze cases and formulate recommendations, followed by professional presentations to groups representing management.

592R. Management Seminar. (0.5-3)
   Invited guests speak on topics of general management interest ranging from ethics, industry problems and opportunities, and government policies to relevant current events.

599R. Academic Internship: Practicum. (1-6)
   Internship providing hands-on experience in management positions.

600. Spiritual Issues in Management. (3)
   Management issues including leadership, motivation, wealth, balance, hiring, firing, and reward systems; applying spiritual insights from LDS standard works.
   Presentations by business faculty and religious leaders.

601R. MBA Newsletter Practicum. (1.5-3)
   Journalistic writing, layout, graphics, software, and distribution principles during creation of an MBA newsletter.

602. Taxation for Decision Makers. (3)
   Analysis of business and individual transactions for their tax factors. Basic structure of the law and implications for both personal and corporate income tax.

603. Dynamics of Law. (1.5)
   Legal techniques and approaches necessary to understand dynamics between the law and business transactions. Includes the court systems, torts, criminal law, and contacts.

604. Business Ethics. (1.5)
   Basic issues, concepts, and tools of management ethics; includes ethical theory, character ethics, and social responsibility, all taught in a gospel context.

605. Decision Analysis. (1.5)
   Applying analytical decision-making tools to management situations using spreadsheet decision models based on concepts of risk, uncertainty, and multiple criteria.

606. Optimization. (1.5)
   Applying analytical decision-making tools to management situations, emphasizing spreadsheet decision models that optimize a key variable subject to constraints.

607. Statistics. (1.5)
   Review of basic statistics as applied to common problems in business management and finance.
608. Simulations. (1.5)  
Prerequisite(s): MBA 607 or equivalent.  
Applying Monte Carlo and systems simulation, along with appropriate software, to address management problems.

610. Advanced Process Facilitation.  
(1.5)  
The facilitator role in organizations; work techniques and structured processes that enable effective group (team or business unit) performance.

611. Qualitative Research Methods in Business.  
(1-3)  
How to use qualitative research methods in business management: content analysis, ethnographic methods and hybrid approaches. Implications of interpretative and positivistic approaches to research.

613R. E-Business Topics. (1-3)  
Current and relevant topics in e-business. Course content varies by section and instructor. May cover e-business topics relating to strategy, marketing, operations, accounting, and technology.

614. Spreadsheet Automation and Modeling. (3)  
Prerequisite(s): Admission to a Marriott School graduate program.  
Programming in Excel VBA; automating common tasks; retrieving data from web servers; building optimization models and user forms.

615. Spreadsheets for Business Analysis.  
(1.5)  
Use of spreadsheets to support business analysis and decision making. Includes sensitivity analysis, pivot tables, introductions to databases and macros, charting, and similar topics.

616. Practical Database Management.  
(3)  
Prerequisite(s): Admission to a Marriott School graduate program.  
Retrieving data from corporate databases and building project-level databases.

617. Risk Management.  
(3)  
Management of risk exposures in a business setting. Identifying, measuring, and dealing with both traditional insurable risks and financial risks.

619. Services Management.  
(3)  
Prerequisite(s): Introductory operations management course or instructor’s consent.  
Management principles and characteristics of service industries and service aspects of supply chains. Sources of strategic advantage in services. Process analysis and tools. Service quality.

(3)  

621. Advanced Corporate Finance.  
(3)  
Issues such as mergers/acquisitions, valuation, financial restructuring, leveraged buyouts, capital structure, international portfolio analysis, tax-driven decisions, leasing, recapitalizations, and industry restructurings.

622. Investments.  
(3)  
Basic principles and techniques of investment analysis and portfolio selection and management. Portfolio policies available to investors.

(3)  
Modern investment theory and evidence, including asset pricing models, options pricing, the efficient markets hypothesis, portfolio diversification, and performance measures.

(3)  
Functions and instruments of capital markets: relationships to money markets, historical background, structures, and analysis of significant economic problems and trends in the markets.

626. Derivatives and Fixed Income.  
(3)  
Prerequisite(s): MBA 622.  
Valuing and using derivative and fixed-income securities. Key concepts include equilibrium pricing, arbitrary pricing, and financial engineering.

627. International Finance.  
(3)  
Impact that currency, tax and capital market variations between countries have on sourcing of funds, management of working capital, investment of funds, and protection of assets. Understanding the foreign exchange market.

628. Issues in Global Trade and Finance.  
(3)  
Global market issues for public and private sectors. Impacts of trade and economic integration; global rule of financial markets and institutions.

629A. Silver Fund, Part 1.  
(1.5)  
Prerequisite(s): Finance faculty consent.  
Team management of actual investment portfolios for a full year. Responsibility for economic forecasts, security selection, and portfolio strategy.

629B. Silver Fund, Part 2.  
(1.5)  
Prerequisite(s): Finance faculty consent.  
Team management of actual investment portfolios for a full year. Responsibility for economic forecasts, security selection, and portfolio strategy.

630. Managing for Results.  
(3)  
Essential skills for effective self-management; role, characteristics and supervisory skills; structuring a work environment and enhancing the quality of professional and personal life.
631. Power, Influence, and Negotiation. (3)
Analysis of power and influence processes; develop observational skill; roles of networks, social capital, and influence in organizations; employing power and influence to negotiate effectively.

632. Social Entrepreneurship. (3)

633. Supply Chain Strategy. (3)
Art and science of leveraging complementary process and network competencies across organizational boundaries to deliver exceptional customer value. Critical topics include globalization, network design, and expatriate management.

634. Quality Management. (3)
Concepts of quality management; strategic issues, philosophies, and tools used to implement and control quality.

637. Global Supply Chain. (3)
Emerging rules of a global marketplace and their influence on key supply chain activities and processes.

638. Strategic Issues in Operations. (3)
Interface of strategy and manufacturing. Topics include: capacity and facilities management, work force management, quality management, technology management, vertical integration, manufacturing infrastructure, manufacturing interface with other functions, and incorporating manufacturing in corporate strategy.

639. Product Development: Market to Concept. (3)
Prerequisite(s): Graduate standing as a student in business administration, mechanical engineering, or manufacturing, or instructor’s consent.

   Strategies, processes, tools, and methods in product development, focusing on initial stages of market and competitive assessment to concept development.

640. Leadership 2: Strategies for Leading and Managing Organizations. (1.5)
Understanding and building individual leadership skills required for a global business environment.

641. The Consultative Process. (3)
Consulting skills and practice: philosophy, interventions, tools, and theories. Consulting project required.

642. Research Design and Data Analysis. (3)
Philosophy of science as it relates to research methodology; both qualitative and quantitative methods of data gathering and analysis.

643. Advanced Human Resource Management. (3)
Advanced analysis of human resource functions (staffing, performance evaluation, compensation and benefits, etc.) emphasizing selected new developments in the HR field, such as certification.

644. Identity and Diversity in Organizations. (1.5)
Dynamics of identity and diversity in organizations considered from three perspectives: interpersonal, intergroup, and institutional. Helping managers work more effectively with these employee populations.

645. International Human Resources. (3)
Understanding national, organizational, and ethnic cultures and cultural frameworks used for business. Cross-country analysis; international human resource issues and working abroad.

646. Designing and Leading Teams. (1.5)
Topics include effective team structure and composition, individual and group autonomy, power and influence, and team conflict.

647. Knowledge Management. (3)
Processes of social and organizational learning at the individual, group, and organizational levels. Processes and practices by which knowledge is acquired, shared, and applied.

648. Capstone: Integrating Theory and Practice. (3)
Applying OBHR knowledge and practitioner change models to enhance organizational effectiveness and business performance. Requires demonstrating utility of theory for individual, team, or organizational change.

649R. Practicum in Organizational Development. (0.5-6)
Completing and analyzing an organizational development project under supervision of a faculty member and a recognized professional person in an organization.

650. Marketing Research and Information Systems. (3)
Consulting course that blends marketing theory and practice and for which a commissioned, proprietary, marketing research project is the major component. Problem identification and definition, descriptive research techniques, uni- and multi-variate analysis, and development of actionable recommendations based on market data.

651. Customer and Product Analysis. (3)
Solving customer and product management problems; measuring, analyzing, and interpreting information for making managerial decisions in market segmentation, product development, and customer satisfaction.

654. Sales Management. (3)
Personal selling and sales management, including strategic role of personal selling; business to business selling; organizing, directing, and compensating the sales force; and evaluating sales performance.

657. Brand Management. (3)
Developing and managing consumer and international products: product selection, line planning, brand management, packaging, market testing, government regulations, market launch, and competitive strategy.
658. International Marketing. (3)
Institutions and techniques related to marketing goods and services in other countries: international dimensions of product, price, distribution channels, and promotion as they are adjusted to meet social, cultural, and political environments found in other countries.

659. Business-to-Business Marketing. (3)
Company and institutional markets, managing R&D and technical product development, building and managing customer relationships and service, and competitive bidding in business market environment.

660. Advanced Brand Strategy. (3)
Strategic market analysis and development and implementation of a strategic marketing plan for a new product, new business, or an ongoing operation.

661. Global Business Negotiations. (3)
Concepts/practices of effective negotiation in the global marketplace. Experiential learning techniques: case studies, role plays, simulations, and videos to develop skills. Cross-cultural international factors that affect negotiation.

664. Venture Capital/Private Equity Fundamentals. (3)
Academic and applied experience opportunities focusing on venture capital and private equity industries, capital acquisition, due diligence, management, governance issues, and best-practice decision making.

665A. Advanced Venture Capital/Private Equity Strategies, Part 1. (1.5)
Prerequisite(s): MBA 664 and application to program.
Applied experience in venture capital and private equity, conducting due diligence on clients, industry, competition; observing and participating in deal structure; tracking progress of funded client companies.
Year-long course.

665B. Advanced Venture Capital/Private Equity Strategies, Part 2. (1.5)
Prerequisite(s): MBA 664 and application to program.
Applied experience in venture capital and private equity, conducting due diligence on clients, industry, competition; observing and participating in deal structure; tracking progress of funded client companies.
Year-long course.

669. Entrepreneurial Strategy. (3)
Developing and applying strategies in emerging businesses, including strategic business models, capital acquisition, and competitive differentiation in new businesses, especially e-businesses. Students consult directly with businesses.

670. Entrepreneurial Marketing. (3)
Strategies for start-up companies. Topics include marketing to investors, internal marketing, and marketing products/services without a marketing budget.

676. Strategic Management of Innovation. (1.5)
Creating and capturing value from innovation by developing and choosing skills and organizing knowledge.

677. Competitive Strategy. (1.5)
Strategic decision making in the context of market competition where strategy choices among rivals are interdependent; utilizing game theory and other tools to create competitive advantage.

679. Creating and Managing New Ventures. (3)
Key issues and problems facing managers in start-up companies. Team-taught by professors and entrepreneurs; particularly helpful for students starting businesses.

680. Strategy 2. (1.5)
Continuation of studies in strategic planning; applying concepts, models, and analysis.

681. Strategy Implementation. (1.5)
Creating alignment among organizational elements of the firm; managing strategic change; and the role of personal and business values in strategy.

682. Ethics, Business, and Society. (3)
Nature of personal and corporate responsibility from perspective of the global system in which we all live.

683. Creative Strategic Thinking. (3)
Understanding conditions under which creative ideas/strategies emerge; building skills for creative strategic thinking; generating valuable ideas for companies.

684. Managing Mergers and Acquisitions. (1.5)
Exploring the motives, organizational processes, financial structures, and performance outcomes of mergers, acquisitions, and divestitures.

685. Strategic Decision Making. (1.5)
Economic, philosophic (logical), psychological, political, and history-based models of decision making and judgment; improving students' decision making processes.

686. Real Estate Analysis: Finance and Investment. (3)
Applying principles and techniques of property investments, including determining value, financing arrangements, and marketing and management problems.

687. Strategic Simulation. (1.5)
Participating as teams in an on-line strategy experience and practicing skills in strategy formulation, group decision making, and strategy execution.

690R. Management Field Study. (1-3)
Experiment working with faculty and management in assisting businesses with specific projects.

691. Real Estate Development. (3)
Prerequisite(s): MBA 520.
Applying financial and real estate principles to practical property investments. Insights into the real estate profession, emphasizing development.

693R. Readings and Conference. (1.5)
Subject to be arranged with instructor.
Approval must be obtained from the MBA Office.
Executive MBA Courses

500. Introduction to Management. (3)
Intensive introduction to management thought and practice.

502. Management Fundamentals 2. (9)
Continuation of Management Fundamentals 1.

504. Corporate Financial Reporting. (3)
Analyzing accounting principles and reporting issues used by prospective managers.

601. Strategy Simulation. (2)
International global strategy simulation during second-year residency week.

606. Global Business Negotiations. (2)

609. Quantitative Methods. (2)
Review of basic statistics for common problems in business management and finance.

615. Entrepreneurial Perspective. (2)
Developing the awareness of an ability to apply entrepreneurial knowledge to make better decisions when starting, growing, and harvesting business ventures.

621. Money, Financial Institutions, and Economic Activity. (2)
Economic analysis of effects of money, banking, and financial institutions on business decisions and aggregate economic activity.

625. Strategic Issues in Manufacturing. (2)
Competitive approach to the manufacturing function.

651. Strategic Marketing Planning. (2)
Strategic market analysis and development and implementation of strategic marketing plan for a new product, new business, or ongoing operation.

651. Strategy 2. (2.5)
Advanced studies in strategic planning; applying concepts, models, and analysis.

687. Global Management 1. (2.5)
Why companies get involved in international business; different entry strategies companies use. Focus on country analysis.

689. Global Management 2. (2)
Capstone course on global management focusing on financial analysis, marketing analysis, organizational strategy, and human resource management.

692. Foreign Business Excursion. (6)
International experience, including instruction by global business executives. Exposure to global practice in management, finance, operations, marketing, and strategy.

693R. Selected Topics in Management. (0.5-6)
Subject(s) to be determined by instructor.

Faculty
Faculty in the Marriott School teaching in the business program:


Allred, Chad R., Assistant Professor. PhD, Purdue University, 2002. Marketing.


Boyer, Brian, Assistant Professor. PhD, University of Michigan, 2004. Investments.


Bryson, Phillip J., Professor. PhD, Ohio State University, 1967. Finance.


Christensen, Theodore E., Associate Professor. PhD, University of Georgia, 1995. Financial; Capital Markets; Taxation.

Cottrell, David M., Associate Teaching Professor. PhD, Ohio State University, 1992. Managerial; Audit; Financial Accounting; Fraud; Auditing.


DeTienne, Kristen B., Professor. PhD, University of Southern California, 1991. Organizational Communications.

Dishman, Paul L., Associate Professor. PhD, University of North Texas, 1992. Competitive Intelligence; Marketing; Marketing Strategy.


Dyer, W. Gibb, Jr., Professor. PhD, Massachusetts Institute of Technology, 1984. Organizational Culture; Entrepreneurship; Management of Family-Owned Firms.


Felìn, Teppo, Assistant Professor. PhD, University of Utah, 2005. Organization Theory, Organizational Learning.


GUERTZ, MICHAEL D., Professor. PhD, University of Oregon, 1972. Marketing; Forecasting; Marketing Research.


HANSON, KAYE T., Assistant Professor. PhD, Brigham Young University, 1983. Management Communication; Spiritual Issues in Management.

HATCH, NILE S., Assistant Professor. PhD, University of California, Berkeley, 1995. Technology Strategy; Investment and Entry Timing; Learning by Doing.

HEATON, HAL B., Professor. PhD, Stanford University, 1983. Finance.


HOLMES, ANDREW, Associate Professor. PhD, University of Houston, 1992. Finance.


JENNINGS, DAVE, Associate Professor. PhD, University of Utah, 2002. Leadership Transition; Leading Change; Resilience.

KIRKHAM, KATE L., Associate Professor. PhD, Union Graduate School, 1977. Dimensions in Diversity in Organizations; Organizational Change; Group Dynamics and Process.

LEBARON, CURTIS D., Associate Professor. PhD, University of Texas, Austin, 1998. Organizational Communication.

LILJENQUIST, KATIE L., Assistant Professor. PhD, Northwestern University, 2007. Management and Organizations.


MEEK, CHRISTOPHER B., Associate Professor. PhD, Cornell University, 1983. International Development; Cross-Cultural Analysis in Organizational Behavior; Labor-Management Cooperation.


NELSON, RAY. D., Associate Professor. PhD, University of California, Berkeley, 1975. Managerial Economics.

PERRY, LEE T., Professor. PhD, Yale University, 1982. Strategies in Declining Organizations; Behavioral Implications of Mergers and Acquisitions; Radical Product Innovation.


RADEBAUGH, LEE H., Professor. DBA, Indiana University, Bloomington, 1973. International; Accounting.

RHOADS, GARY K., Professor. PhD, Texas Tech University, 1988. Marketing.


SANDERS, W. GERARD, Assistant Professor. PhD, University of Texas, Austin, 1996. Corporate Governance; Mergers and Acquisitions; Executive Compensation.


SLADE, BARRETT A., Associate Professor. PhD, University of Georgia, 1997. Real Estate Indexes.


STOCKS, KEVIN D., Professor. PhD, Oklahoma State University, 1981. Managerial; Information Systems.


THOMPSON, MICHAEL P., Associate Professor. PhD, Rensselaer Polytechnic Institute, 1985. Communication; Organizational Theory.


WHETTEN, DAVID A., Professor. PhD, Cornell University, 1974. Organizational Theory; Organizational Identity.

WHITLARK, DAVID B., Professor. PhD, University of Virginia, 1990. Marketing.

WILLIAMS, GARY P., Associate Professor. MBA, Arizona State University, 1974. eBusiness; Entrepreneurship.

WOODWORTH, WARNER P., Professor. PhD, University of Michigan, 1974. International Development; Social Entrepreneurships; Organizational Ethics.

Chemical Engineering

Chair: Richard L. Rowley
Graduate Coordinator: Larry L. Baxter
350 CB
Provo, UT 84602-4100
(801) 422-2586

The Program of Studies

The Department of Chemical Engineering at BYU has been offering graduate degrees since 1960 and has become a center of cutting-edge research and teaching. External funding for departmental research is over $2 million per year, with approximately 14 faculty members and 40 graduate students working to solve technical, scientific, and engineering problems to meet global and societal needs. Faculty and students share their innovations and research in leading scientific publications, attend international research conferences, and collaborate with other researchers across the world. As discussed below, the department is home to a number of specialized research centers where multiple faculty members and students collaborate on long-term projects with lasting impact. The department is known for strong research programs in sustainable energy, catalysis, thermodynamics, molecular modeling, electrochemical engineering, and bioengineering.

The Department of Chemical Engineering offers two degrees: Chemical Engineering—MS and Chemical Engineering—PhD. The department also offers an integrated master’s program. The typical length of study is two years for the MS degree and four and a half years for the PhD degree.

Chemical Engineering—MS

An MS in chemical engineering prepares the student for a wide variety of employment experiences in industry ranging from plant operation to plant design. Employment opportunities in research may also be available to qualified MS graduates. Usually employment is readily available, and starting salaries are slightly higher than those for BS graduates. The MS degree is designed to give the student a solid foundation in chemical engineering principles and a strong research experience. For students desiring design experience rather than research experience, the MS degree with design emphasis is available. See the Chemical Engineering Graduate Student Handbook for details.

Admission and Entry.

Admittance to the MS graduate program in chemical engineering is extended to students most likely to derive the greatest benefit from attending BYU. All candidates must meet admission standards set by Graduate Studies. Additionally, candidates for the chemical engineering graduate program must have an undergraduate degree in chemical engineering or a related field at the time of their admittance and must take the GRE exam. Additional factors considered in admitting students include:

- Academic aptitude as indicated by previous grades and degrees, GRE or other national/international test scores, recommendations, etc.
- Research aptitude as indicated by letters of reference, prior research experience, demonstrated communication skills, and capacity for critical analysis and creative work
- Demands on department resources as determined by outside fellowships, communication skills, intended research area, statement of research purpose, and tuition/stipend requirements

No one of these factors either assures or precludes admittance to the program. All motivated and qualified students are encouraged to apply.

- Semesters of entry and application deadlines for U.S. and Canadian students seeking financial aid and for international students: fall, February 15; winter, June 15; spring, October 15. For U.S. or Canadian students not seeking financial aid, later deadlines apply, but the applicant should contact the department as soon as possible. For applicants with a BS in a major other than chemical engineering, application for spring term is recommended.
- Prerequisite: BS degree (or equivalent) in chemical engineering from a school accredited by the Accreditation Board for Engineering and Technology (ABET), with a minimum 3.0 GPA in upper-division chemical engineering courses and a minimum 3.3 GPA in all courses. A BS degree in other engineering fields, chemistry, physics, materials science, or metallurgy requires provisional admission.

Requirements for Degree.

- Credit hours: minimum 30 hours including 6 thesis hours (Ch En 699R). No more than 9 hours of 300–499 level course work will apply toward the master’s degree. At least 3 hours of the 30 must be in 600-level lecture courses.
- Required courses: Ch En 501, 531, 533, 535, 691R (every semester) and electives (12 or more hours). For requirements of special programs, see the Chemical Engineering Graduate Student Handbook.
- Residency requirement: residency is required for the major part of the work toward the master of science thesis. This work must be completed under the specific direction of a graduate faculty member while the student is in residence at BYU (at least two consecutive full-time semesters). “In residence” is defined as (1) being registered for credit as a graduate student and (2) living and conducting research in the general vicinity of the university, where the student has ready access to research facilities and consultation with the faculty. Further, all work applying toward any master’s project or thesis must be completely open for university review and publication. Any exceptions to the above must be supported by written approval from the department and college and obtained in advance of any work being performed.
- Prospectus: each student must submit and obtain approval for a written prospectus on his or her proposed thesis topic.
- Periodic reviews: The department evaluates each student's progress twice a year. Continuance as a candidate requires acceptable ratings in these reviews.
- Thesis.
- Examinations: a comprehensive qualifying examination on graduate engineering course work must be taken and passed, generally at the middle of the second semester of the graduate program (see the Chemical Engineering Graduate Student Handbook). The examination is offered once a year.
- Oral thesis defense.
- Cumulative GPA: 3.0 or above in all MS degree classes.

**Chemical Engineering—PhD**

A PhD in chemical engineering indicates that the graduate is capable of and qualified to conduct independent and original research in the chemical industries and other related fields. Employees with PhD degrees are in high demand by industry, with starting salaries that are considerably higher than for BS or MS graduates. Also, a PhD degree is generally required to pursue an academic career. The doctoral program is designed to prepare the student for a lifetime of intellectual inquiry and research and is therefore more rigorous and demanding than the MS program. Students who are dedicated, diligent, and thoughtful and who can work independently are most suited for a PhD in chemical engineering at BYU.

**Admission and Entry.**

Admittance to the PhD graduate program in chemical engineering is extended to students most likely to derive the greatest benefit from attending BYU. All candidates must meet admission standards set by Graduate Studies. Additionally, candidates for the chemical engineering graduate program must have an undergraduate degree in chemical engineering or a related field at the time of their admittance and must take the GRE exam. Additional factors considered in admitting students include:
- Academic aptitude as indicated by previous grades and degrees, GRE or other national/international test scores, recommendations, etc.
- Research aptitude as indicated by letters of reference, prior research experience, demonstrated communication skills, and capacity for critical analysis and creative work.
- Demands on department resources as determined by outside fellowships, communication skills, intended research area, statement of research purpose, and tuition/stipend requirements.
- No one of these factors either assures or precludes admittance to the program. All motivated and qualified students are encouraged to apply.
- Semesters of entry and application deadlines for U.S. and Canadian students seeking financial aid and for international students: fall, February 15; winter, June 15; spring, October 15. For U.S. or Canadian students not seeking financial aid, later deadlines apply, but the applicant should contact the department as soon as possible. For applicants with a BS in a major other than chemical engineering, application for spring term is recommended.
- Prerequisite: BS degree (or equivalent) in chemical engineering from a program accredited by the Accreditation Board for Engineering and Technology (ABET), with a minimum 3.0 GPA in upper-division chemical engineering courses and a minimum 3.3 GPA in all courses.

**Requirements for Degree.**

- Credit hours: minimum 54 semester hours, at least 36 of which must be course work beyond the baccalaureate degree, plus 18 hours of dissertation (Ch En 799R). Candidates without a master's degree: 36 hours. At least 6 hours of the 36 must be in advanced mathematics, statistics, or computer science and a minimum 18 hours of dissertation (Ch En 799R). At least 6 hours of the 36 must be in 600- or 700-level lecture courses.
- Required courses: Ch En 501, 531, 533, 535, 791R (every semester), 6 hours of advanced mathematics, statistics, or computer science.
- Demands on department resources as determined by outside fellowships, communication skills, intended research area, statement of research purpose, and tuition/stipend requirements.
- Candidates with a master's degree: with committee approval, up to 20 hours of previous graduate work, may apply toward the doctorate, but at least 36 hours must be taken at BYU (including 18 dissertation hours). Courses taken in the master's program may apply toward the required 6 hours of advanced mathematics, statistics, or computer science.
- Required courses: Ch En 501, 531, 533, 535, 791R (every semester), 6 hours of advanced mathematics, statistics, or computer science, and 17 hours of elective courses.
- Undergraduate hours: up to 6 hours of 300- and 400-level interdisciplinary courses from an approved list may be applied toward the 36 hours of course work for interdisciplinary research areas, such as biomedicine and statistical mechanics. These approved courses appear in the Chemical Engineering Graduate Handbook.
- Study list: the graduate study list must be submitted during the first semester of doctoral study.
CHEMICAL ENGINEERING

• Residency: see residence requirements listed in the preceding Chemical Engineering—MS section.
• Comprehensive qualifying examination: during the second semester students must take and pass a written comprehensive qualifying examination based on graduate course work. The results of this examination are considered together with other performance criteria in evaluating the student for admission to candidacy.
• Prospectus: each student must submit and successfully defend a written prospectus on his or her proposed dissertation research topic.
• Periodic reviews: The department evaluates each student's progress twice a year. Continuance as a candidate requires acceptable ratings in these reviews.
• Dissertation.
• Oral defense of dissertation.
• Cumulative GPA: 3.0 or above in all PhD courses.

Integrated Master’s Program—BS/MS

Students who desire to obtain a master's degree in engineering, and who have been accepted to a department professional program, may elect to enter the integrated master’s program at the end of the sophomore year or during the junior year of the engineering curriculum. The purpose of the program is to afford greater flexibility in scheduling course work than is normally available through a traditional BS degree followed by an MS degree program.

In this program the BS degree may be received before or simultaneously with the MS degree (normally five years from freshman matriculation). Specific requirements are the same as those listed for the chemical engineering MS but include the following:

Admission and Entry.
Application requirements: formal application for admission submitted to Graduate Studies (B-356 ASB) before completion of final 30 hours of combined graduate and undergraduate course work. Applicants must have a cumulative 3.3 or higher GPA and a 3.0 GPA in all chemical engineering classes.

Requirements for Degree.
• Maintenance requirements: cumulative 3.0 GPA or above in upper-division and graduate chemical engineering courses and satisfactory performance evaluation by the research advisor.
• Degree requirements: same as MS degree including a cumulative 3.0 GPA or above in all master's degree courses and, during first semester of registration as a graduate student, submission of a final study list that specifies all technical elective courses.

FINANCIAL ASSISTANCE

Student support is available from the department and the university in the form of teaching assistantships and competitive fellowships, and from faculty members in the form of research assistantships. Nearly every graduate student receives some financial support.

RESOURCES AND OPPORTUNITIES

All of the faculty actively participate in research endeavors, and a number have gained international recognition for their work.

Some of the major facilities in the Department of Chemical Engineering are:

The Advanced Combustion Engineering Research Center (ACERC) is internationally recognized as a leading center for interdisciplinary energy research. Initially founded by the National Science Foundation (NSF) as an engineering research center, ACERC now represents a collaborative effort of faculty with similar research interests and funding from both industrial and government sources. Students and faculty associated with the center pursue experimentation, analysis, computer modeling, and design of combustion systems.

DIPPR Thermophysical Properties Laboratory. Development and management of the DIPPR 801 thermophysical property database is the major pursuit of the DIPPR laboratory. This database, perhaps the best in the world of its kind, is sponsored by the Design Institute for Physical Property Data (DIPPR) of the American Institute of Chemical Engineers (AIChE). Research activities consist of collecting and evaluating literature data on pure component properties and developing correlation and prediction techniques. Experimental projects also compose a significant emphasis of the laboratory.

Catalysis Laboratory. The lab has a thirty-two-year history of productive research in heterogeneous catalysis. Highly interdisciplinary in nature, this research applies principles of kinetics, chemistry, materials science, surface science, and chemical engineering to the understanding of catalyst properties and catalytic reactions.

For a more detailed description of the graduate program requirements, send for a copy of the Chemical Engineering Graduate Student Handbook (or look at http://www.et.byu.edu/cheme/graduate).

COURSE DESCRIPTIONS

518. Biomedical Engineering Principles. (3)
Prerequisite(s): Ch En 374, 376, 478; or equivalents.
Application of chemical engineering principles to model physiologic systems and to solve medical problems.

528. Industrial Catalytic Processes. (2)
Prerequisite(s): Chem 106 or 111; 351; Ch En 378, 478; or equivalents.
Fundamentals of catalytic chemistry and materials; applications to important industrial catalytic processes. Includes catalyst materials and preparation, catalyst characterization, fixed-bed reactor design, and catalyst deactivation.
531. Thermodynamics of Multicomponent Systems. (3)
Prerequisite(s): Ch En 373 or Chem 461 or equivalent.
Fundamental concepts and applications in first and second laws, equilibrium and stability, phase equilibrium, and homogeneous and heterogeneous chemical equilibrium.

533. Transport Phenomena. (3)
Prerequisite(s): Ch En 476 or concurrent enrollment.
Transport mechanisms and coefficients and fundamental field equations for momentum, heat, and mass transport, with application to system design.

535. Kinetics and Catalysis. (3)
Prerequisite(s): Ch En 478 or equivalent.
Theories and principles of chemical kinetics, including heterogeneous catalysis and reactor design.

541. Computer Design Methods. (3)
Prerequisite(s): Math 311, Ch En 376; or equivalents.
Computer-aided design and numerical methods of chemical engineering processes.

578. Polymer Science and Engineering. (3)
Prerequisite(s): Ch En 373, 374 378, 478; or equivalents.
Foundation science and theory of polymer chemistry and physics and their implications in engineering applications. Topics include polymerization chemistry, structure-property relationships, polymer physics, and transport properties.

593R. Special Topics - Intermediate. (1-3)
Prerequisite(s): Instructor’s consent.
Special topics for advanced undergraduate students and for graduate students.

601. Directed Graduate Studies. (2)
Prerequisite(s): Ch En 531, 533, 535.
Guided preparation for department’s comprehensive exams and for formulation of research prospectus.

610. Principles of Reservoir Engineering. (3)
Prerequisite(s): Ch En 373 or equivalent.
Reservoir and hydrocarbon classification; fluid flow; primary oil and gas recovery mechanisms; enhanced oil recovery.

631. Applied Statistical Mechanics. (3)
Prerequisite(s): Chem 461; Ch En 531 or equivalent.
Fundamentals of statistical mechanics and their application to calculating thermodynamic and transport properties of fluids and fluid mixtures.

633. Combustion Processes. (3)
Prerequisite(s): Ch En 533 or equivalent.
Fundamentals of transport processes in reacting flow systems with specific applications of various combustion processes.

634. Advanced Mass Transfer. (3)
Prerequisite(s): Ch En 531, 533.
Fundamental mass transfer for multicomponent and flow systems. Includes influence of species activities and temperature gradients.

641. Combustion Modeling. (3)
Prerequisite(s): Ch En 633; Math 311 or Ch En 541.
Theory of combustion systems and quantitative procedures for computing performance of combustion chambers. Applications include turbulent combustion of gases, sprays, and particulates.

674. Advanced Thermodynamics. (2)
Prerequisite(s): Ch En 531 or equivalent.
Advanced topics of thermodynamics, including electrolytes, phase equilibrium modeling, nonequilibrium thermodynamics, and calorimetry.

685. Chemical Engineering for Chemistry Students. (6)
Intensive treatment of fundamentals of material and energy balances, fluid flow, and heat and mass transfer, with application to design and analysis of engineering systems.

691R. Seminar for Master’s Students. (0.5)
Technical presentations by graduate students, faculty members, and guests.

693R. Special Topics--Graduates. (0.5-6)

698R. Master’s Project. (0.5-6)

699R. Master’s Thesis. (0.5-9)

733. Coal Combustion. (3)
Prerequisite(s): instructor’s consent.
Fundamentals of coal combustion and gasification processes, including particle mechanics, devolatilization, heterogeneous oxidation, radiative heat transfer, and combustion of coal in practical flames.

791R. Seminar for Doctoral Students. (0.5)

793R. Selected Topics in Chemical Engineering. (0.5-3)
Topics vary according to student-faculty interests.

799R. Doctoral Dissertation. (0.5-9)

FACULTY

Baxter, Larry L., Professor. PhD, Brigham Young University, 1989. Combustion of Coal; Biomass; and Solid Fuels.

Fletcher, Thomas H., Professor. PhD, Brigham Young University, 1983. Coal Combustion; Gasification; Gas Turbine Combustion.


Hecker, William C., Associate Professor. PhD, University of California, Berkeley, 1982. Catalysis; Chemical Kinetics.

Knotts, Thomas A., Assistant Professor. PhD, University of Wisconsin, Madison, 2006. Molecular Modeling.

Oscarson, John L., Professor. PhD, University of Michigan, 1985. Thermodynamics; Calorimetry.
Wheeler, Dean R., Assistant Professor. PhD, University of California, Berkeley, 2002. Electrochemical Engineering; Molecular Modeling.

Chemistry and Biochemistry
Chair: Paul B. Farnsworth
Graduate Coordinator: David V. Dearden

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The Program of Studies
Chemistry is fundamental in our physical and biological world. The principles and applications of chemistry are diverse, interesting, and challenging. The graduate program in chemistry and biochemistry at BYU prepares developing scientists to enjoy the excitement of chemistry and to contribute in diverse circumstances where chemical knowledge and skill are needed.

Thirty-three faculty are the foundation of an excellent graduate program. The department occupies the 190,000-square-foot Benson Science Building, which provides comfortable, modern laboratories. Extensive instrumentation is available and constantly being replaced or upgraded to support cutting-edge research.

About 90 graduate students provide an essential and dynamic atmosphere for research progress and stimulating discussion. Twenty postdoctoral students and visiting scientists add depth and diversity to the intellectual atmosphere. About 170 undergraduate research assistants also bring significant strength and enthusiasm to research projects.

Additional information about faculty members and their research interests is available online or found in a DVD available from the department office at the address, phone number, fax, or e-mail address given above.

The Department of Chemistry and Biochemistry offers four degrees: Chemistry—MS, Biochemistry—MS, Chemistry—PhD, and Biochemistry—PhD.

Areas of emphasis include: Analytical Chemistry, Biochemistry, Inorganic/Materials Chemistry, Organic and Biomolecular Chemistry, and Physical Chemistry.

About 80 percent of the graduate students are in the PhD program, and they complete their work in four to five years. MS program students complete their work in about two and a half years.

Admission and Entry.
• Application requirements:
  (1) completed BYU Application for Admission to Graduate Study,
  (2) official results of the GRE general exam,
  (3) official TOEFL or IELTS examination results for persons whose first language is not English.

Note: The GRE subject test for chemistry or biochemistry is recommended but not required.
• Semester of entry and application deadline: fall, February 1 (U.S. and international).
• Prerequisite requirements: applicants should have completed a baccalaureate degree in chemistry or biochemistry or have equivalent preparation in chemistry and biochemistry (e.g., molecular biology).
• Proficiency examinations: written examinations of a new student’s undergraduate preparation in chemistry and/or biochemistry are given during the week preceding the first semester of enrollment.

Chemistry—MS
The chemistry MS degree provides specialized study and research on an advanced level. It includes about one year of course work beyond the bachelor’s degree and the development of a significant research project presented in a thesis. The MS student will study in one of the four chemistry areas of emphasis or develop, with an advisor, an interdisciplinary program. The added preparation in theory and practice allows the chemical scientist to assume responsibility and
supervision beyond that normally given with bachelor’s level study. The MS degree is adequate preparation for some junior college teaching positions. The master’s degree is generally not necessary as a preparatory step for the PhD degree.

Requirements for Degree.
- Credit hours (30): 24 hours of course work and research plus 6 thesis hours (Chem 699R).
- Required courses: Chem 594R (every semester in residence) and other courses as specified by committee.
- Annual progress review and/or examination.
- Thesis.
- Final oral examination consisting of two parts: (A) public presentation of original research described in thesis; (B) comprehensive examination on course work, research, and thesis.

Biochemistry—MS
The biochemistry MS degree provides specialized study on an advanced level. The degree includes about one year of course work beyond the BS degree and a thesis based upon a significant research project. The research will be in areas of biochemical emphasis, such as molecular genetics, enzymology, or protein structure and function. The added preparation in theory and practice allows the MS biochemist to assume responsibility and supervision beyond that normally given a BS or BA biochemist. The MS degree is adequate preparation for some junior college teaching positions. It is generally not a prerequisite for a PhD degree program.

Requirements for Degree.
- Credit hours (30): 24 hours of course work and research plus 6 thesis hours (Chem 699R).
- Required courses: Chem 581, 583, 594R (every semester in residence) and other courses as specified by committee.
- Annual progress review and/or examination.
- Thesis.
- Final oral examination consisting of two parts: (A) public presentation of original research described in thesis; (B) comprehensive examination on course work, research, and thesis.

Chemistry—PhD
The chemistry PhD degree prepares a scientist to contribute on the creative front of chemical science. A student’s study may fall within one of the chemistry areas of emphasis or it may involve an interdisciplinary focus. Some courses on advanced topics related to the student’s professional goals will be taken, but the PhD degree is primarily a research experience that is to be reported in a dissertation and in the scientific literature. The PhD chemist is prepared for a wide range of career choices and will be expected to act with considerable independence and enjoy major responsibilities. A new PhD chemist may seek employment in industry, government agencies, or the university or college setting.

Requirements for Degree.
- Credit hours (54): 36 hours of course work and research plus 18 dissertation hours (Chem 699R). (With departmental approval, some credit from an MS degree may be applied toward this requirement.)
- Required courses: Chem 581, 583, 594R, (every semester in residence) and other courses as specified by committee.
- Annual progress review and/or examination.
- Comprehensive qualifying exam: written and/or oral.
- Dissertation.
- Final oral examination consisting of two parts: (A) public presentation of original research described in dissertation; (B) oral examination, primarily on dissertation.

Biochemistry—PhD
The biochemistry PhD degree prepares a scientist to perform and to supervise creative research in biochemistry and molecular biology. The PhD degree requires some course work, but the emphasis is primarily on original, creative research leading to a dissertation and to publications in scientific journals. The PhD biochemist is prepared for a wide range of career opportunities that involve independent thinking and supervisory responsibilities in industry, government, or academia.

Requirements for Degree.
- Credit hours (54): 36 hours of course work and research plus 18 dissertation hours (Chem 699R). (With departmental approval, some credit from an MS degree may be applied toward this requirement.)
- Required courses: Chem 581, 583, 594R (every semester in residence), and other courses as specified by committee.
- Annual progress review and/or examination.
- Comprehensive qualifying exam: written and/or oral.
- Dissertation.
- Final oral examination consisting of two parts: (A) public presentation of original research described in dissertation; (B) oral examination, primarily on dissertation.

FINANCIAL ASSISTANCE
All eligible students in the department’s graduate program who request financial aid are granted tuition for all required graduate courses and a graduate assistantship. These awards are granted on a continuing basis as long as satisfactory progress is being made toward the degree. This financial assistance allows students to be involved full-time in their graduate program, which will include research and course work and may also include teaching and laboratory assistant assignments.

Other types of financial aid such as internships, scholarships, and student loans may also be available to students who qualify. More information may be obtained from the department office and from the Financial Aid Office.

The department relies on its graduate students to fill many assignments in laboratory and recitation instruction. Unless excused by the faculty, a graduate student is expected to be a
teaching assistant for at least two semesters for twenty hours a week during residency toward the doctoral degree. Master’s degree candidates are expected to teach half this amount.

**Resources and Opportunities**

**Cancer Research Center.** The objective of the BYU Cancer Research Center is to make significant scientific contributions toward the control and cure of cancer. Intense investigations of oncogenes and their relation to the development of cancer represents a major activity within the center. Faculty and students from the Department of Chemistry and Biochemistry and from the College of Life Sciences contribute their expertise.

Detailed information about the department, its facilities, and programs is available on the department’s Web site at www.chem.byu.edu. We encourage you to explore the site and to contact the department office for answers to any questions that you may have. (Please see preceding address information.)

**Course Descriptions**

**501. Safe Chemical Practices.** (0.5)
University and department safety policies. Chemical hazards, fire safety, and biosafety, including laws.

**514. Inorganic Chemistry.** (3)
Prerequisite(s): Chem 462, 468; or equivalents.
In-depth treatment of theoretical concepts in inorganic chemistry and solid state, organometallic, and bioinorganic chemistry.

**518. Advanced Inorganic Laboratory.** (2)
Prerequisite(s): Chem 201 or concurrent enrollment; Chem 514.
Synthesis, characterization, and properties of materials; coordination and organometallic compounds.

**521. Instrumental Analysis Lecture.** (2)
Prerequisite(s): Chem 462 or equivalent.
Modern instrumental methods and basic principles of instrumentation.

**523. Instrumental Analysis Laboratory.** (2)
Prerequisite(s): Chem 521; Chem 201 or 501 or concurrent enrollment.
Continuation of Chem 521. Laboratory experience with modern analytical instrumentation.

**552. Advanced Organic Chemistry.** (3)
Prerequisite(s): Chem 351, 352; 461 or 468; 462; or equivalents.
Physical aspects of organic chemistry: mechanisms, reaction intermediates, bonding, stereoochemical and stereoelectronic effects, molecular orbital theory, Lewis acidity and basicity.

**553. Advanced Organic Chemistry.** (3)
Prerequisite(s): Chem 351, 352; or equivalents.
Synthetic aspects of organic chemistry: oxidations, reductions, concerted reactions, stereoselectivity, synthetic equivalents, protecting groups. Examples of natural product total synthesis.

**555. Organic Spectroscopic Identification.** (3)
Prerequisite(s): Chem 352, 354; or equivalents.
Theory and practice of spectroscopic methods of identifying organic compounds, including infrared, ultraviolet nuclear magnetic resonance, and mass spectrometries.

**561. Chemical Thermodynamics.** (3)
Prerequisite(s): Chem 461, 462; or equivalents.
Development of the principles of chemical thermodynamics, including laws, pure materials, mixtures, equilibria, and elementary statistical mechanics.

**563. Reaction Kinetics.** (3)
Prerequisite(s): Chem 461, 462; or equivalents.
Theoretical aspects of chemical kinetics in the gas phase and in solution. Rates and mechanisms in solution, rapid reactions, and other topics.

**565. Introduction to Quantum Chemistry.** (3)
Prerequisite(s): Chem 461, 462, 468; or equivalents.
Introduction to physical and mathematical aspects of quantum theory, emphasizing application of the Schrodinger wave equation to chemical systems.

**567. Statistical Mechanics.** (3)
Prerequisite(s): Chem 461, 462; or equivalents.
Introduction to classical and quantum statistical mechanics, including Boltzmann, Fermi-Dirac, and Bose-Einstein statistics. Applications of statistical thermodynamics to gases, liquids, and solids.

**569. Fundamentals of Spectroscopy.** (3)
Prerequisite(s): Chem 462 or equivalent.
Atomic and molecular spectroscopy and application of group theoretical concepts. Types of experiments and interpretation of data.

**581. Advanced Biochemical Methodology 1.** (3)
Prerequisite(s): Chem 482 or equivalent.
Physical methods used in biochemical research, including centrifugation, structural determinations, and use of radioactivity and spectroscopy.
First of two required courses for biochemistry graduate students.

**583. Advanced Biochemical Methodology 2.** (3)
Prerequisite(s): Chem 482 or equivalent.
Molecular biological methods used in biochemistry, including immunotechniques, bioinformatics, and selected recombinant DNA techniques.
Second of two required courses for biochemistry graduate students.
584. Biochemistry Laboratory/Proteins. (3)
Prerequisite(s): Chem 481 or equivalent.
Introduction to current biochemical research procedures including spectrophotometry, chromatography, electrophoresis, and immunological techniques. Protein over-expression; isolation and characterization methods. Enzyme kinetics and protein-ligand interactions. Introduction to bioinformatics.

586. Biochemistry Laboratory/Nucleic Acids. (3)
Prerequisite(s): Chem 482 or equivalent.
Laboratory course covering major techniques involved in isolation, amplification, and cloning of recombinant DNA as well as isolation, synthesis, translation, and identification of RNA.

594R. General Seminar. (0.5-3)
Research topics presented by faculty and visiting scientists.
Required one semester in residence of all senior BS majors in chemistry and biochemistry.

596R. Special Topics in Chemistry. (0.5-3)

619R. Advanced Topics in Inorganic Chemistry. (0.5-3)
Prerequisite(s): Chem 514 or equivalent.
The following topics are rotated: chemistry of the main group elements, chemistry of the transition elements.

629R. Advanced Topics in Analytical Chemistry. (0.5-3)
Prerequisite(s): Chem 521 or equivalent.

655. Advanced Techniques in Nuclear Magnetic Resonance. (1)
Prerequisite(s): Chem 455 or 496 or equivalent.
Introduction to techniques such as DEPT, COSY, HETCOR, ROESY, INADEQUATE, HMQC, HSQC, and HMBC.

659R. Organometallic Chemistry. (0.5-3)
Prerequisite(s): Chem 552 or equivalent.

669R. Advanced Topics in Physical Chemistry. (0.5-3)
Prerequisite(s): Chem 561 and/or 565 or equivalent.
The following topics are rotated: advanced chemical thermodynamics, quantum chemistry.

689R. Advanced Topics in Biochemistry. (0.5-3)
Prerequisite(s): Chem 582 or equivalent.
The following topics are rotated: cellular signal transduction, clinical chemistry, eukaryotic gene regulation, and protein and RNA engineering.

694. Scientific Writing and Professional Ethics. (1)
Prerequisite(s): Chem 594R.
Professional standards. Manuscript preparation and attendance at seminars by faculty and visiting scientists.
To be taken the second year of the graduate program.

697R. Graduate Research. (0.5-6)
Prerequisite(s): Chem 501 or concurrent registration.

699R. Graduate Thesis/Dissertation. (0.5-9)

719R. Selected Topics in Inorganic Chemistry. (0.5-3)
Subjects that may be offered: materials chemistry.

729R. Selected Topics in Analytical Chemistry. (0.5-3)
Subjects that may be offered: atomic spectroscopy, laser spectroscopy, mass spectrometry, microfabrication/nanotechnology, and surface chemistry and analysis.

759R. Selected Topics in Organic and Biomolecular Chemistry. (0.5-3)
Subjects that may be offered: emerging areas in organic and biomolecular chemistry.

769R. Selected Topics in Physical Chemistry. (0.5-3)
Subjects that may be offered include: advanced group theory, advanced techniques in magnetic resonance, calorimetry, molecular structure and spectroscopy, solid-state chemistry, statistical mechanics.

789R. Selected Topics in Biochemistry. (0.5-3)
Subjects that may be offered are: biochemical immunology, bioorganic chemistry, molecular biology of cancer, molecular modeling of biomolecules, and proteomics.

FACULTY


ASPLUND, MATTHEW C., Assistant Professor. PhD, University of California, Berkeley, 1998. Physical Chemistry.


BELNAP, DAVID M., Assistant Professor. PhD, Purdue University, 1995. Biochemistry.

BOERIO-GOATES, JULIANA, Professor. PhD, University of Michigan, 1979. Physical Chemistry.

BURTON, GREGORY E., Professor, PhD, Medical College of Virginia, Virginia Commonwealth University, 1989. Biochemistry.


FARNsworth, PAUL B., Professor. PhD, University of Wisconsin, Madison, 1981. Analytical Chemistry.

Goates, Steven R., Professor. PhD, University of Michigan, 1981. Analytical Chemistry.

Graves, Steven W., Professor, PhD, Yale University, 1978. Biochemistry.

Ham, Young Wan, Assistant Professor. PhD, Purdue University, 2002. Organic Chemistry.

Hansen, Jaron C., Assistant Professor. PhD, Purdue University, 2002. Analytical Chemistry.

Harrison, Roger G., Associate Professor. PhD, University of Utah, 1993. Inorganic/Materials Chemistry.


Linford, Matthew R., Associate Professor. PhD, Stanford University, 1996. Analytical/Materials Chemistry.

Patterson, James E., Assistant Professor. PhD, University of Illinois at Urbana-Champaign, 2004. Analytical Chemistry.


Shirts, Randall B., Associate Professor. PhD, Harvard University, 1979. Physical Chemistry.


Vollmer-Snarr, Heidi R., Assistant Professor, DPh, Oxford University, United Kingdom, 2000. Organic Chemistry.


Willardson, Barry M., Professor. PhD, Purdue University, 1990. Biochemistry.


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Civil and Environmental Engineering

Chair: Steven E. Benzley
Associate Chair: Rollin H. Hotchkiss
Graduate Coordinator: E. James Nelson

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The Program of Studies

Two degrees are offered through the Department of Civil and Environmental Engineering: Civil Engineering—MS and Civil Engineering—PhD. The department also offers an integrated BS/MS program.

The Department of Civil and Environmental Engineering admits approximately forty-five students each year into its programs.

Civil Engineering—MS

The MS degree builds on the foundation of skills, breadth, and depth of the undergraduate education to achieve greater competency. While the undergraduate program prepares students for routine practice (i.e., practice that has long been used and tested by practicing engineers), the MS program brings students to the state-of-the-art in one or more specialty areas enabling them with the skills necessary to handle problems at the cutting edge of the profession.

Students pursuing the thesis option gain the added dimension of participating in research work at the cutting-edge of the profession. This research work culminates in a high-quality thesis presentation. Electronic submission of the thesis is required. Alternatively, the student may choose the project option and complete a less intensive research or design study project. The master’s degree normally requires one year beyond the bachelor’s degree.
Admission and Entry.
• Semesters of entry and application deadlines: fall, February 15 (international) and May 15 (U.S.); winter, June 15 (international) and September 15 (U.S.); spring, October 15 (international) and February 15 (U.S.); summer, October 15 (international) and February 15 (U.S.).
• Application requirements: complete BYU Application for Admission to Graduate Study and GRE general examination. It is recommended that the GRE be taken a minimum of six weeks prior to the application deadline. International students must submit scores for the TOEFL or IELTS examination. International applicants who have obtained their degree(s) outside the U.S. must submit all official transcripts, diplomas, and mark sheets to one of the following agencies for an evaluation: Education Credential Evaluators (ECE), International Education Research Foundation (IERF), or World Education Services (WES).
• Prerequisite: baccalaureate degree in civil engineering or its equivalent. Students with other academic backgrounds will also be considered but would need to complete civil engineering prerequisite course work.

Requirements for Degree.
• Credit hours:
  Thesis program: 30 minimum approved hours including 6 thesis hours (CE En 699R).
  Project program: 30 minimum approved hours including 3 project hours (CE En 698R).
• Required course: CE En 691R (Graduate Seminar) each fall and winter semester; 1 hour required by department and which is in addition to the university required 30 minimum.
• Study list: the graduate study list must be submitted during the first semester of graduate study.
• Evaluations: a department advisor’s evaluation of the student’s graduate program progress is required each semester/term in MS program.
• Residency requirements: residency is required for the major part of the work toward the MS degree. This work must be completed under the specific direction of a graduate faculty member while the student is in residence at BYU. “In residence” is defined as (1) being registered for credit as a graduate student and (2) living and conducting research in the general vicinity of the university, where the student has ready access to research facilities and consultation with the faculty. Further, all work applying toward any master’s thesis or project must be completely open for university review and publication. Any exceptions to the above must be supported by written approval from the department and college and obtained in advance of any work being performed.
• Examinations: (A) successful completion of the Fundamentals of Engineering Examination (FE); (B) oral defense of thesis or oral presentation of project.
• Cumulative 3.0 GPA or above in all master’s degree courses.

Integrated Master’s Program—BS/MS
Students who desire to obtain a master’s degree in engineering may elect to apply for and enter the integrated master’s program during the junior year of the engineering curriculum. The purpose of the program is to afford greater flexibility in scheduling course work than is normally available through a traditional BS degree followed by an MS degree program.
In this program the BS degree will be received simultaneously with the MS degree. Specific requirements are the same as those listed for the civil and environmental engineering MS but include the following:

Admission and Entry.
• Submit formal integrated program application to the Department of Civil and Environmental Engineering during junior year.
• Submit formal graduate program application for admission to Graduate Studies before beginning the final 30 hours of the graduate degree.
• Required GPA: cumulative of 3.0 or better in civil and environmental engineering courses at end of sophomore year.

Requirements for Degree.
See requirements for degree listed in the preceding Civil Engineering—MS section.

Engineering Management—Minor
Offered to MS students in the College of Engineering and Technology, the engineering management minor provides a way to include some elements of modern management in a technical graduate program.

Requirements.
• The minor requires 9 hours, of which only 6 may be included in the 30 hours required for the MS degree. Mgt 501 and 511 are required courses. The other 3 hours are selected from Mgt 541, MBA 650 and 679, P Mgt 622, 675, 676. Students should carefully plan how they will meet the requirements of the minor since these courses are taught only once a year.
• This minor should be declared as part of a student’s graduate study list. Admittance approval to enroll in class will be derived from approved graduate study lists.

Civil Engineering—PhD
The PhD degree is awarded to candidates who have made a significant contribution to knowledge in a particular specialization of civil and environmental engineering. Such a contribution is achieved through research that involves a thorough review of applicable literature, completion of carefully planned work, and a high-quality presentation of the new knowledge: the dissertation. Electronic submission of the disser-


CIVIL AND ENVIRONMENTAL ENGINEERING

• Credit hours: minimum 54 semester hours with a minimum 18 hours in graduate-level courses, plus a minimum 18 hours of dissertation (CE En 799R). Students with no advanced mathematics, statistics, or science in their baccalaureate degree will be required to take additional courses in these areas.

Candidates with a Master's Degree: at least 36 semester hours beyond master's degree hours with a minimum 18 hours in graduate-level courses, plus a minimum 18 hours of dissertation (CE En 799R). Students with no advanced mathematics, statistics, or science in their baccalaureate or master's degree will be required to take additional courses in these areas.

• Required course: CE En 691R (graduate seminar) each fall and winter semester; 2 hours required by department and which is in addition to the university required 54 minimum.

• Study list: the graduate study list must be submitted during the first semester of doctoral study.

• Evaluations: A department advisor's evaluation of the student's graduate program progress is required each semester/term in PhD program.

• Residency requirements: see residency requirements listed in the preceding Civil Engineering—MS section.

• Comprehensive qualifying examination: students must take and pass a written comprehensive qualifying examination based on graduate course work. After passing this examination, the student is accepted to candidacy for the doctoral degree. The examination is offered when the candidate completes two semester of coursework and must be taken at least one year before completion of the degree.

• Prospectus: students must submit and successfully defend a written prospectus on their proposed dissertation research topic at least one year before completion of the degree.

• Dissertation.

• Oral defense of dissertation.

FINANCIAL ASSISTANCE

Departmental Scholarships.
Master's or PhD candidates are eligible for scholarships each year. Applications may be obtained in March on the department Web site; the awards are given in mid-April for the next academic year. Selection is based on need and on scholastic merit (primarily using the GPA of the last 60 hours on a verified transcript). These scholarships may be received in addition to any assistantships or privately endowed awards unless the total financial aid package exceeds the scholarship limit stipulated by the university.

Research Assistantships. The Civil and Environmental Engineering faculty obtain funds from both off-campus and on-campus sources to support research assistants. These awards support students at the current pay rate for up to 30 hours per week. The research work normally applies toward completion of the student's thesis or dissertation.

Teaching Assistantships. All graduate students are eligible to be TAs. The assistantships range from 10-20 hours per week and consist of teaching labs and grading courses.

Awards. The department has the following privately endowed awards: the Russell J Berrett Scholarship, the Joseph Layne Black Scholarship, the W Don and Kaye Budge ASCE Scholarship, the Caleb Tanner Water Resources Scholarship, The Jerry Christiansen Scholarship, the Nancy and Doug Ferrell Scholarship, the D Allan Firmaage Scholarship, the Dean K Fuhriman Scholarship, the King and Diane Husein Professorship, the Ramesh Khona Scholarship, the Marvin E Larson Scholarship, the Billy and Marian Nichols Scholarship, the H Burke Peterson Scholarship, the Ralph and Betty Rollins Scholarship, the John and Bobbie Tanner Scholarship, the Lee and Connie Wimmer Scholarship, and the T Leslie Youd Family Fellowship. In addition, the department has the following private annual awards: the Keller and Associates Scholarship, the Wayne Y
Lee Scholarship, the Washington Group International Scholarship, and the Wright Engineers Scholarship.

Resources and Opportunities
The Fulton College of Engineering and Technology, of which the Department of Civil and Environmental Engineering is a part, has experienced rapid growth in funded research during the past decade.

Faculty research areas include: collapsible soils; composite materials; finite element modeling; foundation and earthquake engineering; hydraulics and stream restoration; industrial and hazardous waste control; optimization in design; concrete and bituminous pavements; surface, watershed and groundwater modeling; earthquake resistant structures; and transportation studies.

For a more detailed description of the graduate program requirements, send for a copy of the department’s graduate handbook; Web site: www.et.byu.edu/ce/.

**Course Descriptions**

500. (CEEn-MeEn) Design and Materials Applications. (3)
Prerequisite(s): Me En 372 or CE En 321 or equivalent.
Applied and residual stress; materials selection; static, impact, and fatigue strength; fatigue damage; surface treatments; elastic deflection and stability--all as applied to mechanical design.

501. (CEEn-MeEn) Stress Analysis and Design of Mechanical Structures. (3)
Prerequisite(s): CE En 321 or Me En 372 or equivalent.
Stress analysis and deflection of structures; general bending and torsion with computer applications to mechanical and aerospace structure design.

503. (CEEn-MeEn) Plasticity and Fracture. (3)
Prerequisite(s): CEEn 203; MeEn 250; Math 303; senior standing or instructor's consent.
Tensor algebra; stress and deformation tensors; relationships between dislocation slip, yielding, plastic constitutive behavior, and microstructure development; cracks and linear elastic fracture mechanics.

504. (CE En-Me En) Computer Structural Analysis and Optimization. (3)
Prerequisite(s): Linear algebra; CE En 321 or Me En 372 or equivalent.
Matrix analysis of rods, shafts, beams, trusses, frames, and grids using the generalized stiffness method. Optimization methods for these structures. Organizing computer programs for structural analysis and structural optimization.

505. Portland Cement Concrete Mixture Design and Analysis. (3)
Prerequisite(s): CE En 305 or equivalent.
Properties and testing of freshly mixed and hardened concrete and constituent materials; concrete mixture design and analysis; concrete construction practices; laboratory experimentation.

506. (CE En-Me En) Continuum Mechanics and Finite Elements. (3)
Prerequisite(s): CE En 321 or Me En 372 or equivalent.
Equilibrium, constitutive, and compatibility equations; closed-form solutions from elasticity; finite element theory, programming, and usage; membrane, axisymmetric, and solid elements. Application to heat transfer, fluid mechanics, and seepage.

508. (CE En-Me En) Structural Vibrations. (3)
Prerequisite(s): CE En 321 or Me En 372 or equivalent.
Dynamic analysis of single degree-of-freedom, discrete multi-degree-of-freedom, and continuous systems.

521. Seismic-Resistant Steel Buildings. (3)
Prerequisite(s): CE En 421 or equivalent.
Background and development of UBC seismic provisions, analysis and design of multistory steel frames, in-depth treatment of shear and moment connections, design of horizontal and vertical diaphragms.

523. (CE En-Me En) Aircraft Structures. (3)
Prerequisite(s): CE En 305, 321; or Me En 250, 372; or equivalents.
Requirements, objectives, loads, materials, and tools for design of airframe structures; static behavior of thin-wall structures; durability and damage tolerance; certification and testing. Airframe component team design project.

524. Reinforced Concrete Buildings. (3)
Prerequisite(s): CE En 424 or equivalent.
Design for earthquake resistance; torsion effects, slender columns, and two-way slabs.

525. Bridge Structures. (3)
Prerequisite(s): CE En 422, 424; or equivalents.
Design of composite, continuous beam, and girder bridges, including piers, abutments, floor systems, and bearings; field trips to observe bridge construction and fabrication.

526. Prestressed Concrete. (3)
Prerequisite(s): CE En 424 or equivalent.
Strength, behavior, and design of prestressed reinforced concrete members and structures, emphasizing pretensioned, precast construction.

528. Masonry Design. (3)
Prerequisite(s): CE En 424 or equivalent.
Introduction to analysis, design, and construction of masonry structures. Compressive, tensile, flexural, and shear behavior of masonry structural components.
531. Principles of Hydrologic Modeling (3)
Prerequisite(s): CE En 431 or equivalent.
Advanced hydrologic and hydraulic principles with an emphasis on modeling for the purpose of planning and designing drainage, flood control, and other water resource facilities.

535. Hydraulic Design of Channels and Control Structures. (3)
Prerequisite(s): CE En 433 or equivalent.
Design of water conveyance channels and control structures, including siphons, chutes, weirs, flumes, dams, spillways, and outlet works.

540. Geo-Environmental Engineering. (3)
Prerequisite(s): CE En 341 or equivalent.
Geotechnical aspects of environmental engineering. Topics include municipal and hazardous solid waste landfill design and characterization and remediation techniques for contaminated soil and groundwater.

542. Foundation Engineering. (3)
Prerequisite(s): CE En 341 or equivalent.
Soil investigation, bearing capacity and settlement, design of spread footings, combined footings, mat foundations, pile foundations, and drilled shafts.

543. Earth- and Rock-Fill Structures. (3)
Prerequisite(s): CEEn 341 or equivalent.
Design and construction of earth- and rock-fill dams, including selecting dam sites and materials, and applying seepage and pore pressure studies, shear strength data, stability analysis, and construction controls.

545. Geotechnical Analysis of Earthquake Phenomena. (3)
Prerequisite(s): CE En 321, 341; or equivalents.
Earthquake magnitude and intensity; design ground motions, elementary dynamics of structures; response spectra; building code provisions; liquefaction and ground failure.

547. Seepage and Groundwater Modeling. (3)
Prerequisite(s): CEEn 341, 431; or equivalents.
Techniques for modeling groundwater flow on a regional and local basis. Seepage analysis of levees, excavations, and earth dams.

551. Water Treatment Facilities Design. (3)
Prerequisite(s): CE En 351 or equivalent.
Evaluation, selection, and design of water treatment facilities.

555. Environmental Chemistry. (3)
Prerequisite(s): CE En 351 or equivalent.
Chemical theory and calculation support analysis of major organic and inorganic constituents in environmental engineering, focusing on theoretical understanding of the chemical processes.

562. Traffic Engineering: Characteristics and Operations. (3)
Prerequisite(s): CE En 361 or equivalent.
Traffic flow theory, traffic operations, characteristics of drivers and vehicles, parking facilities, at-grade intersections, channelization, traffic control devices, signals.

563. Pavement Design. (3)
Prerequisite(s): CEEn 305, 361; or equivalents.
Design, construction, evaluation, maintenance, and rehabilitation of flexible and rigid pavements; influence of traffic and environmental factors; mechanistic analysis of pavement structures using computer software.

565. Urban Transportation Planning. (3)
Prerequisite(s): CEEn 361 or instructor's consent.
Urban transportation planning and decision making, intermodal transportation, land-use transportation interrelationships, transportation demand modeling, site impact analysis, sustainable transportation; livable cities.

570. (CE En-Me En) Computer-Aided Engineering Software Development. (3)
Prerequisite(s): Me En 373 or C programming.
Programming methods for the development of engineering software. Data structures, architecture, libraries, and graphical user interfaces, with applications to CAD systems.

572. (CE En-Me En) Computer-Aided Geometric Design. (3)
Prerequisite(s): Proficiency in C programming.
Mathematical theory of free-form curves and surfaces and solid geometric modeling. Bezier and B-spline curve and surface theory, parametric and implicit forms, intersection algorithms, topics in computer algebra, and free-form deformation. Several programming projects.

575. (CE En-Me En) Optimization Techniques in Engineering. (3)
Prerequisite(s): Math 302 and FORTRAN, C, or similar computer language.
Application of computer optimization techniques to constrained engineering design. Theory and use of state-of-the-art computer routines. Robust design methods.
Fees.

580. Hazardous Waste Management and Control. (3)
Prerequisite(s): CEEn 351 or instructor's consent.
Hazardous waste statutes and regulations; introduction to hazardous waste treatment, storage, disposal, and monitoring techniques.

594R. Selected Problems in Civil and Environmental Engineering. (1-3)

602. (CE En-Me En) Composite Structures. (3)
Prerequisite(s): CE En-Me En 506.
Design of advanced composite structures; deflections, buckling, and vibration of thin plates and sandwich plates; design guidelines; design examples; project.
606. (CE En-Me En) Plates and Shells. (3)  
Prerequisite(s): CE En-Me En 506.  
Beam and plate theories, including flexural and shear deformation. Large displacement beam and plate theory. Axisymmetric shells and general curved shells. Finite element analysis of beams, plates, and shells, including buckling analysis.

608. (CE En - Me En) Nonlinear Structural Analysis. (3)  
Prerequisite(s): CE En-Me En 506, 508.  
Geometrically nonlinear analysis of trusses, frames, membranes, and plates, including buckling and large deformation analysis. Materially nonlinear analysis including plasticity and viscoelasticity

609. (CEEn-MeEn) Spectral Analysis of Dynamic Systems. (3)  
Prerequisite(s): Math 302 or equivalent.  
Digital signal processing and analysis applied to computer-aided testing, system identification, and characterization of random processes. Applications include vibration and acoustic testing, seismic recording and analysis, and system identification for control.

635. Sediment Transport and River Restoration. (3)  
Prerequisite(s): CE En 535.  
Sediment transport concepts applied to stream restoration and stream restoration concepts including geomorphology and stream classification. Lectures, field trips, guest lecturers.

641. Advanced Soil Mechanics. (3)  
Prerequisite(s): CEEn 341 or equivalent.  
Advanced discussion and analysis of shear strength of soils; finite-element stress analysis distribution in soils; slope stability analysis.

644. Advanced Foundation Engineering. (3)  
Prerequisite(s): CE En 341 or equivalent.  
Lateral pressures and earth retaining systems, axial and lateral capacities of piles and drilled shafts, foundations subjected to vibratory loadings, foundations on collapsible and expansive soils, soil improvement techniques.

645. Field and Laboratory Testing of Soils. (3)  
Prerequisite(s): CE En 341 or equivalent; 542.  
Field and laboratory testing procedures used in geotechnical engineering practice: penetration, consolidation, permeability, and shear strength.

648. Groundwater Contaminant Transport. (3)  
Prerequisite(s): CE En 547.  
Fate and transport of contaminants in groundwater. Advection, dispersion, adsorption, biodegradation, and computer simulation of actual sites.

651. Wastewater Treatment Facilities Design. (3)  
Prerequisite(s): CE En 551.  
Evaluation, selection, and design of wastewater treatment facilities.

654. Water and Wastewater Advanced Treatment Processes. (3)  
Prerequisite(s): CE En 551.  
Treatment and disposal of industrial wastes; basic industries and their waste problems.

662. Traffic Simulation and Analysis. (3)  
Prerequisite(s): CEEn 562 or instructor’s consent.  
Simulating and analyzing highway capacity, traffic flow, and traffic control problems; potential solutions using computer models.

664. Transportation Site Planning. (3)  
Prerequisite(s): CE En 562.  
Characteristics of transportation site planning; traffic impact analysis; principles of access design; driveway, site circulation, and parking lot design; permitting of proposed developments.

691R. Civil and Environmental Engineering Seminar. (0.5)

694R. Selected Problems in Civil and Environmental Engineering. (1-3)

698R. Master’s Project. (1-3)  
Prerequisite(s): Graduate committee’s consent.

699R. Master’s Thesis. (1-9)  
Prerequisite(s): Graduate committee’s consent.

794R. Selected Topics in Civil and Environmental Engineering. (1-3)

797R. Research for Doctoral Students. (1-9)

799R. Doctoral Dissertation. (1-9)  
Prerequisite(s): Graduate committee’s consent.

FACULTY


Bartlett, Steven E., Adjunct Assistant Professor. PhD, Brigham Young University, 1992. Geotechnical Engineering.

Benzley, Steven E., Professor. PhD, University of California, Davis, 1971. Structural Mechanics.

Borup, M. Brett, Associate Professor. PhD, Clemson University, 1985. Environmental Engineering.

Clement, Prabhakar T., Adjunct Assistant Professor. PhD, Auburn University, 1993. Water Resources; Environmental.

de Anda, Jose, Adjunct Assistant Professor. PhD, National Autonomous University of Mexico, 2001. Environmental Engineering.

Fonseca, Fernando S., Associate Professor. PhD, University of Illinois, 1996. Structures.

Gerber, Travis M., Assistant Professor. PhD, Brigham Young University, 2003. Geotechnical Engineering.

COMMUNICATION DISORDERS


Jensen, David W., Professor. PhD, Massachusetts Institute of Technology, 1986. Structures; Advanced Composites.

Jones, Norman L., Professor. PhD, University of Texas, Austin, 1990. Geotechnical Engineering.

Miller, A. Woodruff, Professor. PhD, Stanford University, 1975. Hydrology; Hydraulics.

Nelson, E. James, Associate Professor. PhD, Brigham Young University, 1999. Computational Mechanics.


Richards, Paul W., Assistant Professor. PhD, University of California, San Diego, 2004. Structural Engineering.

Rollins, Kyle M., Professor. PhD, Purdue University, 1988. Transportation Engineering.

Schultz, Grant G., Assistant Professor. PhD, Texas A&M University, 2003. Traffic; Transportation Engineering.

Williams, Gustavious P., Associate Professor. PhD, Northwestern University, 1994. Environmental Geotechnology.

Youd, T. Leslie, Adjunct Professor. PhD, Iowa State University, 1967. Geotechnical Engineering.

Zundel, Alan K., Adjunct Associate Professor. PhD, Brigham Young University, 1994. Hydraulic Modeling.

COMMUNICATION DISORDERS

Chair: David L. McPherson
Graduate Coordinator: Ron Channell
136 TLRB
Provo, UT 84602-8605
(801) 422-4318

THE PROGRAM OF STUDIES

The separate but overlapping disciplines represented by the Department of Communication Disorders involve the study of the processes and disorders of hearing, speech, and language. The department integrates principles and methods of acoustics, anatomy, psychology, linguistics, medicine, physiology, and rehabilitation to prepare students to more effectively help persons of all ages who have either congenital or acquired impairments to hearing, speaking clearly, participating in conversations, or any of the other skills that allow effective communication.

The graduate program in the department provides a mixture of academic course work, clinical experience, and research involvement. Students are expected to master knowledge related to treating persons with disorders and to apply this knowledge in clinical activities at BYU and at other professional settings in the community. Strong performances in both course work and clinical activities are required, as is the successful completion and defense of a thesis. Because clinical training requires broad expertise, no clinically relevant topics are excluded from coverage in course work or clinical training; however, student research activities are channeled into topical areas in which faculty have focal expertise.

The master’s degree program in the department focuses only on the speech-language pathology part of communication disorders and prepares students to (A) work competently with clients of all ages in all professional settings, (B) conduct research and communicate findings to peers and cooperating professionals, (C) meet requirements for national certification, state licensure, and school licensure, (D) qualify for and excel at doctoral study if desired, and (E) maintain currency in their discipline through ongoing, independent study.

About 15 students per year are admitted into the program. Students generally complete their programs in two years.

Communication Disorders—MS

The discipline of speech-language pathology involves the study of the anatomy and physiology of speech production mechanisms, the normal and impaired development of speech abilities, disorders of articulation, voice disorders, stuttering and related disorders of speech rate and rhythm, speech acoustics, speech perception, and swallowing disorders. Speech-language pathology also includes the study of normal and impaired language development and language processing, the assessment of children’s language and related social and cognitive abilities, the treatment of language impairments, and the assessment and treatment of aphasia.

Admission and Entry.

• Semesters of entry and application deadlines: spring, fall, February 1 (both U.S. and international students).

• Application requirements: submit GRE general test scores using the institution number R 4019. Because speech-language pathology is a clinical profession, both academic and personal qualifications are considered in selecting applicants and in evaluating, retaining, and graduating students.

• Prerequisites: students entering a graduate program with a bachelor’s degree outside communication disorders must complete the equivalent of the undergraduate major to meet certification and licensure requirements.
**Requirements for Degree.**
- Credit hours: 48 (plus all classes in the undergraduate major), including 6 hours of thesis credit and 6 hours of clinical practicum spread over several semesters or terms.
- Required courses: all the courses listed below except ComD 544.
- Minor (in related field): optional and in addition to all required major classes.
- Residence: see university residence requirements. Transfer of graduate courses taken elsewhere is not guaranteed and will be evaluated on a course-by-course basis.
- Thesis.
- Examinations: (A) pass ASHA NTE Praxis exam in speech-language pathology with score at or above the 75th percentile nationally; (B) oral defense of thesis.

**Note:** ComD 680R (Public School Practicum) requires a fee in addition to tuition.

**Financial Assistance**

Some of the money that is available for financial assistance in the Department of Communication Disorders is given to graduate students in the form of graduate assistantships. These assistantships involve assisting faculty in course management or research; awardees are selected by faculty from those applying for assistantships on the basis of suitability for the work needed. Other financial aid is available in the form of supplementary awards such as partial-tuition scholarships; these awards are made on the basis of academic excellence.

**Resources and Opportunities.**

The Department of Communication Disorders is housed in the John Taylor Building and as such is part of the BYU Comprehensive Clinic. This clinic links audiology and speech-language pathology and clinical psychology, marriage and family counseling, social work, and LDS Social Services in interdisciplinary cooperation on a variety of clinical cases. The clinic also allows for shared access to audiovisual services, computers and networks, and tests and therapy materials.

**The BYU Audiology Clinic** focuses on the assessment and treatment of hearing disorders of students, faculty, staff, missionaries from the Missionary Training Center (Provo), and the public. It is also involved in monitoring the hearing ability levels of university employees for OSHA compliance and in testing the hearing of central Utah's high-risk babies in collaboration with the Utah State Health Department.

The BYU Speech and Language Clinic is staffed by graduate students under faculty supervision and focuses on assessing and treating the speech and language disorders of students, faculty, staff, missionaries, and the public.

**Research Facilities and Equipment.**

Audiology and speech-language pathology use a broad range of tools for clinical diagnosis and therapy. The facilities supporting research and clinical work include 32-channel evoked potential and brain mapping, digital audio recording and editing instrumentation, sound-level meters, sound-level dosimetry equipment, spectrographic, laryngographic, and nasometric analyses of speech and voice production, stroboscopic flexible fiberoptic digital video laryngoscopy and nasendoscopy, audiovisual equipment for conversational language sampling and analysis, and computer-assisted language sample analysis.

**Course Descriptions**

Admission to all courses is by permission of the instructor.

544. Psychoacoustics. (2)
- Advanced studies in human psychoacoustics and hearing science.

600. Research Methods. (3)
- Prerequisite(s): Stat 221 or equivalent.
- Research methods in audiology and speech-language pathology. Applying statistical techniques; professional literature and writing.

**BYU 2008–2009 Graduate Catalog 53**
**COMMUNICATIONS**

**COMMUNICATIONS**

Chair: Ed Adams  
**Graduate Coordinator:**  
Kevin L. Stoker  
360C BRMB  
Provo, UT 84602-2500  
(801) 422-1222

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**THE PROGRAM OF STUDIES**

The Department of Communications offers a broad-based master's program designed to promote critical thinking and research with a particular focus on the interaction between media and society.

The program of study prepares students with the theoretical background, methodological expertise, and critical thinking skills needed both for continued studies at the doctoral level and informed professional practice. It emphasizes communications theory and quantitative and qualitative research methodologies. Specialized topical areas include literature of journalism, communications history, media and religion, international media and communications, communications ethics and law, persuasion, public relations and leadership, and media and current societal issues.

One graduate degree is offered through the Communications Department: Mass Communications—MA. A minor in mass communications also is offered.

Approximately fifteen students are admitted to the master's program each fall semester. The average time spent in completing requirements for the master's degree is from two to two and a half years.

**Mass Communications—MA**

The master's program is intended to serve as preparation for:

- Doctoral studies where theory, teaching, research, and publication are emphasized.
- Advancement in communications professions.

Beyond the courses required by the department, students select—in consultation with advisors—the specific courses that best meet their goals and interests. Generally, students with non-communications undergraduate majors will be expected to concentrate on communications electives. Those with a communications baccalaureate are encouraged to seek broadening electives outside the department. Consult with your graduate committee chair and the graduate coordinator about these issues.

**Admission and Entry.**

- Semesters of entry and application deadlines: fall, February 28.
- Application requirements: the entrance examination is the GRE; minimum required GPA is 3.0 for last 60 semester hours of baccalaureate work. There is no predetermined required score for the GRE, but applicants are recommended to have a score of 1,000 or better, with a 600 or better on the verbal section and a minimum score of 5 on the written section. Exceptions are considered based on prior experience or other evidence of competence. Potential students are encouraged to prepare thoroughly before taking the test.
- Prerequisites: baccalaureate degree (if undergraduate preparation in communications is not adequate, the department graduate coordinator may require certain undergraduate communications courses to satisfy the deficiency); background in research and statistics (prerequisite course in statistics or social science research methods is recommended); professional competence in written and spoken English (professional experience in communications is desirable).

**Requirements for Degree.**

- Credit hours (31): minimum 25 hours of course work.
- Required courses: Comms 600, 602, 610, 611, 616 (13 hours).
- Electives: 12 credit hours from Comms 604, 607, 612R, 619, 621, 622R, 623, 624, 625, 627, 691R, 692R, 695R, and/or interdisciplinary substitute courses (with prior approval). Electives determined in...
consultation with advisor and committee.

- **Thesis (Comms 699R, 6 hours minimum) or project (Comms 698R, 6 hours minimum).**
- **Examinations:** (A) written comprehensive examination; (B) final oral examination and defense of thesis or project.

**Mass Communications—Minor**

Consult with the graduate coordinator regarding a recommended program of study. A minimum of 9 semester hours is required, plus a comprehensive examination.

**Financial Assistance**

The principal types of financial aid and awards available to mass communications graduate students are teaching and research assistantships, along with some full- and half-tuition scholarships. Under the direction of faculty, teaching assistants oversee undergraduate classes and labs in advertising, broadcasting, journalism, and public relations. Research assistants work closely with graduate faculty in their research and publication activities. Applications for assistantships and scholarships are available online at www.byu.edu/gradstudies.

**Resources and Opportunities**

**Facilities.** The Department of Communications is housed in the George H. Brimhall Building. Also affiliated with the department are journalism, advertising, and broadcast laboratories and radio and television studios. Graduate students interested in applied studies may structure work in these media outlets into their programs.

**Communications Research Center.** Computers with SPSS and other research software are available in the department's research center. Mass communications graduate students can receive research assistance from the director of the Communications Research Center.

For a more detailed description of the graduate program requirements, go to comms.byu.edu.

**Course Descriptions**

600. **Introduction to Graduate Studies.** (1)

Introduction to graduate education, communications theory, research, and academic writing. Faculty research programs presented.

602. **Qualitative Research Methods.** (3)

Major methods of qualitative research used in communications studies.

604. **Communications History and Historical Research Methods.** (3)

In-depth investigation of the history of mass media, including study of historical research methods.

607. **International Media and Communications.** (3)

Role of communication internationally and its impact on culture, ethics, morality, and politics around the world. Comparison of communication systems, media flows, and communications among countries.

610. **Studies in Communications Theory.** (3)

Nature and content of contemporary mass communication theory.

611. **Communications/Social Science Research Methods.** (3)

Prerequisite(s): Stat 221 or equivalent and/or social science research methods.

- Major methods of research used in communications studies.

612R. **Research Practicum.** (1-3)

Practical experience in research under direction of individual faculty.

616. **Media Effects: Individual, Family, and Society.** (3)

Prerequisite(s): Comms 600, 602, 610, 611.

Media's roles in major social settings. Capstone course, including preparation for comprehensive exams.

619. **Gender, Race, and Class in Mass Communications.** (3)

Issues related to gender, race, and class in the communication process. Implications of current developments in critical theory and issues of diversity.

621. **Media and Religion.** (3)

Seminar regarding the interface of media and religion.

622R. **Seminar on Media and Current Societal Issues.** (3)

Preannounced societal issue or issues (such as environment, impact of new technologies, vulnerable audiences, consumerism, nonprofits, health communications, terrorism, etc.).

623. **Literature of Journalism.** (3)

Critiquing journalism theories and philosophy ranging from traditional libertarian ideals to contemporary movements of public journalism and public service broadcasting.

624. **Seminar on Media Law and Ethics.** (3)

Review of literature and research on ethics. Legal and regulatory relationship between government and communications; legal research methods.

625. **Integrative Persuasive Communications.** (3)

Persuasion theories and links to practice of integrated communications, including promotion, advertising, public relations, direct marketing, and branding.

627. **Public Relations Theory and Leadership.** (3)

Relationship of strategic communications and stakeholder theory to current issues in the field, including reputation, image, apologia, trust, transparency, power, leadership, conflict resolution, and change.

691R. **Special Studies in Communications.** (1-3)

Prerequisite(s): Approval of committee chair and graduate coordinator.

Individual study with a graduate faculty member.

Course and subject must be approved by committee chair and graduate coordinator before registration.
692R. Professional Practicum. (1-3)  
Prerequisite(s): committee chair and graduate coordinator approval.  
Individual work in professional communications settings, with oversight and assessment by graduate faculty member.

695R. Topical Seminar. (1-3)  
Seminar on focused pre-announced topic relating to specific media issues.  
Often taught by visiting scholar or media professional.

698R. Master's Project. (1-6)

699R. Master's Thesis. (1-6)

Faculty


Baker, Sherry L., Associate Professor. PhD, University of Utah, 1994. Communications and Persuasion Ethics; Cultural History as Evidenced in Media Texts.


Carter, Edward L., Assistant Professor. JD, Brigham Young University, 2003. First Amendment Law and Policy; Media Regulation.


Cutri, Christopher, Assistant Professor. MFA, Art Center College of Design, 1997. Creative Advertising.

Plowman, Kenneth, Associate Professor. PhD, University of Maryland, 1995. Conflict Resolution; Public Relations Management; High-Tech Public Relations.

Randle, Quint B., Assistant Professor. PhD, Michigan State University, 2001. Magazines; New Media; Newspapers.

Rawlins, Bradley L., Assistant Professor. PhD, University of Alabama, 1995. Public Relations Theory; Organizational Behavior; Public Relations Ethics.

Robinson, Thomas E., Associate Professor. PhD, University of Southern Mississippi, 1996. Portrayal of the Elderly in Media Advertising.

Stoker, Kevin L., Associate Professor. PhD, University of Alabama, 1998. Media History; Media Ethics.

Thomson, Steven R., Professor. PhD, University of Georgia, 1994. Media Effects; Media and Adolescent Socialization.


Wilson, Laurie J., Professor. PhD, American University, 1988. Public Relations; Service Learning; International Communications.

Computer Science

Chair: Tony Martinez  
Associate Chair: Bryan Morse  
Graduate Coordinator: Parris Egbert

The Program of Studies

The Department of Computer Science offers two degrees: Computer Science—MS and Computer Science—PhD.

The MS degree is designed to prepare students either to be technically capable of leading development teams in industrial software development or to be ready to continue on for a PhD. The PhD degree prepares students to be researchers and teachers either in industry or academia. Areas of particular emphasis are listed under Resources and Opportunities and under research faculty interests.

The expected duration of the MS program for full-time students who enter without deficiencies is one and a half years. Depending on the number of deficiencies, some students may require additional semesters. Students may not enter the PhD program with deficiencies. For full-time students in the PhD program, the expected duration is three years for those entering the program with an MS in computer science and from four to four and a half years for those entering without an MS in computer science. These expectations assume that students take a full graduate load and begin and complete the steps in their thesis or dissertation research in a timely manner.

Computer Science—MS

Mission Statement. Students should be exposed to and participate in leading-edge research. Depending on their long-range objectives, students should also do one or more of the following:
• Develop skills for critical thinking and for analyzing results.
• Learn to write technically and articulately.
• Evolve research ideas and produce research results.
• Learn about group development and be technically capable of leading a development team.
• Demonstrate ability to develop software for industrial-size problems.

**Admission and Entry.**
• Semesters of entry and application deadlines: fall, January 15 (U.S. and international); winter, August 15 (U.S. and international).
• Entrance examinations: GRE general test, and the TOEFL or IELTS examination for those whose native language is not English.
• Prerequisite: baccalaureate degree in computer science or equivalent course work in related undergraduate programs. A student without an acceptable undergraduate degree in computer science may be admitted provisionally into the MS program.

**Requirements for Degree.**
• Credit hours (30): minimum 24 course work hours plus 6 thesis hours (C S 699R).
• Required courses: determined in consultation with graduate committee.
• Examinations: oral defense of thesis.

While in the MS program, students are expected to make steady and satisfactory progress toward their degree. Progress reviews take place two times each year. Students who fail to make appropriate progress will be dropped from the program.

**Computer Science—PhD**

**Mission Statement.** Students should be able to:
• Generate new ideas.
• Convince others that their ideas are worth pursuing.
• Do the necessary research to demonstrate that their ideas are viable.
• Communicate the results of their research orally and in the published literature.

**Admission and Entry.**
• Semesters of entry and application deadlines: fall, January 15 (U.S. and international); winter, August 15 (U.S. and international).
• Entrance examinations: GRE general test. The TOEFL or IELTS examination is required for those whose native language is not English.
• Prerequisite: baccalaureate degree in computer science or equivalent (students with undergraduate deficiencies should enroll in the MS program).

**Requirements for Degree.**
• Credit hours (66): minimum 48 course work hours plus 18 hours of dissertation research. Must include C S 611.
• Dissertation.
• Milestones:
  1. Qualifying process: (A) pass courses demonstrating broad proficiency in computer science and (B) produce a satisfactory research paper.
  2. Research area examination: for the chosen dissertation research area (A) write an outline for a survey of the research area and (B) make an oral presentation of and answer questions about the research area.
  4. Dissertation defense: make an oral presentation that defends the dissertation research.
• Residency: PhD students are expected to be resident for the full duration of their PhD program. Exceptions may be granted if the advisor and graduate committee approve a leave in advance.
• Teaching: all students must teach at least one course.

While in the PhD program, students are expected to make steady and satisfactory progress toward their degree. Progress reviews take place twice each year. Students who fail to make appropriate progress will be dropped from the program.

**FINANCIAL ASSISTANCE**
The Computer Science Department recognizes that most students require financial assistance to remain in school. The department has funds in the following forms: teaching and research assistantships and tuition awards.

**RESOURCES AND OPPORTUNITIES**
The Computer Science Department offers research in the following areas:

- Artificial intelligence
- Bioinformatics and computational science
- Computer graphics
- Computer networks
- Computer vision and image processing
- Data mining
- Formal verification
- High-performance networks and computing
- Human-computer interaction
- Information extraction and integration
- Learning and information dynamics
- Machine learning
- Middleware, messaging, and virtualization
- Natural language processing
- Neural networks
- Performance and dependability
- Quantum computing
- Security
- Software engineering

For more detailed information please see our Web site: www.cs.byu.edu

**COURSE DESCRIPTIONS**

**501R. Advanced Topics in Computer Science.** (1-3) Prerequisite(s): Instructor's consent. Advanced undergraduate- and graduate-level subjects as announced before each semester.
557. Computer-Aided Geometric Design. (3)  
Prerequisite(s): C S 240, Math 343; or equivalents.  
Free-form curves and surfaces; mathematical theory and algorithms. Bezier and B-spline curves and surfaces, subdivision surfaces, T-splines, free-form deformation, and intersection algorithms. Several programming projects.

579. Natural Language Processing. (3)  
Prerequisite(s): Instructor's consent.  
Machine translation, human-computer dialog, question answering, parsing, and generating from an artificial intelligence and machine-learning perspective.

598R. Special Projects. (0.5-3)  
Prerequisite(s): Instructor's consent.

601R. Special Topics in Computer Science. (3)  
Prerequisite(s): Instructor's consent.  
Special subjects as announced before each semester.

611. Theoretical Foundations of Computing. (3)  
Prerequisite(s): CS 252 or equivalent; CS 312 or instructor's consent.  
Proofs (deductive and inductive reasoning), computability (models of computability and computability issues), and complexity (time and space bounds, nondeterminism, and complexity classification).

613. Robust Control. (3)  
Prerequisite(s): C S 412 or equivalent.  
Feedback design in context of making decisions from data. Computational methods yielding designs with guaranteed performance in spite of model uncertainty. Uncertainty/complexity tradeoff.

618. Computational Biology. (3)  
Prerequisite(s): C S 240, 252, 312; or equivalents.  
Algorithms for DNA sequence analysis. Heuristics analyzed and developed for NP-complete problems including alignment, phylogeny, secondary structure predictions, protein folding, and microarray analysis.

621. Pattern Recognition. (3)  
Prerequisite(s): CS 450 or equivalent.  
Design and use of pattern classifiers for recognition and classification of one- and two-dimensional signals such as voice, images, and handwriting. Emphasis on images.

650. Computer Vision I. (3)  
Prerequisite(s): CS 450 or equivalent.  
Machine vision, image segmentation, mathematical morphology, image enhancement and filtering, edge detection, feature extraction, neighborhood operators, region growing, boundary detection, scene segmentation, and matching.

651. Theoretical Foundations of Object-Oriented Data Engineering. (3)  
Prerequisite(s): CS 452 or instructor's consent.  
Applying model and proof theory to object-oriented database development and data engineering; constructing theory-based tools; conceptual model formalization; topics of current interest.

652. Information Extraction and Integration. (3)  
Prerequisite(s): C S 452 (or equivalent) and/or 553.  
Information extraction from structured, semistructured, and unstructured documents, including Web documents; integrating heterogeneous source information; theoretical foundations of information modeling; topics of current interest.

653. Information Retrieval. (3)  
Prerequisite(s): CS 236 or equivalent.  
IR modeling, IR query languages, text indexing and searching, retrieval evaluation, query and text operations, parallel and distributed IR, Web searching.

655. Advanced Computer Graphics. (3)  
Prerequisite(s): CS 455 or instructor's consent.  
Advanced computer graphics systems programming and architecture, including ray tracing, radiosity, animation, and physically based modeling.

656. Interactive Software Systems. (3)  
Prerequisite(s): CS 330, 456; or instructor's consent.  

660. Computer Networks. (3)  
Prerequisite(s): CS 460, Stat 321; or equivalents.  
Computer networking, software architecture, organization, protocols, routing, global networks, local networks, internetworking, standards, and applications.

665. Advanced Computer Security. (3)  
Prerequisite(s): CS 465 or instructor's consent.  
Authentication and authorization using digital credentials.

670. Multi-Agent Systems. (3)  
Prerequisite(s): CS 470 or equivalent; CS 478 or instructor's consent.  
Introduction to fundamental concepts emphasizing current literature. Topics include game theory, repeated play games, Arrow's impossibility theorem, negotiation, search, and learning.

674. Quantum Computation. (3)  
Prerequisite(s): CS 252, 312, Math 343; or instructor's consent.  
Introduction to theory of quantum computing and its impact on the science of computation. Introduces basic ideas in quantum information processing and focuses on quantum algorithms.

676. Advanced Topics in Data Mining. (3)  
Prerequisite(s): C S 478 or equivalent.  
Data mining process, data warehousing concepts, text mining, ethical issues, meta-learning, and key success factors.

677. Bayesian Methods in Computer Science. (3)  
Prerequisite(s): CS 470 or instructor's consent.  
Applying Bayesian methods useful for incorporating confidence or belief into problems in computer science, allowing computers to better handle uncertainty.
678. Advanced Neural Networks and Machine Learning. (3)
    Prerequisite(s): CS 478 or equivalent.
    Advanced models, algorithms, and approaches in neural networks
    and machine learning.

680. High Performance Computer Architecture. (3)
    Prerequisite(s): CS/ECEn 324 or equivalent.
    Advanced topics in computer architecture, including pipelining,
    superpipelining, VLIW superscalar, branch prediction, and speculative
    execution.

684. Parallel Processing. (3)
    Prerequisite(s): CS 324, 345; or equivalent.
    Theoretical and practical study of parallel processing including a
    discussion of parallel architectures, parallel programming languages,
    and parallel algorithms.

686. Advanced Model Checking. (3)
    Prerequisite(s): CS 486 or equivalent.
    Advanced models, algorithms,

751R. Advanced Topics in Database Systems. (3)
    Prerequisite(s): graduate standing
    and instructor's consent.

757R. Advanced Topics in Computer Security. (3)
    Prerequisite(s): C S 665.
    Advanced topics and reading in
    computer security.

778R. Topics in Neural Networks and Machine Learning. (3)
    Prerequisite(s): CS 678.
    Advanced topics and readings in

786R. Readings in Model Checking. (3)
    Prerequisite(s): CS 686.
    Focused readings and projects as
    suggested by class interest and cur-
    rent trends.

799R. Doctoral Dissertation. (0.5-9)
    Prerequisite(s): committee chair's
    consent.

FACULTY

    Computer Vision; Image Processing; Pattern Recognition.

    Hyperdimensional Computer Graphics; Visualization.

Clement, Mark J., Associate Professor. PhD, Oregon State
    University, 1994. Parallel Processing; Bioinformatics;
    Computational Sciences.

Egbert, Parris K., Professor. PhD, University of Illinois, 1992.
    Computer Graphics; Visualization; Virtual Reality.

Embley, David W., Professor. PhD, University of Illinois, 1976.
    Database Systems; Conceptual Modeling; Information Extraction.

Flanagan, J. Kelly, Professor. PhD, Brigham Young University, 1993.
    Computer Architecture;
    Performance Evaluation; Digital System Design.

Giraud-Carrier, Christophe G., Associate Professor. PhD, Brigham
    Young University, 1994. Data Mining.
Snell, Quinn O., Associate Professor. PhD, Iowa State University, 1997. Parallel Programming; Bioinformatics; Computational Sciences.

Ventura, Dan A., Associate Professor. PhD, Brigham Young University, 1998. Neural Networks and Machine Learning; Quantum Computing.


Windley, Phillip J., Associate Professor. PhD, University of California, Davis, 1990. Middleware; Messaging; and Virtualization.

Woodfield, Scott N., Professor. PhD, Purdue University, 1980. Software Design; Reusability; Software Engineering.

Zappala, Daniel M. A., Associate Professor. PhD, University of Southern California, 1990. Computer Networks: Multicast, Peer-to-Peer Networks; Ad Hoc Networks; Quality of Service.

COUNSELING PSYCHOLOGY AND SPECIAL EDUCATION

Chair: Mary Anne Prater
340 MCKB
Provo, UT 84602-5093
(801) 422-3857
E-mail: cpsese@byu.edu
Internet: www.education.byu.edu/cpse

School Psychology Graduate Coordinator: Ellie Young
(801) 422-1593
Special Education Graduate Coordinator: Tina T. Dyches
(801) 422-5045
Counseling Psychology Graduate Coordinator: Aaron P. Jackson
(801) 422-8031

THE PROGRAM OF STUDIES

The Department of Counseling Psychology and Special Education prepares educators and professionals who work primarily with individuals or small groups. The programs offered in the department all pursue at least two common goals. The first is to help individuals enhance the quality of their lives through meaningful personal, educational, and career development. A second common goal is to assist people in overcoming barriers to learning and to success and happiness in life. These barriers include difficulty in thinking, reading, studying, learning, making decisions, relating to others, understanding the impact of their behavior, etc.

The programs utilize a scientist-practitioner model where students and faculty enhance science and learning through research and inquiry. Further, in dealing with those whom they serve, they apply the principles learned. Since their work is often highly personal, it is essential that students possess/develop integrity and professional standards of ethical conduct. They must also develop the knowledge and skills essential to promote positive change in individuals struggling with important aspects of their lives. The settings in which graduates typically serve include public and private schools, colleges, and universities.

Each program assists students in planning individual course work, receiving supervised practical experience, and obtaining appropriate credentials (certification and licensure).

Three degrees are offered through the Department of Counseling Psychology and Special Education: Special Education—MS; School Psychology—EdS; and Counseling Psychology—PhD.

The average number of students admitted each year varies by program as follows:

- Special Education: 10
- School Psychology: 12
- Counseling Psychology: 6

Special Education—MS

The program in special education prepares graduate students to provide collaborative leadership to foster the moral development and improve learning and social competence of exceptional children with challenging behaviors. In order to prepare special educators to work collaboratively with multidisciplinary teams in their schools, the program models cooperative teaming and teaching with faculty and students in School Psychology and Teacher Education.

Although the focus of the program is to enhance the knowledge and skills of currently practicing special educators, expectations for research-based practices are integrated into the program, culminating in a thesis and oral defense of the student's research and course work.

Courses are taught in the evenings to accommodate school teachers' schedules during Fall, Winter, and Spring. Summer enrollment is also required.

Admission and Entry.
- Semesters of entry and application deadlines: summer, March 1 (U.S.
and international) every other year (odd-numbered years). Students are admitted in a cohort of up to 15 students.

- Application requirements: GRE or MAT examination (scores will be no more than five years old); Area of Special Education Application for Admission and related candidate evaluation forms; interview with graduate faculty. Because of the nature of the teaching profession, both academic and personal qualifications are considered in selecting applicants and in evaluating, retaining, and graduating students.

- Prerequisite: completion of an undergraduate degree; evidence of special education licensure, or concurrent enrollment in a licensure program under special circumstances (e.g., international students); evidence of successful experience as a contracted, special education licensed teacher for a minimum of 2 years (preferred, but not required); grade point average of at least 3.0 for the last 60 semester hours of university course work.

Requirements for Degree.

- Credit hours: 36 hours minimum; students without a license in special education are required to complete licensure courses.
- Required courses: consult area program documents.
- Residence: part-time evening class attendance; required Spring/Summer term enrollment.
- Examinations: oral defense of thesis and course work.

School Psychology—EdS

The EdS degree in school psychology prepares students to pursue certification as school psychologists in K–12 educational settings. Knowledge and competency areas include counseling (individual and group); responsive services; consultation with parents, teachers, school administrators, and other professionals; child and adolescent psychopathology; learning theory; promotion of healthy growth and development; prevention of problems; assessment leading to intervention with educational, personal/social, career, and mental health issues; multicultural counseling; historical and educational foundations; professional roles and expectations; ethics; family and institutional systems; and research and evaluation.

This thesis program requires full-time day attendance. Students are placed in practicum early in the program. The 1200-hour internship is completed at sites where counseling and psychological services are provided under the supervision of a certified/licensed site supervisor and a university faculty supervisor.

Admission and Entry.
- Semesters of entry and application deadlines: fall, January 15 (U.S. and international).
- Application requirements: the entrance examination is the GRE general test. When taking the GRE, use the institutional number R 4019. Application will not be considered without GRE scores. Because of the nature of the helping professions, both academic and personal qualifications are considered in selecting applicants and in evaluating, retaining, and graduating students.
- Prerequisite: undergraduate major in education, psychology, or one of the social sciences is preferred but not required; experience in a helping profession is desired but not required.

Requirements for Degree.
- Credit hours: minimum 70 hours of approved course work including practica, internship, and thesis hours.
- Required courses: consult department program documents.
- Residence: full-time day attendance first two years, followed by a 1200-hour internship in a school setting.
- Examination: PRAXIS exam and portfolio.
- Internship: see department program documents for specifics.

Counseling Psychology—PhD

The PhD in counseling psychology is fully accredited by the American Psychological Association (Committee on Accreditation), 750 First Street NE, Washington, DC 20002; phone: (202) 336-5979; fax: (202) 336-5978. It is primarily psychological in nature and is based upon the scientist-practitioner model of training. The scientist-practitioner model is an integrated approach to training that acknowledges the interdependence of theory, research, and practice.

The counseling psychology program at BYU emphasizes the educational, developmental, and preventive functions of counseling psychologists and counselor educators. Students are primarily prepared to work as counseling psychologists in counseling centers and in academic departments in university and college settings. Students are also prepared to make remedial interventions. Graduates typically accept positions as counselors or psychologists in college or university counseling centers or as scholars/faculty members in counseling psychology or counselor education programs. Others serve in agencies or private practice as licensed psychologists.

Admission and Entry.
- Semesters of entry and application deadlines: fall, January 15 (U.S. and international).
- Application requirements: the entrance examination is the GRE general test. When taking the GRE, use the institutional number R 4019. Applications will not be considered without GRE scores. Because of the nature of the helping professions, both academic and personal qualifications are considered in selecting applicants and in evaluating, retaining, and graduating students.
- Prerequisite: bachelor’s or master’s degree in counseling or psychology or in a closely related field.

Requirements for Degree.
- Credit hours: 106 plus dissertation and internship.
FINANCIAL ASSISTANCE

Graduate Assistantships. Graduate assistantships include working with selected faculty members on research projects, curriculum development, and other assignments for 5 to 20 hours per week. Several other organizations on campus, such as the Counseling and Career Center, often request students to serve as graduate assistants.

CPSE Partial-Tuition Scholarships. Applications are awarded on the basis of scholarship and financial need.

MSE Scholarships. A small number of modest, specific-interest scholarships are also available. Students may apply through the McKay School of Education.

Contact the department secretary for application forms, deadlines, and additional information about departmental financial assistance.

Other sources of financial aid are available to students through the Financial Aid Office, A-41 ASB, Provo, UT 84602-1009.

RESOURCES AND OPPORTUNITIES

Computer Laboratories. Computer laboratories provide graduate students access to the university’s computers, enabling students to use several programs, such as SPSS and SAS, to analyze research data. These terminals also permit access to the Internet, library databases, etc. Wireless connections are also available in many locations on campus.

Graduate Student Project and Research Laboratory. Space is provided for graduate students who are working with faculty on research, evaluation, and development projects.

Study Areas. Graduate study areas are available in the CPSE Graduate Lab, the McKay School of Education Technology Education Computing Lab, and the Harold B. Lee Library.

For a more detailed description of the graduate program requirements, view the department Web page.

COURSE DESCRIPTIONS

Note: CPSE 514R and 515R courses are for licensure purposes only and are listed in the BYU Undergraduate Catalog. No graduate degree credit is given for 514R; 515R credit may count toward a graduate degree if prior approval is obtained from the graduate committee.

503. Education of Individuals with Disabilities. (3)
Prerequisite(s): Concurrent enrollment in student teaching or internship.
Developing, implementing, and evaluating programs for individuals with disabilities.

514R. Current Topics in Counseling. (0.5-3)
Prerequisite(s): instructor’s consent.
No graduate credit is given for CPSE 514R.

515R. Current Topics in Counseling. (0.5-3)
Prerequisite(s): Instructor’s consent.
CPSE 515R credit may count toward a graduate degree if prior approval is obtained.

518. Introduction to Gifted/Talented Education. (2)
Various approaches to educating the gifted and talented.

533R. Practicum in Assessment: Mild/Moderate Disabilities. (0.5-3)
Assessing, diagnosing, and evaluating individuals with disabilities.

545. Gifted: Creativity and Thinking Strategies. (2)
Nature of creativity and approaches to nurturing it.

560. Leadership in Student Services. (3)
Applying leadership and administrative theory and methods to student services in school and related educational settings. Helping skills for counselors, school psychologists, principals, teachers, and others interested in the learning and emotional climate of the school.
Independent Study only; no graduate degree credit given for Independent Study.

580R. Directed Observation in the Schools. (0.5-3)
Prerequisite(s): instructor’s consent.

586R. Student Teaching: Students with Mild/Moderate Disabilities. (4-12)
Prerequisite(s): Successful completion of all core courses and practicum in the special education program.
Culminating experience in the program: teaching students with mild/moderate disabilities in school settings.

587R. Student Teaching: Students with Severe Disabilities. (4-12)
Prerequisite(s): Successful completion of all core courses and practicum in the special education program.
Culminating experience in the program: teaching students with severe disabilities in school settings.

599R. Academic Internship: Special Education. (12)
Prerequisite(s): Successful completion of all core courses and practicum in the special education program.
Culminating experience in the licensure program teaching students with disabilities in a school setting full-time for one academic school year.
600. Introduction to Counseling and Guidance Services. (3)
Introduction to the counseling profession: history, philosophy, issues, trends, and current status. Role of counselor in school and community agency settings.
Independent Study only; no graduate degree credit given for Independent Study.

601. Current Issues and Research in Special Education. (3)
Prerequisite(s): Admission to special education master’s program or instructor’s consent.
Current issues in special education and related research.

602. Child Social/Emotional Assessment and Intervention. (3)
Etiology and diagnosis of dysfunctional behavior and maladjustment, with interventions for school-age children and adolescents. DSM-IV and IDEA diagnostic systems.

603. Helping Relationships. (3)
Models and methods of establishing empowerment and parity in ethical and professional helping relationships with families of individuals with disabilities.

604. Moral Dimensions in Education. (3)
Prerequisite(s): Admission to special education master’s program or instructor’s consent.
Moral development and values that undergird schooling.

605. Ethics, Professional Roles, and Standards. (3)
Prerequisite(s): Admission to one of the CPSE graduate programs.
Introduction to the profession of school psychology; ethics, professional roles, and standards of practice, focusing particularly on school-based settings.

606. Psychoeducational Foundations. (3)
Basic educational and counseling philosophy; tests and measurement theory; professional roles and challenges; the school counselor–psychologists’ personal impact on students and programs.

607. Bilingual Assessment. (3)
Prerequisite(s): CPSE graduate major status.
Assessment and educational intervention for children from non-English-language and other diverse backgrounds. Utilizing nonverbal and alternative forms of assessment.

608. Biological Basis of Behavior. (3)
Prerequisite(s): CPSE graduate major status.
Biological basis of human behavior: relationship between neurological processes and behavior; medications used in treating various disorders.

609. Academic Assessment and Interventions. (3)
Prerequisite(s): CPSE 532 or equivalent.
Curriculum-based evaluation integrated with standardized academic assessment. Students conduct assessments, develop, implement, and monitor research-based interventions.

610. Consultation Within School and Family Systems. (3)
Models and methods of consultation with teachers, parents, and professionals.

611. Academic Interventions for Children with Learning Problems. (3)
Prerequisite(s): Admission into a CPSE graduate program.
Targeting academic needs, setting goals, developing research-based interventions, and monitoring progress to strengthen student academic achievement in the areas of reading, writing, and math.

614. Behavioral Assessment and Intervention. (3)
Functional assessment of behaviors using formal and informal behavioral observations. Utilizing collected data to develop and monitor behavioral interventions.

615. Problem Solving for Social and Emotional Interventions. (3)
Principles, procedures, and strategies for classroom behavior management, social skills development, assessing social behavior, and learning environment enhancement through case studies and problem solving.

618. Legal Issues in Special Education. (3)
Prerequisite(s): Admission to special education master’s program or instructor’s consent.
Laws, regulations, and civil court actions in determining services for students with disabilities. Policy issues and problem solving using a legal reference for decision making.

620. Models of Gifted/Talented Education. (2)
Varied programs for gifted and talented students in the schools.

621. Gifted: Curriculum and Effective Instruction. (2)
Designing curriculum and instruction for gifted and talented students in the schools.

622. Theories of Learning and Cognition. (3)
Learning and cognitive development theories and their application to attitudinal and behavioral change.

630. Gifted: Practicum. (0.5-4)
Experience in a school setting under the direction of college faculty.

644. Career Development and Assessment. (3)
Theories of career development in lifespan and career counseling. Assessing interests, values, and other characteristics related to career decision making.

646. Counseling Theory and Interventions. (3)
Various theories of counseling, current research, processes, and micro-skills training for interviewing and relationship building.
Lab required.

647. Psychometric Foundations and Assessment of Intelligence. (3)
Prerequisite(s): Admission to graduate study in counseling/school psychology or counseling psychology.
Testing and measurement theory and experience in administering, scoring, and interpreting various standardized and individual intelligence tests.
648. Group Counseling and Intervention. (3)  
Primarily group approaches to personal and social counseling and guidance, including skill-streaming groups, divorce and loss groups, parent education groups, grief therapy interventions, and problem-focused interventions.

649. Human Growth and Development. (3)  
Psychoeducational aspects of developmental theory across the life span, including psychosocial, moral, ego, cognitive, faith, and identity. Developmental implications in the counseling process.

654. Comprehensive Developmental Guidance. (3)  
Components and integration of a comprehensive developmental guidance program, including planning, crisis intervention, responsive services, evaluation, guidance curriculum, and applied approach to career guidance.

655. Crisis Intervention. (3)  
Human crises; preventive, developmental, and remedial interventions within school and family systems.

656. Spiritual Values and Methods in Psychotherapy. (3)  
Spiritual values and perspectives, issues, and approaches in counseling and psychotherapy.

672. Empirical Inquiry. (3)  
Introduction to empirical research. Designing, conducting, analyzing, reporting, and evaluating research studies in counseling, school psychology, and related areas.

673. Single-Subject Research Design. (3)  
Prerequisite(s): Admission to special education master’s program or instructor’s consent.  
Application of applied behavior analysis in designing and conducting single-subject research in school and other applied settings.

678R. Practicum in School Psychology. (1-3)  
Prerequisite(s): Admission into a CPSE graduate program.  
Supervised experiences in observing, planning, and implementing effective assessment, intervention, and monitoring strategies in school settings.

679R. Practicum in Counseling Psychology. (1-3)  
Prerequisite(s): Admission into a CPSE graduate program.  
Clinical experience in individual counseling, group counseling, consultation, testing, in-service, career and education guidance, and/or therapeutic interventions in an educational setting under supervision.

688R. Academic Internship. (1-3)  
Prerequisite(s): CPSE 679R.  
Practical experience in a public school setting.

690R. Seminar. (0.5-4)  
Check current class schedule for seminar topics.

692R. Advanced Topics. (0.5-3)

693R. Directed Individual Study. (0.5-3)  
Prerequisite(s): instructor’s consent.

697R. Special Projects. (0.5-6)  
Prerequisite(s): Stat 552 and CPSE 672 or equivalent.

699R. Master’s Thesis. (0.5-6)  
Clinical experience in individual counseling, group counseling, consultation, testing, in-service, career and education guidance, and/or therapeutic interventions in an educational setting under supervision.

702. Philosophy and Theories in Counseling Psychology. (3)  
Introduction to counseling psychology. Philosophical assumptions and theoretical perspectives. Integration of science and practice within a consistent philosophical framework.

710. Ethical/Legal Standards and Issues. (3)  
Ethical and legal standards and issues in the helping professions.

715. Diagnosis and Treatment of Mental Disorders. (3)  
Diagnosis, classification, and treatment of emotional problems and mental disorders.

725. Objective and Projective Personality Assessment. (3)  
Prerequisite(s): instructor’s consent.  
Objective assessment of personality (including MMPI) as well as projective techniques (including TAT). Pragmatic psychological report writing.

744. Advanced Career Counseling. (3)  
Survey of current research in career psychology. Advanced career counseling techniques focusing on the interface between career and personal issues and the use of assessment.

746. Supervision and Consultation Theory. (3)  
Theoretical models and approaches to consultation and supervision of counseling; practice in supervising counselors in training.

748. Advanced Theory of Group Counseling. (3)  
Theory and methods of group counseling; advanced skills in conducting group therapy.

749. Data Analysis and Statistics. (3)  
Prerequisite(s): Stat 510, 511, 512; concurrent registration in CPSE 750.  
Use of SPSS as a quantitative research tool. Conceptual integration of statistics and research design.

750. Research Theory and Methods in Counseling Psychology. (3)  
Prerequisite(s): CPSE 672, Stat 552 or 510; admission to PhD program in counseling psychology.  
Advanced counseling process and outcome research methods. Includes between groups, within-subjects experimental designs; quasi-experimental and times series designs; discovery-oriented, small N, and qualitative research strategies.

751. Counseling Multicultural and Diverse Populations. (3)  
Multicultural competency training on issues of race, ethnicity, gender, sexual orientation, age, socioeconomic status, disability, and religion. Knowledge, skills, and awareness applied to counseling.
776R. Advanced Practicum 1: Counseling Psychology. (0.5-3)
Prerequisite(s): Admission to graduate study in counseling psychology.
Clinical experiences conducted primarily through collaboration with BYU’s Counseling and Career Center.

777R. Advanced Practicum 2: Counseling Psychology. (0.5-3)
Prerequisite(s): Admission to graduate study in counseling psychology.
Clinical experiences and psychotherapeutic training conducted primarily through collaboration with BYU’s Counseling and Career Center.

778R. Counseling Psychology Clerkship. (1-3)
Prerequisite(s): Admission into doctoral program in counseling psychology.
Clinical experiences and psychotherapeutic training conducted off campus in an approved community agency clinical setting.

779R. University Teaching Practicum. (3)
Prerequisite(s): Admission to graduate study in counseling psychology.
University teaching under supervision of a faculty member, including teaching or team teaching an undergraduate course and/or team teaching a master’s level course (or portions of courses).
Weekly supervisory and training session required.

788R. Predoctoral Counseling Psychology Internship. (1-9)
Prerequisite(s): CPSE 779R, all other course work, and comprehensive examinations.
One calendar year of full-time or two years of half-time supervised clinical counseling and psychotherapy for a total of 2,000 clock hours.

790R. Advanced Seminar. (0.5-3)
Prerequisite(s): Admission to graduate work.

799R. Doctoral Dissertation. (0.5-9)
Prerequisite(s): Completion of skill requirements.
Formal report and defense of substantive research topic designed to make an original contribution to knowledge in the field.

Only 3 hours of 799R may be used in establishing residency requirements.

FACULTY

ANDERSON, Darlene H., Adjunct Associate Professor. PhD, Utah State University, 2002. Positive Behavior Support; Secondary Students with Mild/Moderate Disabilities; Teacher Education.

ASHBAKER, Betty Y., Associate Professor. PhD, Brigham Young University, 1982. Paraeducation; Team Teaching.

BEECHER, Mark E., Associate Clinical Professor. PhD, Brigham Young University, 1998. Individual and Group Psychotherapy; Disabilities; Psychological and Psychoeducational Assessment.

CALDARELLA, Paul, Adjunct Associate Professor. PhD, Utah State University, 1998. Social Skills; Behavioral Assessment and Intervention.


FISCHER, Lane, Associate Professor. PhD, University of Minnesota, 1991. Counseling; School Psychology.


GLEAVE, Robert L., Clinical Professor. PhD, Brigham Young University, 1981. Postmodern Thought; Group Work and Research.

HEATH, Melissa Allen, Associate Professor. PhD, Texas A&M University, 1996. Conflict and Violence; Crisis Management, Parent Training.

JACKSON, Aaron P., Associate Professor. PhD, University of Missouri, Columbia, 1993. Career Development of Native Americans; Counseling Philosophy and Theories.

LYON, Rachel E. Crook, Assistant Professor. PhD, University of Maryland, College Park, 2002. Psychotherapy Process and Outcome; Dream Interpretation; Therapeutic Alliance; Training and Supervision.

MARCHANT, Michelle, Associate Professor. PhD, Utah State University, 2000. Emotional/Behavior Disorders.

OKISHI, John, Assistant Clinical Professor. PhD, Brigham Young University, 2000. Multicultural Counseling and Training; Forensic Populations; Outcome Assessment; Individual and Group Psychotherapy.

PRATER, Mary Anne, Professor. PhD, Utah State University, 1987. Mild/Moderate Disabilities; Multicultural Special Education.

RICHARDS, P. Scott, Professor. PhD, University of Minnesota, 1988. Religion and Mental Health; Spirituality and Psychotherapy; Research Methods.

SCARMAN, Janet S., Associate Clinical Professor. PhD, University of Utah, 1992. School Counseling; Individual and Group Counseling; Qualitative Research Methods; Student Development.

SMITH, Timothy B., Associate Professor. PhD, Utah State University, 1997. Consultation; Multicultural Psychology; Spirituality; Identity Development; Quality Relationships.

WILDER, Lynn K., Associate Professor. EdD, Ball State University, 1999. Behavior Disorders; Literacy, Adult Education.

WILLIAMS, Marleen S., Clinical Professor. PhD, Brigham Young University, 1993. Diagnosis and Treatment of Dysfunctional Behavior; Women’s Issues in Mental Health and Counseling Psychology; Religious Issues in Counseling.

YOUNG, Ellie L., Associate Professor. PhD, University of South Florida, 2001. Gender Issues in Education; Self-Concept.

YOUNG, K. Richard, Professor. PhD, University of Utah, 1973. Educational Psychology; Emotional/Behavioral Disorders; At-Risk Youth and Dysfunctional Families.
THE PROGRAM OF STUDIES

The Department of Dance at Brigham Young University defines dance in three dimensions—the physical, the intellectual, and the spiritual. Dance refines and integrates the body, mind, and spirit in a continual pursuit of excellence.

The Dance Department is committed to preparing reflective, articulate dance artists, teachers, and scholars. Honoring and preserving the past as it gives voice to the present and seeks to define the future, the dance program provides for study, research, experimentation, practice, and the creation and performance of new works. And, in addition to rigorous preparation in dance, the department has many opportunities for collaborative work with other arts and science disciplines.

The graduate program requires a breadth and depth of inquiry and exploration that extends beyond individual dance genres and styles, encompassing the theory and principles of the discipline. To this end, the graduate program seeks to enhance an undergraduate foundation in dance with the following academic goals: (1) intensify learning in selected areas of emphasis within the dance discipline by providing demanding course work; enhanced creative, pedagogical, and research opportunities; and real-life experiences; (2) foster the development of significant new ideas and creative works through careful research, rigorous intellectual inquiry, and masterful artistic effort; (3) recognize, acknowledge, and preserve our cultural and intellectual heritage; and (4) carefully prepare well-qualified professionals who not only do but also contemplate, comprehend, and articulately express what has been found.

One degree is offered through the Department of Dance: Dance—MA.

Dance—MA

Note: The department is not accepting applicants for the 2008–2009 academic year. Contact the department for more information.

COURSE DESCRIPTIONS

500R. Workshop in Dance. (0.5-3)
Experience with Workshop in Dance: ballet or ballroom.

540R. Modern Dance Technique and Theory 5. (2)
Prerequisite(s): Dance 340R or instructor’s consent.
Advanced technique, with movement combinations emphasizing dance as a performance art.

562R. Modern Dance Composition, Advanced. (1)
Prerequisite(s): Dance 362 or instructor’s consent.
Development of substantive modern dance compositional works based on intent, form, and content relationships.

563R. Modern Dance Improvisation, Advanced. (1)
Prerequisite(s): Dance 363 or instructor’s consent.
Developing advanced skills of immediate movement response to enhance nonverbal communication.

630R. Dance Technique, Advanced. (0.5-3)
Prerequisite(s): instructor’s consent.
Course designed for higher-level assignment and credit while attending ballet, ballroom, folk, or modern advanced technique course.

638R. Dance Performance. (0.5-2)
Prerequisite(s): instructor’s consent.
Performing with a BYU dance company.

651. Dance Pedagogy. (2)
Prerequisite(s): Undergraduate course in dance methodology or equivalent.
Nature and application of pedagogy from universal and dance perspectives.

663. Dance Technique—Theory and Principles. (2)
Research in dance technique.

697R. Individual Research and Composition in Dance. (0.5-4)
Prerequisite(s): Admission to graduate study in dance.
Pedagogical research, choreographic, or performance project (faculty approved and supervised). Presentation of resultant product required.

699R. Master’s Thesis. (0.5-6)

FACULTY

Allen, Sandra Birch, Associate Professor. MFA, University of Utah, 1967. Ballet; Methodology; Technique; History.

Berrett, Marilyn, Associate Professor. MA, Brigham Young University, 1984. Modern Dance; Dance Education; Technique.

Black, Catherine H., Professor. MFA, University of Utah, 1972. Dance History; Modern Dance; Choreography; Performance; Research Methods.

Davis, Susanne, Dance Professor. MS, Brigham Young University, 1971. American and Folk Dance Forms; Cultural Aspects; Pedagogy; Anthropology.

Debenham, Pat, Professor. CLMA, MA, University of California, Los Angeles, 1976. Modern Dance; Choreography; Technique; Performance; Music Dance Theatre, Laban Movement Analysis; Bartenieff Fundamentals.

Gibb, Sara Lee, Professor. MS, Brigham Young University, 1970. Modern Dance; Dance Education; Pedagogy; Dance and Body Therapies.

Holman, Curt, Associate Professor. MA, Brigham Young University, 1996. Ballroom Dance; Technical Annotation of American-Style Ballroom Dance.

Musil, Pamela S., Associate Professor. MA, Brigham Young University, 1985. Modern Dance; Dance Education; Dance Science; Technique.
**ECONOMICS**

*Chair:* Michael R. Ransom

130 FOB
Provo, UT 84602-2363
(801) 422-2859

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**THE PROGRAM OF STUDIES**

The Department of Economics does not offer a graduate degree but offers the following graduate courses:

**COURSE DESCRIPTIONS**

580. Advanced Price Theory. (3)
Prerequisite(s): Econ 378, 380, 382; or equivalents.
Modern theories of consumers, producers, and competitive equilibria.

581. Advanced Macroeconomics. (3)
Prerequisite(s): Econ 380, 381, 382, 388; or equivalents.
Theory of determining national income, employment, inflation, and interest rates. Issues of economic fluctuations, economic growth, and monetary and fiscal policy.

582. Topics in Mathematical Economics. (3)
Prerequisite(s): Econ 580.
Advanced topics such as risk and uncertainty, game theory, and capital theory.

586. Advanced Mathematics for Economists. (3)
Prerequisite(s): Econ 380, Math 214; or equivalents.
Advanced mathematical methods that have proved useful in economic modeling.

588. Econometrics. (3)
Prerequisite(s): Econ 380, 381, 382, 388; or equivalents.
Theory and practice of formulating, estimating, and analyzing economic models.

599R. Academic Internship: Supervised Management and Training. (0.5-6)
Prerequisite(s): Course work pertinent to proposed experience.

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**PHILLIPS, REBECCA WRIGHT, Associate Professor.** MFA, University of Utah, 1990. Modern Dance; Music Dance Theatre; Technique; Choreography; Performance.

**PROHOSKY, CAROLINE, Associate Professor.** MA, University of California, Los Angeles, 1980. Modern Dance; Choreography; Technique; Performance.

**WAKEFIELD, B. LEE, Associate Professor.** MA, Brigham Young University, 1977. Ballroom Dance Choreography; Ballroom Dance Historical Research.

**WEST, COLEEN N., Associate Professor.** MA, Brigham Young University, 1985. Ethnic Dance Forms (Ukrainian Specialty); Ethnic Costuming; Rhythm Tap.

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**FACULTY**

For faculty listings, refer to the BYU Undergraduate Catalog.
EDUCATIONAL LEADERSHIP AND FOUNDATIONS

Chair: A. LeGrand Richards
Graduate Coordinator:
Scott E. Ferrin
306 MCKB
Provo, UT 84602-5092
(801) 422-4291
Internet: http://www.edlf.byu.edu
Fax: (801) 422-0196

THE PROGRAM OF STUDIES

Our vision is to improve life conditions and opportunities for individuals, families, and communities worldwide.

Our mission is to improve the equity and quality of teaching and learning environments throughout the world. We accomplish this mission through the integration of research, teaching, and service to strengthen educational opportunities for all people worldwide. This integrated mission is threefold:

• Explore and expand the knowledge of educational theory, policy, practice, and leadership.
• Foster the growth of educational leaders of faith and character who possess the requisite knowledge, skills, and dispositions.
• Build the capacity of individuals, families, communities, states, and nations to identify and solve education problems.

The Department of Educational Leadership and Foundations offers three degrees: Educational Leadership—MEd, Educational Leadership—EdD, and Educational Leadership—PhD.

Students may be admitted for graduate study on a part- or full-time basis.

Educational Leadership—MEd

The master of education degree program emphasizes the preparation of leaders for responsible positions in institutions concerned with educational programs, both domestic and international. Each emphasis represents an organized, streamlined program of study designed to give the student a solid theoretical, research, and practical foundation in a variety of settings.

Within the MEd degree in educational leadership and foundations are the following areas of emphasis and a JD/MEd degree program.

1. School Leadership. This emphasis prepares students for school leadership roles and requires an internship or a project. The school leadership emphasis consists of two program options:
   • Leadership preparation program (LPP) (licensure program)
   • Executive school leadership program (ESLP) (licensure or nonlicensure program). This program (ESLP) also prepares students to become educational leaders in public or private schools without licensure through completing a project or thesis instead of internship hours.

2. Comparative and International Development Education. Emphasis under revision.

Admission and Entry.
• Application deadlines: February 15 of the year in which enrollment is desired (LPP applicants: December 1).
• Application requirements: minimum 3.0 GPA for last 60 semester hours.
• Entrance examinations: GRE or LSAT; for international applicants, TOEFL. (A TOEFL score of 600 or higher is required.)
• Prerequisite: baccalaureate degree and minimum one year’s professional experience.
• Semesters of entry: summer. (LPP begins spring.)

Requirements for Degree.
• Credit hours: See program announcement.

• Required courses: consult program announcement available in department office.
• Study list: to be submitted by end of first semester.
• Credit limitations: EdLF 515R or extension credit will not be counted toward a degree program.
• Comprehensive examination: required upon completion of course requirements.
• Thesis, project, or internship.

Requirements for Minimum Registration. Following admission to the MEd program, students will be expected to work continuously toward completion of all requirements for the degree. The university requires that students complete at least 6 semester hours of approved program credit during each academic year (September 1 to August 31). Students are permitted five years to complete the degree program and graduate.

Requirements for Administrative/Supervisory Endorsement in Addition to Master’s Degree. To become a school site administrator, and for certain district office positions in Utah, the administrative/supervisory license is required. The administrative/supervisory license, which is an endorsement to the teaching certificate, requires prior teaching experience and the completion of courses and credits required for the master’s degree. Students wishing to receive the endorsement must have prior approval.

Educational Leadership—EdD

Note: The EdD program is not admitting students for the 2008–2009 academic year. Contact the department for more information.

Educational Leadership—PhD

The doctor of philosophy degree (PhD) requires the student to demonstrate scholarly competence, engage in self-directed inquiry, and demonstrate the ability to conduct and report educational research. The program emphasizes a rigorous approach to advanced study in educational leadership. (In general,
the PhD program examines educational issues from a larger, global context and with an extensive theoretical framework.

The PhD degree program has five elements:
1. Program course work—the knowledge base required for good leadership and analysis in contemporary educational settings through doctoral core and specialization elective courses.
2. Professional internships—three internship activities to develop future professional skills: off-site internship, graduate research assistantship, and graduate teaching assistantship.
3. Integrative seminar—a capstone experience to integrate and synthesize ideas learned from courses and educational experiences in the doctoral program.
4. Comprehensive examination—a demonstration of the ability to integrate and synthesize ideas learned from program course work.
5. Dissertation—the use of theory and research to address problems related to educational policies and practices, with the specific aim of furthering knowledge of the educational field.

Admission and Entry.
- Semesters of entry and application deadlines: all application materials must be completed and on file in Graduate Studies by March 1 of each year to be considered for admission to graduate study the coming summer term.
- Doctoral applicants must contact the department secretary no later than December 31 of the year preceding intended entry to obtain materials specific to application procedures and deadlines.
- Doctoral students enter the university to begin study only in the summer term of each year.
- Required entrance examinations: the GRE, GMAT, or LSAT; and, for international applicants, TOEFL. The department may require additional examinations.
- Prerequisite: master’s degree or equivalent; professional experience in leadership and/or administration consistent with intended area of study is preferred.

Requirements for Degree.
- Credit hours (66): minimum 48 hours plus 18 hours of dissertation credit (EdLF 799R).
- Required core courses: see program announcement available in department office.
- Study list: submit by the end of the first semester.
- Credit limitations: EdLF 515R or extension courses will not be counted toward degree programs.
- Residence: 2 consecutive semesters with 6 credit hours each semester.
- Examinations: (A) comprehensive examination of course work (B) oral presentation of dissertation.
- Dissertation: a rigorous, independent, guided research project. The dissertation (18 credit hours) presumes advanced research expertise and may not be undertaken until all course work has been completed and the comprehensive examination has been passed. The dissertation is different from course work per se; therefore, performance on the dissertation may not correlate with performance in individual courses.

Minimum Registration. Following admission to the doctoral program, students will be expected to work continuously toward completion of all requirements for the degree. The university requires that students complete at least 6 hours of approved program credit during each academic year (September 1 to August 31). Students are permitted eight years in which to complete the degree program and graduate.

Joint Degrees
The department and the Law School have established the joint JD degree for a masters in Educational Leadership.

FINANCIAL ASSISTANCE
Research Assistantships. A limited number of research assistantships are available upon application. These assignments involve working with selected faculty members on a ten- to twenty-hour-per-week basis. Assistantships are given for a one-year period only but may be extended following a review of student performance.

Tuition Scholarships. Scholarships are available on a limited basis. Students receiving assistantships are not normally given tuition scholarships. Tuition aid is given on the basis of need, and applications should be received in the department by May of each year for consideration for the following summer term and academic school year.

Scholarships. Several modest scholarships are also available. Contact the department for application forms and additional information about these opportunities.

RESOURCES AND OPPORTUNITIES
Computer Laboratory. Computer terminals in the laboratory provide graduate students direct line access to the university’s large mainframe computers, enabling students to use several sophisticated programs, such as SPSS, SAS, and NVivo to analyze research data. These terminals also enable students to search out books and other materials in the Harold B. Lee Library.

Graduate Student Project and Research Laboratory. Laboratory space is provided for graduate students who are working with faculty on research, evaluation, and development projects.

Study Areas. Graduate study areas are available in the McKay Teaching and Learning Center.

For a more detailed description of the graduate program requirements, send for a copy of the department’s bulletin.
EDUCATIONAL LEADERSHIP AND FOUNDATIONS

COURSE DESCRIPTIONS

Note: EdLF 515R is for teacher certification purposes only and is listed in the BYU Undergraduate Catalog.

515R. Special Topics in Education. (0.5-3)
Credit earned in 515R is not counted toward graduate degrees.

530. School and Community Programs in Education. (2)
Examination of programs in school and community for enhancement of teaching and learning.

600. Personal and Group Leadership in Education. (3)
Theoretical foundations of leadership and organizational behavior, specifically applied at the micro level to individuals and groups within educational organizations.

602. Organization and Strategic Leadership in Education. (3)
Prerequisite(s): EdLF 600.
Theoretical foundations of leadership, organizational theory, strategy, and change, specifically applied at the macro level to educational organizations and their environments.

610. Human Resource Administration in Education. (2)
Introduction to human resource management policy and practice in education organizations, including job analysis and design, recruitment, selection, supervision, and evaluation.

614. Education of Diverse Populations. (3)
Multicultural issues in educational theory and practice, with special reference to race, ethnicity, gender, socioeconomic status, and various types of exceptionality.

617R. Professional and Scholarly Communication in Education. (1-3)
Developing and refining skills in written and oral communication. Analytical, critical, and persuasive writing; speaking, presenting, and collaborative problem solving.

620. Educational Finance. (3)
Theory, principles, and general practices of public school finances; equalization and finance problems.

621. Economics of Education. (3)
Main concepts that apply economic thinking to education. Overview of literature on the efficiency and effectiveness of educational policies on education outcomes.

622. The Law and Education. (3)
Evolution of American law and its application to American educational systems. Fundamental sources and principles of the law, the judicial structure, and key court cases affecting education at the state and federal levels.

627. Instructional Leadership 1: Seminar on Principalship Roles. (3)
Prerequisite(s): EdLF 600, 602, or instructor’s consent.
Integrating research, theory, and standards of practice in studying principalship roles in educational learning communities, including school culture, vision building, and teaming for school improvement.

629. Instructional Leadership 2: Seminar on School Improvement Models. (3)
Instructional leadership and school improvement models in creating and sustaining successful teaching and learning communities. Instructional supervision, professional development, and action research for school improvement.

631. The Curriculum: Theory and Practice. (3)
Prerequisite(s): EdLF 600, 602, or instructor’s consent.
Theory and practice of curriculum in its various psychological, social, historical, and philosophical contexts.

632R. Field Practicum. (0.5-6)
Working with a school administrator as a supervised intern.
6 hours required for administrative certificate; 2 hours required for MEd degree.

635R. Internship Seminar. (0.5-3)
School administrative internship seminar. Practices, concepts, and theories of school administration.

640. Quantitative Reasoning 1. (3)
Statistical reasoning, logic systems, and methodology.

641. Quantitative Reasoning 2. (3)
Prerequisite(s): EdLF 640.
Use of analysis of variance, analysis of covariance, and multiple regression/correlation in the analysis of research in education.

645. Quantitative Methods in Education Research. (3)
Prerequisite(s): EdLF 640, 641, 672.
Reasoning and methods utilized in quantitative research with a major focus on survey research techniques.

646. Qualitative Methods in Education Research. (3)
Prerequisite(s): EdLF 672.
Reasoning and methods utilized in qualitative research.

650. Education Policy. (3)
Introduction to development and evaluation of educational policy in such domains as governance, resource allocation, productivity, assessment, and curriculum.

655. Social History of American Education. (3)
Interpretative study of major ideas, values, and practices that influenced development of American education within broader social, political, cultural, and economic context.

656. Best Practices in American Education. (2)
Ideas, organizational arrangements, policies, and practices judged highly effective, especially in the promotion of student learning outcomes. Includes visits to local schools.

657. Language, Policy, and Education. (3)
Comparative policy approaches to language of instruction issues in international and U.S. settings, including fundamental sources of policy, from law to international declarations rights; critical overview of second language acquisition theory.

658. Political Aspects of Education. (3)
Understanding processes and institutions in building support for education; associated issues.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
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<tbody>
<tr>
<td>659</td>
<td>Contemporary Issues in Educational Leadership. (2)</td>
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<td>660</td>
<td>Education and Social Change. (3)</td>
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<td>661</td>
<td>Education and International Development. (3)</td>
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<td>Comparative and International Development Education. (3)</td>
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<td>663</td>
<td>Education, Culture, and Economic Development. (3)</td>
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<td>665</td>
<td>Evaluation and Assessment of School Programs. (3)</td>
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<td>668</td>
<td>Philosophical Foundations of Western Education. (3)</td>
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<td>670R</td>
<td>Seminar in Education. (0.5-3)</td>
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<td>671R</td>
<td>Seminar in Comparative International Development Education. (1-3)</td>
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<td>672</td>
<td>Research Methods. (3)</td>
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<td>EdLF 640</td>
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<td>Business Administration and Technology Applications in Education. (2)</td>
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<td>677</td>
<td>Quantitative Data Analysis: SPSS. (3)</td>
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<td>EdLF 640 or equivalent; EdLF 672</td>
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<td>678</td>
<td>Qualitative Data Analysis. (3)</td>
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<td>679</td>
<td>Professional Negotiations. (2)</td>
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<td>688R</td>
<td>Master’s Internship. (1-6)</td>
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<td>Independent Study. (0.5-3)</td>
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<td>694R</td>
<td>Independent Research. (0.5-3)</td>
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<td>instructor’s consent; departmental consent if more than one registration desired</td>
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<td>instructor’s consent; departmental consent if more than one registration desired</td>
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<td>698R</td>
<td>Master’s Project. (0.5-6)</td>
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<td>699R</td>
<td>Master’s Thesis. (0.5-6)</td>
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<tr>
<td>700</td>
<td>Strategic and Organizational Leadership. (3)</td>
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<td>729</td>
<td>Advanced Instructional Leadership. (3)</td>
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<td>Advanced Educational Leadership. (3)</td>
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<td>750</td>
<td>Economics of Resource Allocation in Education Policy. (3)</td>
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<td>EdLF 621, 650</td>
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<td>755</td>
<td>Cultural History of U.S. Schooling. (3)</td>
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<tr>
<td>762</td>
<td>History of Higher Education. (3)</td>
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</tbody>
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775. Educational Research: Theory and Methodology (3)
Prerequisite(s): EdLF 640, 672; or equivalents.
   Exploration of the history, theory, and methodology of research in education.

776. Contemporary Approaches to Educational Research. (3)
Prerequisite(s): EdLF 672 or equivalent; 775.
   Exploration of the paradigms and approaches to contemporary educational research.

780. Economic Issues in Educational Leadership. (3)
   Economic benefits of education to country’s economy; why education is considered an investment in human capital. Equity and equality of funding education.

788R. Doctoral Internship. (1-6)
   Practical experience in the state office, local school districts, higher education settings, or other agencies.

790R. Doctoral Practicum. (1-3)
   Designing and implementing on-site research.

791R. Doctoral Seminar. (0.5-6)
Prerequisite(s): departmental consent.

792. Research Topics and Issues in International Comparative Education. (3)
   Research topics and issues on histories, philosophies, and practices of international educational systems.

795. Research and Reporting Techniques for Doctoral Dissertation. (3)
   Research designs for planning and conducting research for doctoral dissertation using survey, inferential, and experimental methods.

799R. Dissertation. (0.5-18)
Prerequisite(s): EdLF 795.

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FACULTY


FERRIN, SCOTT E., Associate Professor. JD, Brigham Young University, 1984; EdD, Harvard University, 1996. School Law; Policy; Politics; Language Policy.


HALLAM, PAMELA, Associate Professor. PhD, University of Utah, 2006. Leadership; Educational Administration.

HILTON, STERLING C., Associate Professor. PhD, Johns Hopkins University, 1996. Longitudinal Data Analysis; Structural Equation Modeling; Statistics Education.

HITE, JULIE M., Associate Professor. PhD, University of Utah, 1999. Leadership; Organizational Behavior; Organizational Theory; Strategy and Networks.


JACKSON, KAREN M., Assistant Professor. PhD, Indiana University, 2007. Education Policy; Education Leadership.

MATTHEWS, L. JOSEPH, Associate Professor. EdD, Brigham Young University, 1987. Leadership; Educational Administration; Principalship.

MAYES, CLIFFORD T., Associate Professor. PhD, University of Utah, 1997. Cultural Foundations; Sociology of Education; Curriculum Theory.

RANDALL, E. VANCE, Professor. PhD, Cornell University, 1989. Educational Administration; Social Philosophy; Education Policy.

RICHARDS, A. LEGRAND, Associate Professor. PhD, Brigham Young University, 1982. Philosophy; Foundations.

WILLIAMS, ELLEN J., Associate Professor. EdD, Brigham Young University, 1990. Instructional Leadership; Educational Administration; Nurturing Organizational Knowledge.
THE PROGRAM OF STUDIES

Electrical engineering has its origins in the study and application of electrical phenomena. However, in recent years the field has grown to embrace a diverse range of problems in applied physics and mathematics. The department currently offers advanced study in four broad areas.

- **Computer Engineering** concentrates on the architecture and implementation of digital logic and computing systems.
- **Electromagnetics** explores the theory, physical properties, and applications of electromagnetic radiation and includes emphases in optics, remote sensing, numerical computation, and microwave systems.
- **Microelectronics and VLSI** focuses on the design and fabrication of micro-electronic circuits for digital and analog applications, including device physics, modeling, processing, and fabrication.
- **Signals and Systems** studies fundamental and applied issues in information processing and includes emphases in communication theory, linear and nonlinear control systems, digital signal processing, and estimation theory.

Specific research activities in these broad areas are described on the department graduate program Web page at http://www.ee.byu.edu/grad.

Two degrees are offered through the department: Electrical and Computer Engineering—MS and Electrical and Computer Engineering—PhD.

Admission and Entry.
All degree programs have the same admission and entry requirements.
- Semesters of entry and application deadlines: fall, January 15; winter, September 15. Note that the application deadline for admission in the fall semester is earlier than the general university deadline.
- Application requirements: complete BYU Application for Admission to Graduate Study online and GRE general exam.
- Prerequisites: BS degree in electrical or computer engineering or allied discipline. Minimum 3.0 GPA for last 60 credit hours of course work. International applicants who have obtained their degree(s) outside the U.S. must submit all official transcripts, diplomas, and mark sheets to one of the following agencies for an evaluation: Education Credential Evaluators (ECE), International Education Research Foundation (IERF), or World Education Services (WES).

**Electrical and Computer Engineering—MS**

The MS degree concentrates on establishing a sound theoretical foundation and on exposing students to advanced developments. The critical thinking and high level of mathematical and algorithmic facility required by the abstract nature of graduate courses allows the MS graduate to assume responsibility and supervision beyond that normally given a BS engineer. MS students study in one of the four broad areas while pursuing either the thesis or course work option. The MS degree typically takes two years to complete.

The preferred MS degree option within the department is the thesis option. Students pursuing the thesis degree work closely with a faculty adviser and develop the research and design tools necessary to participate in the leading edge developments in the discipline. Students applying for the thesis degree option should indicate their research interests and preferred faculty advisor within the application.

The department also offers a MS course work degree. The number of students admitted to the course work option is limited and thus admission standards for the course work degree are more selective than that of the thesis degree. Students applying for admission to the course work degree should clearly indicate their interest in this degree option and describe how the course work degree will meet their goals for a graduate education at BYU.

**Requirements for Degree**

**(Thesis Option)**
- Credit hours: 30.
- Required courses: 9 credit hours from one of the four emphasis areas and 3 credit hours from one of the other three emphasis areas; 6 credit hours of EC En 699R.
- Study list: submitted during first semester of graduate study.
- Thesis.
- Final oral examination consisting of public presentation of original research described in thesis.

**(Course Work Option).**
- Credit hours: 30
- Required courses: 9 credit hours from one of the four emphasis areas and 6 credit hours from any of the other three emphasis areas.
- Study list: submitted during first semester of graduate study.

**Engineering Management—Minor**

Offered to MS students in the College of Engineering and Technology, the engineering management minor provides a way to include some elements of modern management in a technical graduate program. Students interested in pursuing the Engineering Management Minor should clearly indicate this interest in their personal statement within the university application.

**Requirements.**
- The minor requires 9 hours. Mgt 501 and 511 are required courses. The other 3 hours are selected from Mgt 541, MBA 679 and 650, P
FINANCIAL ASSISTANCE
The department provides several types of financial assistance for graduate students. All applicants in good standing are considered for financial aid, but priority is given to PhD students. More information may be obtained from the department. No special application form is required. The following types of assistance are available:

Tuition Scholarships. The department offers a limited number of full- and partial-tuition scholarships. All students applying to the program are automatically considered for tuition scholarships.

Research Assistantships. Full-time graduate students in good standing may be awarded research assistantships to assist faculty with externally funded research. Contact individual faculty directly to identify research assistantship opportunities.

Teaching Assistant. The department employs graduate students as teaching assistants in undergraduate and graduate courses. The department also employs students in a number of department support positions such as computer system administration and laboratory support. Applications for teaching assistant and department student positions are accepted the week prior to the given semester or term. Contact the department for more information about current teaching assistant and department support opportunities.

RESOURCES AND OPPORTUNITIES
The department maintains a variety of facilities to support the diverse research efforts of the graduate faculty. Facilities include:

• Extensive PC and Unix workstation computer resources.
• Digital signal processing laboratory that includes a variety of software tools, image display and digitizing equipment, and audio processing equipment.
• Well-equipped clean-room to support research in semiconductor and electro-optic fabrication.
• Microwave remote sensing and integrated systems laboratories.
• Electro-optics laboratory that includes lasers and fiber optic research equipment.
• Antenna range.
• Reconfigurable logic laboratory.
• Telemetering laboratory to support research in digital communications and error control coding.
• Control laboratory to support research in nonlinear control systems.

For a description of current research activities associated with each facility, see the department graduate program web page at http://www.ee.byu.edu/grad.

COURSE DESCRIPTIONS
522R. Special Topics in Computer Systems. (0.5-3) Prerequisite(s): instructor’s consent
541. Active and Passive Filter Design. (3) Prerequisite(s): ECEn 313, 380; or equivalents.
        Design methods for electronic filters based on passive components, active components, and integrated circuit components.
542R. Special Topics in Electronics. (0.5-3) Prerequisite(s): instructor’s consent.
543. CMOS Amplifier Design. (3) Prerequisite(s): ECEn 443 or 445 or equivalent.
        Factors affecting performance of MOS devices in analog applications.
        Design of MOS amplifiers, buffers, and comparators.
548. Analog CMOS Circuit Design. (3) Prerequisite(s): ECEn 443 or 445 or equivalent.
        Design of CMOS comparators, wideband amplifiers, bandgap references; multipliers, PTAT generators, charge-transfer amplifiers, chopper-stabilized amplifiers, and advanced D/A and A/D CMOS architectures.
549. VLSI Communication Circuit Design. (3)
Prerequisite(s): ECE 443 or 445 or equivalent.
Frequency synthesizers; low-jitter, voltage-controlled oscillators; high Q circuits; clock regeneration; phase-locked loops; frequency discriminators; and radio-on-a-chip concepts.

550. (EC En-ME En) Microelectromechanical Systems (MEMS). (3)
Prerequisite(s): ECE 450 or ME En 372 or equivalent.
Design, fabrication, and applications of MEMS. Mechanical properties governing their design and reliability and the processing technologies used to fabricate them.

555. Optoelectronic Devices. (3)
Prerequisite(s): ECE 450 or equivalent or instructor’s consent.
Design, operation, and fabrication of modern optoelectronic devices, including photodiodes, photovoltaics, LEDs, and lasers.

560. Electromagnetic Wave Theory. (3)
Prerequisite(s): ECE 462 or equivalent.

562. Optical Communication Components and Systems. (3)
Prerequisite(s): ECE 462, 466 or equivalents.
Fiber-optic communication system components and their operating and performance characteristics.

563. Applied Computational Electromagnetics. (3)
Prerequisite(s): ECE 462 or equivalent.
Current theory and practice in numerically solving Maxwell's equations for antenna and circuit design and radar-scattering prediction.

564. Radar and Communication Systems. (3)
Prerequisite(s): ECE 462, 485 or equivalents.
Design and performance of radar and communication systems: radar equation ambiguity functions, modulation, signal detection, link budgets, spread spectrum, system design, and performance trade-offs.

568. Microwave Remote Sensing. (3)
Prerequisite(s): instructor’s consent.
Emphasis on space-borne remote sensing of the earth’s atmosphere, land, and oceans. Primary methods and applications for both active (radar) and passive (radiometry).

620. Advanced Digital Systems. (3)
Prerequisite(s): ECE 320 or proficiency in HDL digital system design.
Advanced synchronous systems design; CAD and HDLs; systolic arrays; high-speed, low-power digital circuit architectures.

621. Computer Arithmetic. (3)
Fundamental principles and development of algorithms for performing arithmetic on digital computers and application-specific processors.

625. Compilation Strategies for High-Performance Systems. (3)
Prerequisite(s): ECE 620 or concurrent enrollment.
Compilation and synthesis strategies for high-performance hardware/software systems.

626. Computer Internetworking. (3)
Prerequisite(s): ECE 427 or equivalent.
Basics of computer networking, legacy and modern LANS, switches/routers, voice/data/video communications, lab experience with network routers and switches, performance evaluation.

627. Advanced Embedded Systems. (3)
Prerequisite(s): ECE 425 or 427 or equivalent.
Topics include embedded system architecture and organization, hardware-software co-design, hardware-software partitioning, co-verification, system-on-a-chip, and real-time systems.

628. Advanced Computer Architecture. (3)
Prerequisite(s): ECE 425 or 427 or instructor’s consent.
Lab experience with hardware and software techniques for exploiting instruction-level parallelism.

629. Reconfigurable Computing Systems. (3)
Prerequisite(s): ECE 620.
Introduction to FPGA devices, lab experience developing FPGA-based reconfigurable systems.

631. Robotic Vision. (3)
Prerequisite(s): ECE 380, Math 343 (or equivalents); proficiency in Matlab or C++.
Deriving 3-D geometry and motion from image sequence or multiple digital images: camera modeling, image processing techniques, and geometry models of single and multiple-view systems.

648. Advanced Mixed-Signal Circuit Design. (3)
Prerequisite(s): ECE 548.
New converter architectures, advanced measurement and characterization techniques, low-noise timing circuits, VLSI layout and package considerations, bond wire inductance, and wireless applications.

654. VLSI Systems Design. (3)
Prerequisite(s): ECE 451 or equivalent.
Design of structured circuit systems for very large-scale integrated semiconductor chips. Architecture of digital VLSI systems.

661. Advanced Optical Engineering. (3)
Prerequisite(s): ECE 462 or equivalent.
Theory and analysis of optical systems, including beam propagation, image formation, and modern optical systems.
662R. Special Topics in Electromagnetics. (0.5-3)
Prerequisite(s): Graduate standing or instructor’s consent.

665. Antennas and Propagation for Wireless Communication. (3)
Prerequisite(s): EC En 380, 462; or equivalents.

670. Stochastic Processes. (3)
Prerequisite(s): EC En 370 and 380 or equivalents; graduate standing or instructor’s consent.

671. Mathematics of Signals and Systems. (3)
Prerequisite(s): ECEn 380, Math 343 (or equivalents); graduate standing or instructor’s consent.

672. Detection and Estimation Theory. (3)
Prerequisite(s): EC En 370 or equivalent; EC En 670; graduate standing or instructor’s consent.

673. (EC En-Me En 633) Digital Control Systems. (3)
Prerequisite(s): EC En 483 or Me En 431 or equivalent.

674. EC En-Me En 634) Flight Dynamics and Control. (3)
Prerequisite(s): EC En 483 or Me En 431 or equivalent.

675. Error-Control Coding. (3)
Prerequisite(s): EC En 487 or equivalent;

676. Advanced Digital and Wireless Communications. (3)
Prerequisite(s): EC En 485 or equivalent; EC En 670.

677. Digital Signal Processing. (3)
Prerequisite(s): EC En 487 or equivalent; EC En 670, 671; graduate standing or instructor’s consent.

701. Inverse Problems. (3)
Inverse problem theory and solution including statistical, deterministic, linear, and nonlinear techniques:
Landweber conjugate-gradient, POCS, Backus-Gilbert, maximum-entropy, Lucy-Richardson; Radon transforms; inverse scattering; medical imaging.
ENGINEERING MANAGEMENT


Beard, Randal, Professor. PhD, Rensselaer Polytechnic Institute, 1995. Guidance and Control of Micro Air Vehicles; Cooperative Control; Nonlinear Control Theory.


Comer, Donald T., Professor. PhD, University of Santa Clara, 1968. Microelectronics; Mixed Signal VLSI.

Hawkins, Aaron R., Associate Professor. PhD, University of California, Santa Barbara, 1998. Solid-State Device Physics; Semiconductor Processing; Optoelectronics and Photonics; Materials Integration.

Hutchings, Brad L., Professor. PhD, University of Utah, 1992. Reconfigurable Logic; FPGA's VLSI Design.

Jeffs, Brian D., Associate Professor. PhD, University of Southern California, 1989. Digital Signal Processing; Digital Image Processing; Biomedical Imaging.

Jensen, Michael, Professor. PhD, University of California, Los Angeles. 1994. Wireless Communications; High-Frequency Circuits; Antennas and Propagation.

Lee, D. J., Associate Professor. PhD, Texas Tech University, 1990. Medical Informatics; Machine Vision; Real-Time Robot Vision.

Long, David G., Professor. PhD, University of Southern California, 1989. Microwave Remote Sensing; Estimation Theory; Radar.


Nordin, Gregory P., Professor. PhD, University of Southern California, 1992. Photonics; Sensors; Nano- Structures.

Penry, David A., Assistant Professor. PhD, Princeton University, 2006. Computer Architecture; Microarchitecture; Simulation; VLSI Design.

Rice, Michael, Professor. PhD, Georgia Institute of Technology, 1991. Digital Communication Theory; Error-Control Coding; Software Radios.

Schultz, Stephen M., Assistant Professor. PhD, Georgia Institute of Technology, 1999. Fiber Optics; Integrated Optics; Diffractive Optics.

Selfridge, Richard H., Professor. PhD, University of California, Davis, 1984. Fiber and Integrated Optics; Electromagnetics; Lasers.

Stirling, Wynn C., Professor. PhD, Stanford University, 1983. Linear System Theory; Estimation and Detection Theory; Control Theory.

Taylor, Clark N., Assistant Professor. PhD, University of California, San Diego, 2004. Image/Video Shaping; Wireless Communications; Multimedia.

Warnick, Karl, Associate Professor. PhD, Brigham Young University, 1997. Electromagnetics; Scattering Theory; Numerical Analysis.

Wild, Doran, Associate Professor. PhD, Oregon State University, 1995. Regular Array Architectures; Computation.

Wirthlin, Michael J., Associate Professor. PhD, Brigham Young University, 1997. Reconfigurable Computing; Fault-Tolerant FPGA Processing; High-Level Synthesis and Compilation.

ENGINEERING MANAGEMENT

Engineering Management—Minor

Offered to MS students in the College of Engineering and Technology, the engineering management minor provides a way to include some elements of modern management in a technical graduate program.

Requirements for Degree.

- The minor requires 9 hours. Mgt 501 and 511 are required courses. The other 3 hours are selected from Mgt 541, MBA 679 and 650, P Mgt 622, 675, 676, or approved Marriott School of Management courses. Students should carefully plan how they will meet the requirements of the minor since these courses are taught only once a year.

- This minor should be declared as part of a student’s graduate study list. Admittance approval to enroll in class will be derived from the student’s approved graduate study list.

Following are course descriptions.

**COURSE DESCRIPTIONS**

**501. Managerial Accounting.** (3)

Nature, objectives, and procedures of cost accounting. Topics include job costing, joint product costing, cost behavior analysis, standard costs, problems of cost allocation, and uses of cost data in decision making.

**511. Managerial Finance.** (3)

Financing problems facing a business: managing working capital and long-term assets; financing capital requirements in the short and long term; techniques of financial analysis and planning; identifying and valuating cash flows; cost of capital; capital budgeting, structure, and markets; raising corporate capital.

**541. Marketing Management.** (3)

Development of analytical marketing tools and techniques and their utilization in case analysis and decision making in marketing management.
Admission and Entry.
- Semesters of entry and application deadlines: fall, January 15 (U.S. and international).
- Application requirements: application, including writing sample. Creative writing applicants must also submit a creative portfolio.
- Entrance examination: GRE general exam is required (only the verbal and writing sections are considered).
- Prerequisite: undergraduate major or its equivalent, one course in literary criticism (Engl 451 or 452 or equivalent), and reading knowledge of one foreign language.

Requirements for Degree—Literature Emphasis.
- Credit hours: 32 minimum, consisting of 26 course work hours plus 6 thesis hours (Engl 699R).
- Introductory course (2 hours): Engl 600.
- Required courses (15 hours): Engl 630; four additional courses in a coherent plan of study from British literature, American literature, other literatures in English, folklore, or literary theory and criticism.
- Electives (9 hours): three courses.
- Thesis: 6 hours of 699R on a topic demanding research, analysis, interpretation, and theoretical or methodological expertise.

Requirements for Degree—Rhetoric Emphasis.
- Credit hours: 32 minimum, consisting of 26 course work hours plus 6 thesis hours (Engl 699R).
- Introductory course (2 hours): Engl 600.
- Required courses (15 hours): two courses selected from Engl 612, 613, 614, 616; three additional courses in Rhetoric and Composition or in Technical and Professional Communication.
- Electives (9 hours): three courses.
- Thesis: 6 hours of 699R on a topic demanding research, analysis, interpretation, and theoretical or methodological expertise.

Requirements for Degree—Creative Writing Emphasis.
- Credit hours: 32 minimum, consisting of 26 course work hours plus 6 thesis hours (Engl 699R).
- Introductory course (2 hours): Engl 600.
- Required courses (15 hours): Engl 617; two courses selected from Engl 517R, 518R, 519R, 520R; two courses in a related field, by advisement.
- Electives (9 hours): three courses.

Requirements for Degree—Language Emphasis.
- Note: See the Department of Linguistics and English Language for the language emphasis.

Financial Assistance
Financial assistance is available for this program through the English Department and other agencies in the university. The English Department offers a few merit-based scholarships each year as well as tuition awards for all first- and second-year students.

Admitted students are encouraged to apply for instructorships, teaching and research assistantships, editing internships, and other awards that are provided as a financial and learning resource. The university handles federal student loans.

Resources and Opportunities
The Department of English utilizes the Humanities Research Center. This center is especially active in the production of teaching and research materials, particularly those that are computer related.

The Center for the Study of Christian Values in Literature was established in 1980 to affirm the
importance of religious and moral values in the creation and study of imaginative literature. It provides both a focus for activity and an encouragement to teachers, writers, scholars, and readers who believe in a value-centered literary tradition.

The Writing Center is available to assist students and faculty in improving their writing skills. Graduate students benefit particularly from critical evaluations of drafts of seminar papers and theses, and those with advanced writing skills may serve as interns in the center.

Faculty research interests are included in the faculty section following the course descriptions.

For a more detailed description of the graduate program requirements, send for a copy of the department’s bulletin.

**COURSE DESCRIPTIONS**

**515R. Advanced Scholarly Writing.** (3)
Workshop for potential graduate students, graduate students, and professionals in all disciplines in preparing the thesis, dissertation, book chapter, and article.

**516. Advanced Technical Writing.** (3)
Prerequisite(s): Engl 316 or instructor's consent.
Advanced concepts, including literature of technical writing, liaison with technical staff, communication networks, rhetoric of graphics, and teaching and freelancing technical writing.

**517R. Creative Nonfiction Workshop.** (3)
Prerequisite(s): Engl 317R or 318R; Engl 419R; or instructor's consent.
Writing creative nonfiction. Individual consideration of manuscripts.

**518R. Fiction Workshop.** (3)
Prerequisite(s): Engl 318R or 319R; Engl 419R; or instructor's consent
Writing fiction. Individual consideration of manuscripts.

**519R. Poetry Workshop.** (3)
Prerequisite(s): Engl 319R, 419R; or instructor's consent.
Writing poetry. Individual consideration of manuscripts.

**520R. Studies in Theme and Form.** (0.5-3)
Topics vary: literature and film, myth and archetype, science fiction, etc.

**521R. Workshop in Writing for Children and Adolescents.** (3)
Prerequisite(s): Engl 320R, 419R; or instructor's consent.
Writing for young readers. Individual consideration of manuscripts.

**590R. Directed Readings.** (1-3)
Prerequisite(s): Graduate advisory committee approval.
Individual readings beyond what is offered in the curriculum.
Primarily available for English graduate students in Study Abroad programs.

**599R. Academic Internship.** (0.5-9)
Prerequisite(s): Department chair's consent.
On-the-job training.

**600. Introduction to Graduate Studies.** (2)
Trends in postgraduate curricula, ideology, pedagogy, and professional publication in language and literature.

**610. Composition Pedagogy.** (3)
Prerequisite(s): Composition program approval.
Practicum for graduate students teaching First-Year Writing courses.

**611R. Studies in Teaching Advanced Composition.** (3)
Prerequisite(s): Composition program approval.
Practicum for graduate students training to teach advanced composition courses.

**612. History of Rhetoric.** (3)
Major texts, thinkers, and movements of the Western rhetorical tradition from classical antiquity to the present.

**613. Rhetorical Theory and Criticism.** (3)
Interpreting and evaluating rhetorical acts and artifacts, including literature, for the purpose of understanding rhetorical theory and practice.

**614R. Special Topics in Rhetoric and Composition.** (3)
Various approaches to rhetoric and composition.

**615. Special Topics in Technical and Professional Communication.** (3)
Various approaches to technical and professional communication.

**616. Research in Rhetoric and Composition.** (3)
Research methods in rhetoric and composition; evaluation of assumptions, strengths, and limitations of each method; identification of student research topics.

**617. Creative Writing Theory.** (3)
Theories and techniques of creative writers, primarily in fiction, poetry, and creative nonfiction.

**620R. Seminar in British Literature before 1660.** (3)
Texts, trends, and writers from the medieval and early modern periods.

**621R. Seminar in British Literature 1660-1830.** (3)
Texts, trends, and writers from the Restoration, the eighteenth century, and the Romantic period.

**622R. Seminar in British Literature 1830-Present.** (3)
Texts, trends, and writers from the Victorian, modern, and postmodern periods.

**623R. Seminar in the Novel.** (3)
Various approaches to the novel.

**624R. Seminar in Drama.** (3)
Various approaches to drama.

**626R. Seminar in American Literature before 1865.** (3)
Texts, trends, and writers from the colonial, Revolutionary, early national, and Romantic periods.

**627R. Seminar in American Literature 1865-1914.** (3)
Texts, trends, and writers from the realistic and naturalistic periods.
ENGLISH

628R. Seminar in American Literature 1914-Present. (3)
Texts, trends, and writers from the modern and postmodern eras.

629R. Seminar in Transnational Literature. (3)
Texts, trends, and writers from a variety of national and ethnic literary traditions.

630R. Theoretical Discourse. (3)
Prerequisite(s): Engl 451 or 452 or equivalent.
Major texts, issues, and debates from the history of literary theory.

632R. Seminar in Literary Criticism. (3)
Prerequisite(s): Engl 451 or 452 or equivalent.
Directed study of particular branches of literary criticism.

640R. Studies in Folklore. (3)
Prerequisite(s): Engl 391 or instructor’s consent.
Intensive study of particular folklore and folkways.

699R. Master’s Thesis. (0.5-18)

FACULTY

Bennion, John S., Associate Professor.
PhD, University of Houston, 1989. Creative Writing; British Novel; Mormon Literature.

Boswell, Grant M., Associate Professor.
PhD, University of Southern California, 1985. Rhetorical Theory and History; Composition Theory.

Burton, Gideon O., Assistant Professor.
PhD, University of Southern California, 1994. History of Rhetoric; Renaissance Literature; Mormon Criticism and Literature.

Christiansen, Nancy L., Assistant Professor.
PhD, University of California, Los Angeles, 1994. History and Theory of Rhetoric; Sixteenth-Century English Literature.

Christianson, Frank, Assistant Professor.

Clark, Gregory D., Professor.
PhD, Rensselaer Polytechnic Institute, 1985. Rhetorical Theory and Criticism; Early American Literature.

Crisler, Jesse S., Professor.
PhD, University of South Carolina, 1973. Nineteenth-Century American Literature; Naturalism; Adolescent Literature.

Cronin, Gloria L., Professor.
PhD, Brigham Young University, 1980. Twentieth-Century American Literature; Jewish American Literature; Nineteenth- and Twentieth-Century Women’s Literature.

Crowe, Christopher E., Professor.
EdD, Arizona State University, 1986. English Education; Adolescent Literature.

Cutchins, Dennis R., Associate Professor.
PhD, Florida State University, 1997. American Literature; Folklore.

Cutler, Edward S., Associate Professor.

Dean, Deborah M., Associate Professor.
PhD, Seattle Pacific University, 1999. English Education; Writing Pedagogy.

Duerrden, Richard Y., Associate Professor.
PhD, University of Chicago, 1989. Sixteenth- and Seventeenth-Century English Literature; Literary Theory.

Eastley, Aaron, Assistant Professor.

Ellison, Eric A., Associate Professor.
PhD, University of Texas, Austin, 1998. Folklore.

Fox, Jay, Professor.
PhD, Purdue University, 1971. Late Nineteenth- and Early Twentieth-Century British Literature; Literature and Film.

Grierson, Sirpa T., Assistant Professor.
PhD, University of Southern Mississippi, 1996. English Education; Reading and Educational Research.

Hansen, Kristine, Professor.
PhD, University of Texas, Austin, 1987. Rhetoric; Composition Theory.

Harris, Claudia W., Professor.
PhD, Emory University, 1990. Irish Literature; Modern and Contemporary Drama; Contemporary British Literature.

Hatch, Gary L., Associate Professor.
PhD, Arizona State University, 1992. History and Theory of Rhetoric; Eighteenth-Century English Literature.

Hickman, Trenton L., Associate Professor.

Howe, Susan, Associate Professor.
PhD, University of Denver, 1989. Creative Writing; Contemporary American Poetry and Drama.

Jackson, Brian D., Assistant Professor.
PhD, University of Arizona, 2007. Rhetoric; Composition; Teaching of English.

Johnson, Keitti L., Assistant Professor.
PhD, Boston University, 2007. British Literature; Critical Theory.

Johnson, Kim, Assistant Professor.
PhD, University of California, Berkeley, 2003. Poetry; Renaissance Literature.

Jorgensen, B. W., Associate Professor.
PhD, Cornell University, 1978. Creative Writing; Nineteenth-Century American Literature; Contemporary American Fiction.

Larsen, Lance E., Professor.
PhD, University of Houston, 1993. Creative Writing; American Literature; Contemporary Poetry.

Lawrence, A. Keith, Associate Professor.
PhD, University of Southern California, 1987. Early American Literature; Asian-American Literature.

Lundquist, Suzanne E., Associate Professor.
DA, University of Michigan, 1985. Native American Sacred Texts and Modern Novels; Third World Literature.

Madden, Patrick, Assistant Professor.
PhD, Ohio University, 2004. Creative Writing; Nonfiction.
THAYER, DOUGLAS H., Professor. MFA, University of Iowa, 1962. Creative Writing.
THORNE-MURPHY, LESLEE, Assistant Professor. PhD, Brandeis University, 2001. Victorian Literature and Women's Studies.
THURBY, JACQUELINE, Professor. PhD, Bowling Green State University, 1994. English Education; Folklore.
TOURNEY, LEONARD D., Associate Professor. PhD, University of California, Santa Barbara, 1972. Rhetoric and Composition.
TUTTLE, STEPHEN B., Assistant Professor. PhD, University of Utah, 2006. Creative Writing.
WALKER, STEVEN C., Professor. PhD, Harvard University, 1973. Victorian Literature; Bible as Literature.
WICKMAN, MATTHEW F., Associate Professor. PhD, University of California, Los Angeles, 2000. Eighteenth-Century British Literature; Literary Theory.
WILCOX, MIRANDA, Assistant Professor. PhD, Notre Dame University, 2006. Medieval Literature.
YOUNG, BRUCE W., Associate Professor. PhD, Harvard University, 1983. English Renaissance Literature; Shakespeare.
ZIMMERMAN, BEVERLY B., Associate Professor. PhD, Brigham Young University, 1994. Technical Communication; Computers and Composition.
EXERCISE SCIENCES

Exercise Sciences—MS
Candidates who have a scholarly interest in the science or pedagogy of exercise science are encouraged to pursue this degree.

Areas of specialization: Health Promotion, Exercise Physiology, Athletic Training, Physical Education—Pedagogy.

Admission and Entry.
• Semesters of entry and application deadlines: fall, February 1 (U.S. and international).
• GRE general test. (In previous years students accepted to the program have been averaging a combination verbal and quantitative score of 1,000.)
• GPA: minimum 3.0 for last 60 hours of undergraduate work. (Students have averaged a GPA of 3.5 over the last five years.)
• Submit a statement of intent that includes the following information about the applicant: (1) preparation and background for the program, (2) desired emphasis, (3) basic reasons for career choice, (4) special qualities and talents that would enhance success, (5) research interests, (6) professional goals, (7) particular reasons for applying to BYU, (8) specific duration for accomplishing graduate degree, and (9) any specific circumstances or objectives to be considered (optional).
• Prerequisite: see prerequisites with each specialization.

Requirements for Degree.
• Credit hours: minimum 30, with 24–25 being course work hours, plus 6 thesis hours (ExSc 699R) within the following areas of specialization.
• Areas of specialization: the four areas have the following in common:
  —Prerequisite: a baccalaureate degree in exercise science or a related field and completion of ExSc 362, 463, 464, or equivalents.
  —Core courses (12 hours): ExSc 630, 631, 691, 699R (thesis, 6 hours).

Health Promotion
—Prerequisite: in addition to the above prerequisite and core courses, the following undergraduate courses (or equivalent) must be completed before commencing the MS degree: ExSc 302, 468.
—Required courses (18–19 hours):
  ExSc 599R (3 hours); 661, 666, 667, 669, 671, 673.

Exercise Physiology
—Prerequisite: in addition to the above prerequisite and core courses, the following undergraduate courses (or equivalent) must be completed before commencing the MS degree: college physics; Math 110; college chemistry; PDBio 362 or 305; ExSc 302, 400, 468.
—Required courses (10 hours):
  ExSc 666, 667, 669; PDBio 565.
—Electives: select 8 hours from Chem 481; PDBio 601; ExSc 659, 662, 663, 671, 673, 693R (1 hour), 766, 769.

Athletic Training
—Prerequisite: Be NATA-BOC certified or be eligible to become certified.
—Required courses (17 hours):
  ExSc 560; 625R (8 hours); 666; 667; 693R (2 hours).
—Elective (one of the following):
  ExSc 662, 663, 668.

Physical Education—Pedagogy
(Sport Pedagogy)
—Prerequisite: in addition to the above prerequisite and core courses, candidates must have taken ExSc 300, 302, or equivalents.
—Required courses (16 hours):
  ExSc 582, 649, 650, 651, 658, 659, 691, 693R.
—Electives (one of the following):
  ExSc 653, 654, 655.

Exercise Sciences—PhD
The PhD in exercise science is designed to prepare students for leadership at the highest level of their profession. Since most of the students who receive PhDs will become university or college faculty and will teach and publish in their chosen area, students must be (1) well trained in the scientific basis of exercise science, (2) well acquainted with the scientific literature, and (3) able to do independent research.

Admission and Entry.
• Application deadlines: see MS.
• Achieve satisfactory score on GRE.
• GPA: minimum 3.5 for last 60 hours.
• Statement of intent: see MS.
• Prerequisite: baccalaureate degree in exercise sciences or related field, with competence equivalent to the following:
  —Philosophical and ethical issues in exercise sciences (ExSc 302), measurement and evaluation (ExSc 360 or Stat 221), motor learning (ExSc 361), kinesiology and biomechanics (ExSc 362), physiology of activity (ExSc 463), problems in conditioning (ExSc 468), and research methods (ExSc 630). ExSc 797R for candidates who have not written a thesis. These candidates must produce a publishable research manuscript before beginning work on a dissertation. (This is prerequisite and will not count toward the 60 hours.)
  —Foundational science competencies: anatomy and physiology (PDBio 220, 362), college chemistry (Chem 105, 106), college mathematics (Math 110).
• Skill competencies: the equivalent of ExSc 631 or Stat 510; and Stat 511, 512.
• It is recommended that applicants have at least one degree (BS, MS) from a university other than BYU.

Requirements for Degree.
• Credit hours: minimum 60 hours beyond the bachelor’s degree (includes dissertation) in addition to supporting area prerequisites. Students who have earned a master’s degree must complete at least 36 hours of additional graduate work.
• All doctoral students must complete an original research study and present it at a regional, national, or international conference or submit a manuscript to a refereed journal.
• Areas of specialization: the three areas have the following in common. The core and specialization must be taken at BYU:
Financial Assistance
Financial assistance is available in the form of graduate teaching and graduate research assistantships. The graduate student will generally teach exercise science activity or laboratory classes.

Resources and Opportunities
The Department of Exercise Sciences utilizes the Human Performance Research Center. The primary purpose of the center is to support applied and basic research programs of faculty and graduate students on such topics as nutrition and exercise, drugs and exercise, exercise and cardiovascular disease, exercise and weight control, therapeutic modalities and rehabilitation procedures, biomechanics, and other contemporary issues in exercise science.

Other resources exist in these areas: Anatomy: six cadavers and skeletons. Biomechanics: three-dimensional infra-red Motion Analysis video system, force plate analysis. Exercise Biochemistry: blood and muscle biochemistry, gel electrophoresis, muscle histochemistry, DNA and RNA analysis. Exercise Physiology: treadmills, bicycle ergometers, body composition analyses (DEXA and Bod Pod), strength testing, electromyography, expired gas analyses. Athletic Training: one large well-equipped facility plus two satellite training rooms located in the Marriott Center and football stadium. Motor Learning: devices for measuring learning, speed of movement, and reaction time.

For a more detailed description of the graduate program requirements, see the department Web page at http://www.exsc.byu.edu/grad.html.

Course Descriptions
501. Sports Medicine Pathology and Pharmacology. (3) Prerequisite(s): ExSc 320, PDBio 305; or equivalents.
Sports medicine pathologies and related pharmacology for a variety of sports medicine/allied health care professions.
Meets required educational CAATE competencies.

560. Orthopaedic Pathomechanics. (2) Prerequisite(s): ExSc 460 or equivalent.
Advanced analysis of neuromusculoskeletal deformities and/or injury. Therapeutic exercise and the use of orthoses.

582. Physical Education for Special Populations. (2) Prerequisite(s): Baccalaureate degree in physical education.
Theoretical and practical aspects of teaching individuals with disabilities.

585. Pedagogical Techniques in Exercise Sciences. (1) Prerequisite(s): Graduate student with teaching assistantship in exercise sciences.
Teaching methodologies for instruction in fitness and sports courses.

586R. Workshop in Fitness and Sport. (1-4) Prerequisite(s): Undergraduate major in physical education or equivalent.

599R. Academic Internship: Practicum. (1-9) Field experience for exercise science students; 50 hours of service in approved organization required per credit hour.
625R. Advanced Topics in Physical Medicine and Rehabilitation. (2) Prerequisite(s): ATC, PT, or instructor’s consent.
Topics will be rotated and may include: electrotherapy, ultrasound, and diathermy; cryotherapy; orthotics; clinical and educational administration; functional testing and exercise; neural basis of rehabilitation; strength rehabilitation; joint mobilization and manual therapy; spinal manipulation and mobilization.

629R. Athletic Training Practicum. (1-6)
Prerequisite(s): PE 415, 416, 417, 418.
Academic and practical application of athletic training skills in the training room setting.

630. Research Methods in Exercise Sciences. (3)
Prerequisite(s): Stat 221 or equivalent.
Understanding, designing, and conducting research; writing for publication in exercise sciences.

631. Research Design in Exercise Sciences. (2)
Prerequisite(s): Stat 221 or equivalent.
Designing, conducting, and analyzing data for experimental and survey research studies in exercise sciences using standard statistical procedures.

649. Curriculum Theory and Design in Physical Education. (3)
Theoretical and practical aspects of curriculum design in physical education.

650. Assessment in Physical Education. (2)
Prerequisite(s): ExSc 631 or Stat 510.
Instruments and procedures for psychomotor, fitness, cognitive, and affective assessment in physical education.

651. Personnel Management and Supervision in Physical Education. (3)
Theory and practice of successful personnel management and supervision in physical education.

652. Administration of Physical Education and Athletic Programs. (3)
Prerequisite(s): ExSc 659.
Administration and management of physical education, athletics, and related programs and the role of public relations in these programs.

653. Sport and the Law. (2)
Analysis of legal liabilities and issues related to working with programs in physical education and athletics.

654. History of Physical Education. (3)
Review and analysis of historical facts and events in physical education and sports.

655. Philosophy: Ethics and Issues. (2)
Prerequisite(s): ExSc 363 or equivalent.
Ethical and moral interpretations and concepts underlying the profession.

656. Psychological Implications of Sport. (2)
Prerequisite(s): Graduate standing; Psych 111, PE 450, or equivalent.
Psychological phenomena inherent in sport as they relate to the teacher/coach, participant, and spectator.

658. Learning Theory, Sport Pedagogy, and Instructional Design in Physical Education. (3)
Prerequisite(s): ExSc 659.
Systematic approach to designing and evaluating cognitive, psychomotor, and affective instruction in physical education.

659. Theory of Motor Learning. (2)
Prerequisite(s): ExSc 361 or equivalent.
Theories and methods of learning physical skills.

661. Advanced Worksite Wellness. (3)
Prerequisite(s): ExSc 455 or equivalent.
Management for effectively designing, marketing, implementing, and administering health promotion programs.

662. Mechanical Analysis of Activities. (2)
Prerequisite(s): ExSc 362 or equivalent.
Analysis of human movement and sport activities using kinematic and kinetic descriptions and models of motion based on three-dimensional video and force plate techniques.

663. Research Techniques in Biomechanics of Sport. (2)
Prerequisite(s): ExSc 362 or equivalent; 662.
Theory and practice of research techniques in biomechanics: statics, dynamics, body segment parameters, photo instrumentation, electronic instrumentation, digital computer techniques, literature sources, and laboratory fundamentals.

666. Exercise Physiology. (3)
Prerequisite(s): ExSc 363 or equivalent.
Adjustments made by the body to accommodate physical activity.

667. Laboratory Methods and Procedures. (2)
Prerequisite(s): ExSc 363 or equivalent; 666 or concurrent registration.
Basic techniques and procedures used in human performance laboratories.

668. Orthopaedic Anatomy. (4)
Prerequisite(s): PDBio 220, ExSc 400; or equivalents.
Investigating orthopaedic anatomy. Students dissect cadavers.

669. Exercise, Testing, and Prescription. (2)
Exercise testing and interpretation. Exercise prescription for healthy children and adults, athletes, and various clinical and special populations.

670. Basic Electrocardiography. (2)
Prerequisite(s): Human physiology and exercise physiology.
Cardiovascular physiology. Introduction to normal conduction pathways of the heart and common arrhythmias. Resting and exercise 12-lead ECG preparation, recording, and interpretation.
671. Advanced Lifestyle and Chronic Disease Prevention. (3)
Prerequisite(s): ExSc 387 or equivalent.
Managing health risks, particularly those relating to cardiovascular disease, cancer, and obesity.

673. Advanced Obesity and Weight Management. (3)
Prerequisite(s): ExSc 480 or equivalent.
Etiology, treatment, and prevention of obesity in various populations, emphasizing the role of exercise in weight control programs.

685. Physical Education in the Elementary School. (2)
Curricular interrelationships and content materials directed toward obtaining educational results.
For teachers, administrators, and supervisors.

691. Seminar. (1)
Orientation to graduate work in the exercise sciences.

693R. Graduate Seminar in Readings. (1)
Prerequisite(s): ExSc 666 or concurrent registration for exercise physiology section.
Weekly seminar covering selected topics in physical education.
Doctoral students in exercise science should enroll each semester.

699R. Master’s Thesis. (1-9)

751. Doctoral Seminar: Professional and Scholarly Writing. (1)

752. Doctoral Seminar: Teaching Physical Education in Higher Education. (1)

753. Doctoral Seminar: Research and Grantsmanship. (1)

754. Doctoral Seminar: Program Management. (1)

755. Research on Teaching and Teacher Evaluation in Physical Education. (2)
Prerequisite(s): PE 659.
Review of research on teaching and teacher evaluation affecting teaching and administration of physical education.

766. Advanced Exercise Physiology: Cardiopulmonary. (3)
Prerequisite(s): ExSc 666, 667.
Cardiovascular and pulmonary physiology, assessments, responses to exercise, and interventions.

769. Advanced Exercise Physiology: Skeletal Muscle. (3)
Prerequisite(s): ExSc 666; Chem 481 or equivalent.
Effects of acute and chronic exercise on anatomy, physiology, and biochemistry of skeletal muscle.

797R. Individual Research and Study in Exercise Sciences. (1-9)
Prerequisite(s): Undergraduate major in exercise sciences; matriculation for graduate study in the department.

799R. Doctoral Dissertation. (1-18)

Faculty

Allsen, Philip E., Professor. EdD, University of Utah, 1965. Exercise Physiology; Physical Fitness.


Feland, J. Brent, Associate Professor. PhD, Brigham Young University, 1999. Anatomy; Therapeutic Exercise; Rehabilitation.

George, James D., Associate Professor. PhD, Arizona State University, 1995. Exercise and Wellness.

Graser, Susan D., Associate Professor. PhD, Arizona State University, 2001. Elementary Physical Education.

Hager, Ronald Lee, Assistant Professor. PhD, Arizona State University, 1997. Motor Control; Children’s Physical Activity.


Hunter, Ian, Associate Professor. PhD, Oregon State University, 2001. Kinesiology; Biomechanics.

Johnson, A. Wayne, Assistant Professor. PhD, Brigham Young University, 2007. Anatomy; Rehabilitation; Therapeutic Exercise.


Lockhart, Barbara D., Professor. EdD, Brigham Young University, 1971. Administration; Ethics and Philosophy.


Myrer, J. William, Professor. PhD, Brigham Young University, 1983. Anatomy; Orthopaedic Impairments and Rehabilitation.

Parcell, Allen C., Associate Professor. PhD, Ball State University, 1998. Exercise Physiology.

Pennington, Todd R., Associate Professor. PhD, Virginia Polytechnic Institute and State University, 1998. Curriculum and Instruction–Sport Pedagogy.

Prusak, Keven A., Assistant Professor. PhD, Arizona State University, 2000. Pedagogy.

Seeley, Matt, Assistant Professor. PhD, University of Kentucky, 2006. Exercise Science; Biomechanics.


Veirs, Pat R., Associate Professor. PhD, Brigham Young University, 1991. Exercise Physiology.

Wilkinson, Carol, Associate Professor. EdD, Brigham Young University, 1983. Pedagogy.

Zanandrea, Maria, Associate Professor. EdD, Brigham Young University, 1992. Physical Education for Special Populations.
School of Family Life

Director: Richard B. Miller
Associate Director for Research: Randal Day
Associate Director for Curriculum: Shirley Klein

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Marriage, Family, and Human Development Graduate Coordinator: Dean Busby
(801) 422-8529

Marriage and Family Therapy Graduate Coordinator: Robert F. Stahmann
(801) 422-3888

School of Family Life

The Program of Studies

The goal of the School of Family Life is to provide education in prevention and intervention that promotes quality family living across generations. The graduate programs in the school are noted for contributions in marriage preparation, family studies, social development, and marriage and family therapy.

Faculty research interests focus on intergenerational relationships and programs that strengthen marriages and families.

Four degrees are associated with the School of Family Life: Marriage, Family, and Human Development—MS; Marriage, Family, and Human Development—PhD; Marriage and Family Therapy—MS; Marriage and Family Therapy—PhD.

Marriage, Family, and Human Development—MS, PhD

The MFHD graduate programs are designed to help students (1) learn the dominant theories, main research findings, and contemporary issues in the MFHD research literature, (2) learn the general research methods used in MFHD and become competent in applying these methods to research questions in the field, (3) contribute to their self-selected area of scholarly specialization through original research, and (4) become a source of knowledge about healthy marriage and family life and optimal human development for the general public.

Typically from six to ten students are admitted each year to the program, with the proportion of MS and PhD degree candidates varying each year.

For additional information about scholarships, assistantships, ongoing faculty research programs, and research facilities, go to http://mfhd.byu/graduate/.

Marriage, Family, and Human Development—MS

The MS degree in MFHD provides students with a broad-based understanding in family sciences, and human development. Students construct an individualized program of study that helps them acquire depth in one or more of these core areas and/or other areas in the field, such as teaching or family life education. For some the MS is a terminal graduate degree that enhances professional opportunities in educational settings, such as secondary education, the Church Educational System, or in becoming a preschool administrator. For other students this degree is designed to prepare them for doctoral study.

Admission and Entry.

- Semester of entry and application deadlines: fall, January 10.
- Students who need to complete prerequisite courses may be admitted to begin study during spring or summer term.
- Application requirements: As a minimum, applicants who wish to be considered for admission must accomplish the following: (1) Submit a complete application before the application deadline. NOTE: An application is not considered complete until the online application, and all supporting documents (official transcripts, letters of recommendation, the statement of intent, test scores, ecclesiastical endorsement, etc.) have been received and the application fee has been paid.

(2) International applicants must (a) take the IELTS or TOEFL exam and satisfy the minimum score requirements for admission, (b) send all marksheets, transcripts, and diplomas for credential evaluation to one of the following: ECE, IERF, or WES, (c) submit appropriate financial certification forms, (3) arrange for at least three letters of recommendation, two of which must be from academic faculty or others qualified to assess academic/employment qualifications; character reference letters from family and/or friends are not appropriate, (4) have ecclesiastical leader submit ecclesiastical endorsement, (5) take verbal, quantitative, and analytic writing GRE portions of the general GRE exam (the test must have been taken in the last 5 years), (6) earn a bachelor’s degree from an accredited U.S. university or the equivalent from a university outside the United States, (7) receive at least a 3.0 grade-point average in the last 60 credit hours of upper-level course work from an accredited university in the United States, or a comprehensive grade-point average of 3.0 from an equivalent university outside the United States, (8) submit statement of intent including career plans and specific research interests, (9) arrange to have two official transcripts from each school you have attended sent to BYU as part of your application.

Prerequisite Courses.

Students interested in applying to the MFHD master’s degree program need to complete the following courses (or equivalent):

- English: Writing in the Social Sciences (Engl 315).
- Statistics: Principles of Statistics (Stat 221 or Soc 306 or Psych 301).
- Research Methods: Critical Inquiry and Research Methods (SFL 290).

An upper-division human devel-
opment course: e.g., Biological Foundations of Human development (SFL 349) or Socialization across Childhood (SFL 351).

An upper-division marriage and family course: e.g., Family Adaptation and Resiliency (SFL 335) or Cross-Cultural Family and Human Development (SFL 354).

Requirements for Degree.

- Credit hours: 33.
- Core courses: MFHD 591, 611, 612, Stat 511 (or Soc 605, Soc 602, or Soc 606 with chair's approval). Student will also take 6 thesis credit hours (699R) and 15 hours of elective credit from the department. All courses that count toward the degree must be approved by the student's chair, committee members, and the graduate coordinator on the student's program of study.
- Program of study: a list of the courses the student will take to meet degree requirements must be approved by the student's committee and the graduate coordinator. It may include courses in early childhood education, family life education, family processes, human development, gerontology, or financial management and must be submitted the second semester of the first year.
- Thesis.
- Examination: oral defense of thesis and course work.

Marriage, Family, and Human Development—PhD

The primary focus of doctoral study is to help students become effective educators and scholars.

The PhD degree in MFHD provides integrated and in-depth learning experiences in family studies, and human development. It also offers the opportunity to acquire expertise in a number of different aspects of the field.

Admission and Entry.

- Semesters of entry and application deadlines: fall, January 10.
- Students who must complete prerequisite courses may begin study during spring or summer term.
- Application requirements: As a minimum, applicants who wish to be considered for admission must accomplish the following:
  (1) Submit a complete application before the application deadline.
  NOTE: An application is not considered complete until the online application, and all supporting documents (official transcripts, letters of recommendation, the statement of intent, test scores, ecclesiastical endorsement, etc.) have been received and the application fee has been paid.
  (2) International applicants must (a) take the IELTS or TOEFL exam and satisfy the minimum score requirements for admission, (b) send all marksheets, transcripts, and diplomas for credential evaluation to one of the following: ECE, IERF, and WES.
  (c) submit appropriate financial certification forms.
  (3) arrange for at least three letters of recommendation from academic faculty or others qualified to assess academic/employment qualifications; character reference letters from family and/or friends are not appropriate,
  (4) have ecclesiastical leader submit ecclesiastical endorsement
  (5) take verbal, quantitative, and writing portions of the general GRE exam (the test must have been taken in the last 5 years),
  (6) earn a master's degree in family studies or a related field from an accredited U.S. university or the equivalent from a university outside the United States.
  (7) receive at least a 3.0 grade-point average in master's course work from an accredited university in the United States, or a comprehensive grade-point average of 3.0 from an equivalent university outside the United States.
  (8) submit statement of intent including career plans and specific research interests,
  (9) arrange to have two official transcripts from each school you have attended sent to BYU as part of your application.

Prerequisite Courses.

Students interested in applying to the MFHD PhD program should have completed the prerequisite courses listed for admission to the master's degree as well as the courses required for the MFHD master's degree (e.g. MFHD 591, 611, 612, Soc 605 or Stat 511 or MFHD 602 or Soc 606 or their equivalents).

Requirements for Degree.

- Credit hours (72): minimum 54 course work hours plus 18 dissertation hours.
- Required courses: MFHD 760; doctoral-level research methods course such as MFHD 601, 602, or Soc 604; 9 credit hours of advanced statistics selected from Stat 511, MFHD 602, Soc 605, 606, 706R (one semester of Soc 706R must be included).
- Program of study: a list of the courses the student will take to meet degree requirements. The list is approved by the student's committee and the graduate coordinator. It may include courses in early childhood education, family life education, family processes, human development, gerontology, or resource management, and it must be submitted by the second semester of the first year.
- Dissertation: 18 hours minimum.
- Examinations: (A) a qualifying examination where the student writes, submits and successfully defends two professional-quality papers in a two-hour oral exam; (B) oral defense of dissertation.

Marriage and Family Therapy—MS

The marriage and family therapy program offers the master of science degree as a two-year program. The objective of this degree is to train persons who will be outstanding clinicians, prepared to function in a wide variety of marriage and family therapy settings. The curriculum is based on state licensure/certification requirements and is accredited by the Commission on Accreditation of the American Association for Marriage and Family Therapy Education. The master’s degree is the
basic educational credential for independent practice in marriage and family therapy. It also prepares students for doctoral study.

Admission and Entry.
- Semesters of entry and application deadlines: fall, January 10 (U.S. and international).
- Application requirements: (1) at least three letters of recommendation; (2) GRE general test (verbal, quantitative, and analytic writing); (3) letter of intent; and (4) transcripts of previous studies.
- Recommended: background in research, e.g., research methodology and statistics; behavioral sciences, e.g., personality, child development, abnormal psychology; learning theory; social sciences, e.g., marriage, family, and human development; social psychology; sociology.

Requirements for Degree.
- Credit hours (61): minimum 55 course work hours plus 6 thesis hours (699R).
- Required courses: MFT 630, 645, 649, 650, 651, 652, 653, 654, 655R (16 hours), 656, 695R, 699R (6 hours); MFHD 663; Stat 511 or Soc 605; electives (3 hours).
- Clinical requirement: 500 hours of direct client experience.
- Thesis.
- Examination: oral defense of thesis.

Marriage and Family Therapy—PhD
The program is accredited by the Commission on Accreditation for Marriage and Family Therapy Education of the American Association for Marriage and Family Therapy and has three interrelated emphases—Clinical Practice, Research, and Teaching/Supervision.

There are two options for the PhD degree in marriage and family therapy. The first, for students who have already an MFT master’s degree, should take approximately three years to complete. The second is for the post-baccalaureate student and should take approximately five years to complete. The master’s curriculum is followed during the first two years, with the MS degree awarded at the completion of those requirements, before beginning doctoral studies. Post-baccalaureate doctoral students should apply for the master's program. After successfully completing the master's degree, they may be admitted to doctoral study.

Admission and Entry.
- Semesters of entry and application deadlines: fall, January 10 (U.S. and international).
- Application requirements: (1) at least three letters of recommendation; (2) GRE general test (verbal, quantitative, and analytic writing); (3) letter of intent; and (4) transcripts of previous studies.
- Recommended: Post-Master’s Degree Option: master’s degree from a regionally accredited college or university. (Applicants without a marriage and family therapy master’s degree must complete MFT master’s course work and clinical experience before beginning doctoral course work.) Post-Baccalaureate Degree Option: baccalaureate degree from a regionally accredited college or university; background in research, e.g., research methodology and statistics; behavioral sciences, e.g., child development, abnormal psychology; learning theory; social sciences, e.g., family sciences, psychology, social psychology, sociology.

Requirements for Degree.
- Post-Master’s Degree Option (63): minimum 45 course work hours beyond the master’s, plus 18 dissertation hours (MFT 799R).
- Post-Baccalaureate Degree Option: minimum 55 master’s course work hours, plus 6 thesis hours (MFT 699R) and 45 beyond the master’s plus 18 dissertation hours (MFT 799R). Students must complete all master’s degree requirements and pass a qualifying interview before continuing in the doctoral program.
- Required courses: determined in consultation with graduate committee.

- Minor: any minor approved by graduate committee, but not required.
- Clinical requirement: 500 hours of direct client contact after completing the MFT MS requirements.
- Dissertation.
- Examinations: (A) written and oral comprehensive examinations in clinical practice, teaching/supervision, and research; (B) oral defense of dissertation.

FINANCIAL ASSISTANCE
The programs offer graduate research and teaching assistantships, supplementary awards and scholarships, and internships as aid. Once admitted to the program, the student will receive by mail a program application for financial assistance.

RESOURCES AND OPPORTUNITIES
Certified Family Life Educator Program. Students in the School of Family Life may enhance their graduate programs by taking course work that qualifies them for provisional status as a certified family life educator (CFLE). This is a nationally recognized credential given by the National Council on Family Relations for professionals who specialize in teaching and enrichment of marriage and family relationships. The graduate programs in the School of Family Life have been approved by the National Council on Family Relations as offering a quality curriculum that fulfills CFLE requirements. Students who wish to pursue careers in teaching at the college or university level, in providing community marriage and family education programs, or in teaching parent education are encouraged to complete the following CFLE-approved courses as part of their graduate program: MFHD 550, 564, 692R; 540 or 545; 511 or 660; 565; MFT 563, 645; MFHD 561 or MFT 656; MFHD 665 or MFT 656. For additional information see the School of Family Life.

Family Studies Center. An interdisciplinary research institute focusing on studies related to all aspects of
the family, the center encourages and supports research on family-related topics ranging from prenatal development to problems of aging. Many of the faculty in the college are actively engaged in such research and receive support from the center. Activities include providing grants, research assistance, conferences on special topics every two years, and outreach to bring valuable information on strengthening families to both families and family practitioners.

**Comprehensive Clinic.** The Comprehensive Clinic at Brigham Young University is a unique interdisciplinary training and research facility housing the finest video and computer facilities available and a staff of skilled technicians and secretaries to support graduate student and faculty research. The clinic currently functions as a training facility for an AAMFT-approved marriage and family therapy PhD and for MS training programs. In addition, the clinic provides the university and the broader geographical community with mental health services involving between 200 and 250 clients each week.

**Family, Home, and Social Sciences Computing Center.** The center assists faculty and students with social science data processing and other computing needs on mainframe and personal computers. Technical support and consultation services for both statistics and graphics are available to students working on research projects, theses, and dissertations.

**Child and Family Laboratories.** These excellent facilities provide a practicum setting in which graduate students develop skills in conducting and interpreting research involving small children.

**Women’s Research Institute.** Initially established in 1978, the Women’s Research Institute became a part of the College of Family, Home, and Social Sciences in September 1983. Since then the institute has awarded fellowships to upper-division and graduate students for conducting research on women and women’s issues in amounts up to $500 annually for selected projects. Faculty grants became available through the institute in 1984. The college also provides additional research and academic support to family life programs through the Camilla Eyring Kimball Chair of Home and Family Life.

_For a more detailed description of the graduate program requirements, send for a copy of the department’s bulletin._

**Course Descriptions**

**Marriage and Family Therapy**

501R. Workshop in Marriage and Family Therapy. (1-2)  
Prerequisite(s): instructor’s consent.  
Training in delivery of and research about psychoeducational programs for couples and families.

590R. Readings in Marriage and Family Therapy. (1-2)  
Prerequisite(s): instructor’s consent.  
Discussions and reports of current readings.

595R. Special Topics in Marriage and Family Therapy. (1-2)  
Prerequisite(s): marriage and family therapy major status; instructor’s consent.  
Individual study for qualified students.

603R. Research Practicum. (3)  
Prerequisite(s): instructor’s consent.  
Design, data collection, data analysis, and write-up.  
For marriage and family therapy majors only.

630. Theoretical Foundations of Family Systems for Marriage and Family Therapy. (3)  
Systems theory and cybernetic approaches to family processes and epistemological issues.

645. Analysis and Treatment of Human Sexual Development. (3)  
Prerequisite(s): MFT 650.  
Knowledge and skill required to analyze and treat questions related to human sexual development.

649. Addictions and Violence in Families. (3)  
Assessment and treatment of multiple-problem family systems, emphasizing addictions and abuse.

650. Theoretical Foundations of Marital and Family Therapy. (3)  
Epistemological and theoretical issues in marital and family therapy, including normal family processes and personal and intergenerational family issues.

651. Psychopathology and Assessment in Marriage and Family Therapy. (3)  
Diagnosing and assessing mental disorders and dysfunctional relationships. Etiology and diagnosis of individual, marital, and family psychopathology.

652. Marital and Individual Psychotherapy. (3)  
Assessment, intervention techniques, therapist’s role, and principle processes in theories of systemic individual and marital psychotherapy.

For marriage and family therapy majors only.

653. Family and Multigenerational Psychotherapy. (3)  
Systemic theories and strategies to diagnose and treat specific problems in dysfunctional families.

For marriage and family therapy majors only.

654. Issues of Gender and Ethnicity in Marriage and Family Therapy. (3)  
Gender, ethnic, and minority issues in family systems, society, and clinical practice as they relate to individual, marital, and family treatment.

655R. Intermediate Practicum in Marriage and Family Therapy. (2-3)  
Experience in counseling individuals, premarital and marital dyads, families, groups of dyads, and multiple families.

For marriage and family therapy majors only.

656. Ethical, Legal, and Professional Issues for Family Therapists. (3)  
For marriage and family therapy majors only.
693R. Independent Readings. (1-3)

695R. Special Topics. (1-3)
Variable topics, including (1) Spirituality in Clinical Perspective and Practice, (2) Premarital and Remarital Intervention, (3) Play Therapy, (4) Research Methods for MFT, and (5) Group Process.

699R. Master’s Thesis. (1-9)

700. Family Therapy Research Methods. (3)
Prerequisite(s): MFHD 600, Soc 303R; or equivalents.
Advanced study of MFT research methods, including meta-analysis, power analysis, grant writing, and other advanced topics.

750. Supervising Marriage and Family Therapy. (3)
Theory, research, and practice of supervising marriage and family therapists. Supervised experience.
For doctoral marriage and family therapy students only.

751. Advanced Theory in Marriage and Family Therapy. (3)
Advanced family therapy approaches to the diagnosis and treatment of affective, behavioral, and cognitive disorders.
For doctoral marriage and family therapy majors only.

753. Advanced Clinical Specialization in Marriage and Family Therapy. (3)
Advanced approaches in treating dysfunctional individual, marital, and family systems.
For doctoral marriage and family therapy majors only.

754. Family Therapy for Children and Adolescents. (3)
Family psychotherapy with children and adolescent issues, emphasizing treatment and family interventions. Various theoretical perspectives as well as diagnosis and assessment.
For doctoral marriage and family therapy majors only.

755R. Advanced Practicum in Marriage and Family Therapy. (2-3)
Prerequisite(s): MFT 650, 655R, or equivalent.
For doctoral marriage and family therapy majors only.

760R. Supervision Practicum in Marriage and Family Therapy. (1)
Prerequisite(s): MFT 750 and instructor's consent.
Supervised experience in supervising practicum students.

770R. Clinical Internship. (1)
Full-time family therapy training and practice at an approved agency.

793R. Research Seminar in Marriage and Family Therapy (1-3)
Integrating and applying research design and statistics to the study of marital and family therapy.
For doctoral majors in marriage and family therapy only.

799R. Doctoral Dissertation. (1-9)

Marriage, Family, and Human Development

501R. Workshop in Marriage, Family, and Human Development. (1-2)
Prerequisite(s): 8 hours in marriage, family, and human development or department chair’s consent.
Intensive study in applying principles of specified family sciences, subject matter in early childhood education, child development, family relationships, family resource management, or marriage/family therapy.

510. Seminar in Intellectual Development. (3)
Prerequisite(s): MFHD 514.
Current theories and research on intellectual development.

511. Familial Influences on Children’s Social Development. (3)
Prerequisite(s): SFL (MFHD) 331 or higher.
Current theories and research on social development, peer relations, and behavior. Familial/parenting effects as moderated by beliefs, genetics, gender, social cognitions, culture, child guidance, interventions.

512. Emotional and Moral Development. (3)
Prerequisite(s): Instructor’s consent.
Research, theories, and educational implications; preschool through adulthood.

514. Theories of Human Development. (3)
Prerequisite(s): SFL (MFHD) 331 or higher.
Models and concepts in dominant contemporary developmental theories.

540. Family Economics. (3)
Economic functioning of household; role of income, employment, and household production as determinants of family living level.

542. Work and Family. (3)
Introduction to contemporary work/family issues. Framework for helping parents and managers deal effectively with work/family issues at work and home.

545. Family Financial Resource Management. (3)
Prerequisite(s): Instructor’s consent.
Applying theories and principles in managing financial resources to meet needs of individuals and families.

550. (MFHD-Soc) Contemporary Family Theories. (3)
Prerequisite(s): SFL (MFHD) 451, Soc 310, 311; or equivalents.
Introduction to basic micro, macro, and processual approaches to study of the family; social and political theory on the family; philosophical issues and assumptions underlying family theory, research, and practice.

551. Fathering: Scholarship and Intervention. (3)
Prerequisite(s): Instructor’s consent.
Quality fathering across cultures and in varied family circumstances. Historical changes in fathering; challenges to good fathering; effective interventions with fathers.

561. Seminar in Family Law. (3)
Prerequisite(s): Concurrent enrollment in SFL 461.
Intensive investigation of issues and concepts influencing legal aspects of marriage and family life.
566. Family Life Education in the University. (1-3)
Prerequisite(s): Instructor’s consent.
Delivering family life education in university settings. Working with a faculty mentor, making presentations, and preparing basic instructional materials.

567R. Practicum in Family Life Education. (1)
Prerequisite(s): MFHD 566 or instructor’s consent.
Supervised experience teaching family living courses in a university setting.

570. Paradigms in Family Process and Analysis. (3)
Prerequisite(s): SFL 371 or equivalent.
Alternative perspectives on family management, governance, and participation, with emphasis on modernist/management vs. familial orientations affecting leadership, parenting, autonomy and choice, altruism and individualism.

591. Graduate Research Methods. (3)
Prerequisite(s): SFL (MFHD) 290, Stat 221; or equivalents.
Building on introductory knowledge, learning and exploring the quantitative research designs most commonly used in marriage, family, and human development studies.

595R. Special Topics in Marriage, Family, and Human Development. (1-3)
Prerequisite(s): For marriage, family, and human development major; instructor’s consent.
Individual study for qualified students.

601. Seminar in Survey Research. (3)
Prerequisite(s): Soc 300 or equivalent.
Survey research techniques of the behavioral sciences, emphasizing research and sampling designs.

602. (MFHD-Soc) Experimental Design. (3)
Prerequisite(s): MFHD-Soc 600, Stat 510 or equivalent, or instructors consent.
Research methods, logic, writing, and data analysis.

603R. Research Practicum. (3)
Prerequisite(s): instructor’s consent.
Design, data collection, data analysis, and write-up.
For marriage and family therapy majors only.

604. (MFHD-Soc) Ethnographic Research Techniques. (3)
Prerequisite(s): MFHD-Soc 600.
Rationale, methods, and limitations of qualitative research; includes participant observation and hermeneutic skills.

611. Advances in Human Development. (3)
Prerequisite(s): Graduate standing or instructor’s consent.
Recent advances in developmental psychology emphasizing infant development as it informs our understanding of perceptual, cognitive, linguistic, and social development in later childhood.

612. Introduction to Research and Theory in Family Science. (3)
Prerequisite(s): MFHD 290, 335 (or equivalents); or instructor’s consent.
Research and theories about current topics in family science.

623. History, Theories, and Research in Early Childhood Education. (3)
Prerequisite(s): instructor’s consent.

660. (MFHD-Soc) Child and Adolescent Socialization. (3)
Child and adolescent development in the context of social interaction, with particular emphasis on the family. Current theory and research evaluated.

662. Family and Culture. (3)
The role of culture in the diversity of family structure and function. The family in history and in different societies.

663. The Individual and Family Over the Life Course. (3)
Stability and change in individual development and family relationships from young adulthood to later-life.

665. Philosophy in Family Life Education. (3)
Prerequisite(s): MFHD 480 or instructor’s consent.
Ethical issues and interpretive frameworks in human science that address quality of life in families.

692R. (MFHD-Soc) Seminar in Family Relationships. (0.5-3)
Premarital dyad, marital dyad, and issues in family interaction and familial roles.

693R. Independent Readings. (1-3)

695R. Special Topics. (1-3)
Variable topics, including socialization of children, therapeutic intervention with special populations, and marital processes.

699R. Master’s Thesis. (1-9)

706R. (MFHD-Soc) Advanced Statistical Methods. (3)
Prerequisite(s): Soc 605, 606.
Topics include advanced structural equations and hierarchical linear models, or panel data techniques and generalized linear models.

760. Theory Construction Colloquium. (3)
Prerequisite(s): MFHD 611, 612; or instructor’s consent.
Multiple perspectives on and experience in theory construction and analysis, focusing on familial processes, human development, and resource management.

791R. Seminar in Human Development. (1-2)
Prerequisite(s): Must be a PhD candidate in human development.

792R. (MFHD-Soc) Family Symposium. (0.5)
Presentation and discussion of professional papers about the family.

794R. Special Topics in Child Development. (1-3)

799R. Doctoral Dissertation. (1-9)

FACULTY

BEAN ROY, A., Associate Professor.
PhD, Brigham Young University, 1977. Parent-Adolescent Relationships in Ethnic Families; Culturally Competent Family Therapy.
Holman, Thomas B., Professor. PhD, Brigham Young University, 1981. Mate Selection; Marital Quality.

Holmes, Erin K., Assistant Professor. PhD, University of Texas at Austin, 2006. Fathering; Transition to Parenthood.

Israelsen, Craig L., Associate Professor. PhD, Brigham Young University, 1988. Analysis of Investment Products; Financial Success of Individuals and Families.

Jacob, Jenet I., Assistant Professor. PhD, University of Minnesota, 2007. Mothering.

Klein, Shirley R., Associate Professor. PhD, University of Utah, 1990. Family Life Education; Family Work; Prisons.

 Larson, Jeffry H., Professor. PhD, Texas Tech University, 1980. Marriage and Family Therapy; Family Life Education.

Miller, Richard, Professor. PhD, University of Southern California, 1989. Marital Process over the Life Course; Multicultural Families.


Nelson, Larry J., Associate Professor. PhD, University of Maryland, 2000. Social Development of Young Children.

Olson, Terrance D., Professor. PhD, Florida State University, 1972. Philosophy of Family Science; Family Life Education.

Padilla-Walker, Laura, Assistant Professor. PhD, University of Nebraska, Lincoln, 2005. Parenting; Adolescents’ Moral/Prosocial Development.

Porter, Chris, Associate Professor. PhD, Purdue University, 1996. Infancy and Toddlerhood.

Robinson, Clyde C., Associate Professor. PhD, University of North Carolina, Greensboro, 1982. Human Development/Early Childhood Education.
**FRENCH AND ITALIAN**

**Chair:** Yvon Le Bras  
**Graduate Coordinator:** Corry Cropper  
**Associate Graduate Coordinator:** Daryl Lee

3134 JFSB  
Provo, UT 84602-6706  
(801) 422-2542

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**THE PROGRAMS OF STUDY**

The programs in French are designed to serve as a step toward doctoral studies. The degree also assists students seeking careers in foreign language education, international business, law, or the foreign service.

One degree is offered through the Department of French and Italian: French Studies—MA. An additional MA in language acquisition (French) is offered as part of the College of Humanities’ program in language acquisition.

The average number of students admitted to the program is from four to five per year. Most students require four semesters to complete the degree, but it is possible to complete it in one year.

**French Studies—MA**

The departmental MA concentrates on establishing a solid foundation in French studies with a particular emphasis on literature and analytical skills. The thesis should represent in both substance and scope significant research that contributes to the discipline of French studies. Most students also benefit from additional training and experience as research assistants and as teachers in lower-division French classes.

**Admission and Entry.**

- Semesters of entry and application deadlines: fall, February 28 (U.S. and international); winter, June 30 (international) and September 1 (U.S.)
- Application requirements: entrance examination is GRE general test.
- Prerequisite: baccalaureate degree in French or equivalent; advanced French language proficiency based on American Council on Teaching of Foreign Languages (ACTFL) rating.
- Writing sample in French.

**Requirements for Degree.**

- Credit hours (30): minimum 24 course work hours plus 6 thesis hours (Fren 699R).
- Required courses: Fren 510, 511, 512, 660R Critical Theory or equivalent; minimum 18 credit hours in French; maximum 3 credit hours in an approved course in a related field; 6 hours of Fren 699R (thesis).
- Students may petition to replace up to 3 credit hours of French with course work in a related field.
- Writing project: thesis.
- Examinations: comprehensive written and oral examinations on course work and reading list. Oral defense of thesis.

**Expected Learning Outcomes.**

- Produce research on a topic relating to French or Francophone history, literature, culture, politics, language or language learning.
- Analyze, compare and contextualize major works of French literature.
- Gain skills necessary to the pursuit of personal goals such as further education or employment.

**Language Acquisition and Teaching (French)—MA**

See program description in Language Acquisition and Teaching section of this catalog.

**FINANCIAL ASSISTANCE**

Several graduate teaching fellowships and a few partial-tuition scholarships, based on need, will be available.

**RESOURCES AND OPPORTUNITIES**

1. Foreign Language Student Residence.  
2. Internships in French-speaking countries.

3. Teaching opportunities in France and at BYU as Student Instructors  
4. Graduate Student Conferences at BYU and elsewhere.  
5. Graduate Mentoring Grants to support specialized research topics.  
6. Departmental Symposia featuring guest speakers.  
8. French Club activities including the production of plays, cultural events, etc.  
9. Opportunities to publish in and/or to edit the departmental journal, Lingua Romana.

For a more detailed description of the graduate program requirements, send for a copy of the department’s bulletin or see its Web site at http://frenal.byu.edu/fren.php and looking at MA French Studies under the tab Programs.

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**COURSE DESCRIPTIONS**

**French**

510. MA Practicum 1. (1)  
Prerequisite(s): Graduate status.  
Critical strategies and interpretative skills necessary for MA examinations.

511. MA Practicum 2. (1)  
Prerequisite(s): Graduate status.  
Critical strategies and interpretative skills necessary for MA examinations.

512. MA Practicum 3. (1)  
Prerequisite(s): Graduate status.  
Research tools and methods, the process of selecting a thesis topic, compiling a bibliography, and writing a prospectus.

533. Advanced Studies in French Linguistics. (3)  
Advanced study of linguistic features such as phonetics and phonology, semantization, lexical development, morphology, and contrastive syntax.
620R. Advanced Studies in French Culture. (3)
Prerequisite(s): Admittance to MA program.
In-depth study of French historical, political, and social issues or artistic trends.

630R. Studies in Periods and Movements. (3)
Approaches to literature from the perspective of historical periods and/or cultural or political movements.

640R. Author Studies. (3)
Major authors from a variety of critical perspectives.

650R. Studies in Genre. (3)
Literary genres.

660R. Studies in Theory and Interpretation. (3)
Literary theory or theoretical applications to literary interpretation.

690R. Seminar in French. (1-3)
Prerequisite(s): Admittance to MA program.
Group or individual study supervised by graduate faculty member in varying topics of specific interest in French.

699R. Master’s Thesis. (0.5-6)

Linguistics
(See Linguistics section of this catalog for courses.)

FACULTY

CROPPER, CORRY, Associate Professor.
PhD, University of Illinois, 1998.
Nineteenth Century; French Short Story; Cultural History of Sports.

DECOO, WILFRIED, Professor. PhD,
Brigham Young University, 1974.
Foreign Language Teaching; Linguistics; Computer-Assisted Language Teaching and Learning.

ERICKSON, ROBERT G., Assistant Professor.
PhD, Brigham Young University, 2000.
Instructional Psychology and Technology; Second Language Acquisition.

HURLBUT, JESSE D., Associate Professor.
PhD, Indiana University, 1990.
Medieval Manuscript and Drama; Renaissance Philosophy.

LEBRAS, YVON, Associate Professor.
PhD, Laval University, 1992.
Seventeenth Century; French Canadian Novel; Travel Literature; Accredited Translation.

LEE, DARYL, Associate Professor. PhD,
Yale University, 1999.
French Verse; Film; Politics and Literature; Paris and Literature.

OLIVIER, MARC, Associate Professor.
PhD, University of Washington, 1999.
Technology and Culture; Old Regime Science and Literature.

SOWELL, MADISON U., Professor. PhD,
Harvard University, 1979.
Italian and Comparative Literature (Middle Ages; Renaissance); Descriptive Bibliography.

SPRENGER, ANCA MITROI, Assistant Professor.
PhD, University of Southern California, 1997.
Eighteenth–Twentieth Centuries; Literature and the Sacred.

SPRENGER, SCOTT M., Associate Professor.
PhD, Emory University, 1995.
Nineteenth Century; Twentieth Century; Film; Anthropology.

UNLANDT, NICOLAAS G. W., Associate Professor.
DLitt, University of Amsterdam, Netherlands, 1992.
Middle Ages; Medieval Languages; Troubadour Poetry.

GEography

Chair: J. Matthew Shumway
Graduate Coordinator:
Perry J. Hardin
690 SWKT
Provo, UT 84602-5526
(801) 422-3851

THE PROGRAM OF STUDIES
The Department of Geography offers a graduate program emphasizing the application of geographic skills in research and problem-solving framework. This program will provide students with a unique combination of theory, analytical techniques, and computer skills that will enable them to work effectively and independently in a variety of employment and graduate research settings after graduation.

The strength of the program is centered on the use of multiple methods to “understand, and perhaps shape, the physical and human spaces of our planet.” It does this by focusing on selected research methods that allow one to collect and integrate data at various scales of analysis.

Each student will be required to complete course work on the full range of methods, including but not limited to the following: geographic information systems (GIS), remote sensing, secondary data collection, survey data collection, interview data collection, qualitative analysis, and quantitative analysis.

The department’s computer-based Cartography and Geographic Information Systems Laboratory is one of the premier training centers in GIS in the American west. Combined with the research interests of the department faculty, which are global in their diversity, it provides an unparalleled opportunity for graduate students to experience the excitement of research and creativity.

Geography—MS
This program is currently not accepting applications. Please contact the department for more information.
FINANCIAL ASSISTANCE
Tuition assistance is awarded by the department on a competitive basis. Graduate students are employed as research assistants, teaching assistants, and graders.

RESOURCES AND OPPORTUNITIES
Computer Lab. The Geography Department has available for student instruction and use a $1.3 million computer laboratory that contains state-of-the-art Windows workstations and software devoted to spatial analysis, statistics, decision making in urban/regional planning, cartography, GIS, photogrammetry, and satellite image processing. The workstations are supplemented by peripherals for scanning, digitizing, and large-format plotting. To assist in field mapping, high-accuracy global positioning system equipment is also provided for student use.

Graduate Student Laboratory. Students will have access to computers and software.

For a more detailed description of the graduate program requirements, send for a copy of the department’s bulletin.

COURSE DESCRIPTIONS
501R. Seminar in Geography. (0.5-3) Detailed investigation of selected systematic and regional geographic topics.

503. Geographic Information Systems. (4) Prerequisite(s): Graduate standing
Using geographic information for solving advanced spatial problems. Introduction to using and producing maps and computer-based geographic information systems (GIS) as geographic tools. Hands-on research applications in the students’ disciplines.

For nonmajors who have not taken Geog 211 or 212 or equivalent.

510. Advanced Urban Dynamics and Planning. (3) Prerequisite(s): Geog 310, 410, or equivalent.
Urban geography and land use planning, emphasizing urban morphology, land use patterns, and spatial analysis; critical evaluation of models and theories.

521R. Geographic Information Practicum. (3) Prerequisite(s): GIS major status; Geog 311, 312, 313, 317 (or equivalents); Geog 222 or 223 or equivalent; one 400-level GIS course.
Integration of various geographic technologies to solve a practical problem. Advanced topics in GIS, remote sensing, cartography, and programming as needed.

690R. Special Topics. (0.5-4)
699R. Master’s Thesis. (0.5-6)

FACULTY
BEKKER, MATTHEW F., Assistant Professor. PhD, University of Iowa, 2002. Biogeography; Landscape Ecology.

DAVIS, JAMES A., Associate Professor. PhD, Arizona State University, 1993. Cultural Geography; Travel and Tourism; Urban Geography.


EMMETT, CHAD F., Associate Professor. PhD, University of Chicago, 1991. Middle East; Political Geography; Southeast Asia.


JACKSON, MARK W., Assistant Professor. PhD, University of South Carolina, 2001. Remote Sensing; GIS; Landscape Ecology.

JACKSON, RICHARD H., Professor. PhD, Clark University, 1970. North America; Cultural Geography; Planning.

OTTERSTROM, SAMUEL M., Associate Professor. PhD, Louisiana State University, 1997. Planning; Population and Historical Geography; Americas and Europe.

PLEWE, BRANDON S., Assistant Professor. PhD, State University of New York, Buffalo, 1997. Geographic Information Systems; Cartography.

The Program of Studies

Geology is the science that reveals how the earth works. The graduate program in geology at Brigham Young University is designed to prepare scientists to find solutions to many of the environmental and resource problems society faces.

The department offers one degree: Geology—MS. Areas of specialization include: Earth Science Education, Environmental Geology, and Geology.

The expected duration of the MS program is two years for full-time students who enter without deficiencies. The MS degree is designed to give the student a solid foundation in the theoretical and applied aspects of geology and a strong research experience. The thesis component allows each student to develop skills in defining a significant problem, developing a research strategy, acquiring and analyzing data, and technical writing. An MS degree in geology prepares a student for a wide variety of employment opportunities in industry, education, and government, or for advanced study toward a doctoral degree.

The department currently has approximately thirty graduate students in the MS program.

Geology—MS

Pursuit of the MS degree not only helps prepare students for exciting career opportunities in areas of distinct benefit to mankind, but it also allows them to experience the challenges and rewards of modern scientific research. It is expected that the thesis work will culminate in new understanding of a problem of scientific significance and that results will be published in a reputable scientific journal.

Areas of specialization: Earth Science Education, Environmental Geology, and Geology.

Admission and Entry.

• Semesters of entry and application deadlines: fall, February 1 (U.S. and international); winter, September 15 (U.S. and international).
• Application requirements: minimum required GPA is 3.0 overall and in all physical sciences (mathematics, chemistry, physics), as well as in geology courses.
• Entrance examination: GRE general test. GRE scores must be received in the Geological Sciences Department before application for admission will be considered.
• Prerequisite: baccalaureate degree. Arrangements to satisfy undergraduate deficiencies will be made in consultation with graduate coordinator.

Requirements for Degree.

• Credit hours (30): minimum 24 course work hours plus 6 thesis hours (Geol 699R); 1 hour of Geol 591R.
• Required courses:
  Geology: Geol 601 and others to be determined in consultation with advisor.
  Earth science education: Geol 697R (approved by graduate committee); 6-9 hours from Geol 411, 435, 440, 445, 451, 460, 480; 6 hours from IP&T 560, 564, 620, 652, 661. Any additional graduate courses in geology approved by graduate committee may be taken to satisfy remainder of 24 course work hours.
• Publishable thesis.
• Examinations: (A) comprehensive oral examination on course work; (B) final oral defense of thesis.

Financial Assistance

New graduate students are eligible for departmental scholarships, tuition scholarships, and teaching or research assistantships on a competitive basis.

Most regular degree-seeking students receive some form of financial aid. However, none may expect financial assistance from the department for more than four semesters.

Graduate students are also encouraged to seek additional support from industries and agencies outside the Department of Geological Sciences. Note: Such requests must be submitted to the department chair, who will forward them with a supporting letter.

Resources and Opportunities

The Department of Geological Sciences is in the remodeled Eyring Science Center. Extensive renovation included construction of state-of-the-art classrooms with multimedia capabilities, new office space for faculty and graduate assistants, and modern laboratories. The new facilities house extensive instrumentation, computer facilities, and mineral, rock, and fossil collections.

The location of the university campus on the Wasatch Front near the juncture of the Rocky Mountains, the Colorado Plateau, and the Great Basin provides an incomparable natural laboratory for geology studies. The Department of Geological Sciences utilizes this natural setting, and the many geologic problems that remain in it to be studied, as one of our main assets.

The department is well equipped for graduate research in geology. A partial list of research equipment available includes: a wavelength dispersive electron microprobe (Cameca SX-50), stable isotope ratio mass spectrometer, an X-ray fluorescence spectrometer, atomic absorption spectrophotometers, a gradient elution ion chromatograph, an automated single-crystal X-ray diffractometer,
powder X-ray diffractometers, a visible/UV spectrophotometer, a cathodoluminescence microscope, a fluid inclusion heating and freezing stage, a core plug porosimeter/permeameter, liquid scintillation counters, 3D subsurface mapping software, high-resolution GPS, Worden gravimeters, proton precession magnetometers, a ground-penetrating radar system, a twenty-four-channel seismic system and portable energy source, variable offset electrical resistivity equipment, and a Mössbauer spectrometer.

Additional research facilities include:

The Earth Science Museum includes exhibits, preparation laboratories, and fossil collections. Exhibits ranging from minerals to invertebrate and vertebrate fossils are open to the public and are an integral part of many courses. Collections are primarily from the intermountain region and include extensive assemblages of Late Jurassic and Early Cretaceous dinosaurs, Cenozoic vertebrates, and the Tidwell paleobotany collection, all of which provide research opportunities for faculty and students. Field equipment and preparation laboratories support ongoing research projects.

The Fission Track Dating Laboratory provides student and faculty researchers with the geochronological potential to solve problems in stratigraphy and structural geology, to determine rates of uplift and subsequently to aid in thermal modeling, and to provide support for numerous other faculty and student research projects where dating of events is necessary.

Supporting research work in exploration, environmental, and engineering geophysics, the Geophysics Laboratory houses seismic, ground-penetrating radar; electrical resistivity; and gravity, magnetic, and electromagnetic instrumentation, as well as computer support systems.

The Hydrogeochemistry Laboratory supports research programs in hydrology, environmental geology, economic geology, and petrology. In addition, the lab is used in teaching modern analytical techniques in upper-division undergraduate and graduate courses. Groundwater composition, migration, and pollution have been major emphases of research.

Chiefly supporting faculty, graduate, and undergraduate research, the Isotope Laboratory provides for analysis of stable isotopes of H, C, N, and O, as well as 14C and 3H. Analysis of H and O isotopes in water is fully automated. Hydrology, paleohydrology, paleoclimatology, and economic geology are currently major areas of research and teaching supported by this laboratory.

The Mineral Surface Chemistry Laboratory supports research on low-temperature chemical reactions that occur at the interface between mineral surfaces and aqueous solutions. The lab includes an atomic force microscope, a surface-area analyzer, and wet chemical facilities. Computer equipment and software are also available for molecular modeling.

The Sedimentology/Stratigraphy Laboratories support studies in stratigraphy, clastic and carbonate rocks, and micropaleontology. Analytical equipment to map and characterize both surface and subsurface reservoir-quality rocks, to resolve complex stratigraphic problems, and to understand diagenesis in sedimentary rocks is available to graduate and undergraduate students and faculty. Studies conducted in the labs have emphasized fluid flow and migration of both hydrocarbons and water, as well as detailed sequence stratigraphic modeling.

Faculty research interests currently include the following: the geodynamic evolution of the Banda arccontinent collision (structural features, uplifted synorogenic deposits and coral terraces, the GPS velocity field, and climate feedbacks); investigations of subsurface geology using seismic, gravity, and magnetic methods; composition of thermal waters; paleohydrology, paleoclimatology, and hydrogeology of arid and semiarid regions; petrogenesis of alkaline, mafic magmas; mineral surface structure and chemistry; crystallography and crystal chemistry of silicate minerals; studies of Cenozoic magmatism and tectonism in the western United States; correlation of volcanic ash beds in western North America; origins of gold, platinum, copper, and molybdenum deposits; tungsten skarns; reservoir characterization and sequence stratigraphy; Carboniferous-Permian conodont biostatigraphy; Jurassic and Cretaceous dinosaurs, Morrison and Cedar Mountain formations, dinosaur taphonomy, K-T boundary.

For a more detailed description of the graduate program requirements, send for a copy of the department’s bulletin. Numerous courses are taught on alternate years or on a need basis. Please inquire with the department as to when courses will be offered.

COURSE DESCRIPTIONS

504. Global Geology Field Studies. (1-3)
Prerequisite(s): Any senior-level geology course; instructor’s consent.
In-depth study of classic geologic localities, such as Hawaii, the Bahamas, and the Appalachians, preliminary to on-site field study.

521. Borehole Geophysics and Geology. (3)
Prerequisite(s): Phscs 121, 220, Geol 351, 370.
Applied well log analysis, including conventional and new techniques. Subsurface geology and lithology determined from many logs. Determining porosity, permeability, and fluid saturation with hydrology, and hydrocarbon applications.

525. Petroleum Systems Analysis. (4)
Prerequisite(s): Geol 370 or equivalent.
Properties of petroleum; exploration methods; generation and migration of hydrocarbons, reservoirs, traps, and seals; sedimentary basin classification; energy resources. Extended field trip required.
### GEOLOGICAL SCIENCES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisites</th>
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<tbody>
<tr>
<td>530</td>
<td>Geological Communications Laboratory.</td>
<td>(3)</td>
<td>Instructor's consent; graduate status</td>
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<td></td>
<td><strong>Prerequisite(s):</strong> Instructor's consent; graduate status</td>
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<td></td>
<td>Designing and creating a variety of student-selected geological illustrations emphasizing maps and cross-sections.</td>
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<td>535</td>
<td>Contaminant Hydrogeology.</td>
<td>(3)</td>
<td>Geology 435 or equivalent</td>
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<td><strong>Prerequisite(s):</strong> Geology 435 or equivalent</td>
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<td></td>
<td>Principles, tools, and applications used to solve heavy metal, organic, and radionuclide groundwater contamination problems. Topics include regulations, mass transport, multiphase flow, transformation, retardation, and attenuation.</td>
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<td>540</td>
<td>Principles of Glaciology.</td>
<td>(3)</td>
<td>Geology 435 or equivalent</td>
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<td></td>
<td><strong>Prerequisite(s):</strong> Geology 435 or equivalent</td>
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<td></td>
<td>Geophysical problems involving ice in the environment and its role in global change. Topics include atmospheric ice, snow pack, glaciers, ice sheets, sea ice, permafrost, and ice age theories.</td>
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<td>545</td>
<td>Isotope Geochemistry.</td>
<td>(3)</td>
<td>Geology 435 or equivalent</td>
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<td><strong>Prerequisite(s):</strong> Geology 435 or equivalent</td>
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<td></td>
<td>Use of stable and radioactive isotope systematics in geochronology and investigation of origins of rocks and waters.</td>
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<td>550</td>
<td>Environmental Soil Chemistry.</td>
<td>(3)</td>
<td>Chemistry 105, 106, 107; or equivalents</td>
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<td><strong>Prerequisite(s):</strong> Chemistry 105, 106, 107; or equivalents</td>
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<td></td>
<td>Chemistry of soil systems at macroscopic and microscopic scales, examined from the perspective of scientists interested in environmental assessment and remediation.</td>
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<td>551</td>
<td>Advanced Mineralogy.</td>
<td>(3)</td>
<td>Geology 435 or equivalent</td>
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<td></td>
<td><strong>Prerequisite(s):</strong> Geology 435 or equivalent</td>
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<td></td>
<td>Crystallography, structure, and crystal chemistry of major silicate mineral groups.</td>
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<td>552</td>
<td>Igneous Petrology.</td>
<td>(3)</td>
<td>Geology 435 or equivalent</td>
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<td></td>
<td><strong>Prerequisite(s):</strong> Geology 435 or equivalent</td>
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<td></td>
<td>Origin and evolution of magmas, emphasizing trace element and isotopic compositions and intensive properties as calculated from mineral compositions.</td>
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<tr>
<td>555</td>
<td>Volcanism and Ore Deposits.</td>
<td>(1-3)</td>
<td>Geology 352 or equivalent</td>
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<td><strong>Prerequisite(s):</strong> Geology 352 or equivalent</td>
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<td></td>
<td>Field examination of active mafic and silicic volcanism (Hawaii and Yellowstone) and discussion of magmatic volatiles' role in ore deposits.</td>
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<td>560</td>
<td>Reflection Seismology Theory</td>
<td>(3)</td>
<td>Geology 375, Physics 121, 123, 220; or equivalents</td>
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<td></td>
<td><strong>Prerequisite(s):</strong> Geology 375, Physics 121, 123, 220; or equivalents</td>
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<td></td>
<td>Principles, tools, and methods used in seismic geophysics, with exploration, engineering, environmental, and hydrological applications.</td>
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<tr>
<td>561</td>
<td>Applied Exploration Seismology.</td>
<td>(3)</td>
<td>Geology 375, Physics 121, 123, 220; or equivalents</td>
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<td></td>
<td><strong>Prerequisite(s):</strong> Geology 375, Physics 121, 123, 220; or equivalents</td>
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<td></td>
<td>Seismic acquisition processing and computer-assisted interpretation, emphasizing field deployment techniques, use of commercial data processing, and visualization software.</td>
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<td>565R</td>
<td>Special Topics in Geology</td>
<td>(0.5-4)</td>
<td>Instructor's consent</td>
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<td><strong>Prerequisite(s):</strong> Instructor's consent</td>
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<td>The following topics may be offered on demand: geology for teachers, ore deposits, solid-water interface chemistry, X-ray crystallography.</td>
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<td>571</td>
<td>Sedimentology and Ecology of Modern Carbonate Systems.</td>
<td>(1-3)</td>
<td>Geology 370 or equivalent</td>
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<td><strong>Prerequisite(s):</strong> Geology 370 or equivalent</td>
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<td></td>
<td>Field course in the Caribbean emphasizing factors that produce carbonate sediments. Investigation of tidal flat to offshore barrier reef environments and Pleistocene outcrops.</td>
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<td>574</td>
<td>Advanced Stratigraphy.</td>
<td>(3)</td>
<td>Geology 370 or equivalent</td>
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<td></td>
<td><strong>Prerequisite(s):</strong> Geology 370 or equivalent</td>
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<td>Studying the stratigraphic record through modern methods of correlating stratal packages, emphasizing concepts of sequence and seismic stratigraphy, and utilizing methods of chronostratigraphy, biostratigraphy, lithostratigraphy, and absolute dating. Extended field trip required.</td>
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<tr>
<td>575</td>
<td>Advanced Structural Geology</td>
<td>(3)</td>
<td>Geology 375, 410; or equivalents</td>
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<td></td>
<td><strong>Prerequisite(s):</strong> Geology 375, 410; or equivalents</td>
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<td></td>
<td>In-depth discussions of a variety of topics in structural geology, emphasizing current literature and problems.</td>
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<td>576</td>
<td>Three-Dimensional Subsurface Mapping and Evaluation.</td>
<td>(3)</td>
<td>Geology 476 or equivalent</td>
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<td><strong>Prerequisite(s):</strong> Geology 476 or equivalent</td>
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<td></td>
<td>Advanced interpretation of 3D seismic reflection data. Integrating well and seismic data to interpret complex geologic systems. Implications for understanding hydrocarbon reservoirs.</td>
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<td>580</td>
<td>Principles of Paleontology</td>
<td>(3)</td>
<td>Geology 480 or equivalent</td>
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<td></td>
<td><strong>Prerequisite(s):</strong> Geology 480 or equivalent</td>
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<td>Modern approaches to fossil study applied to areas of evolution, paleoecology, and biostratigraphy.</td>
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<tr>
<td>586</td>
<td>Vertebrate Paleontology</td>
<td>(4)</td>
<td>Instructor's consent</td>
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<td><strong>Prerequisite(s):</strong> Instructor's consent</td>
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<td></td>
<td>History of vertebrate fossils.</td>
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<td></td>
<td>Modern approaches to fossil study applied to areas of evolution, paleoecology, and biostratigraphy.</td>
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<tr>
<td>590R</td>
<td>Short Courses.</td>
<td>(1-3)</td>
<td>Instructor's consent</td>
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<td><strong>Short graduate-level courses offered on a random basis.</strong></td>
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<tr>
<td>591R</td>
<td>Seminar.</td>
<td>(0.5)</td>
<td>Seminar on various geologic topics by guest speakers.</td>
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<td><strong>Seminar on various geologic topics by guest speakers.</strong></td>
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<td>Total of 1 credit hour required.</td>
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<tr>
<td>592R</td>
<td>Career Pathways Seminar.</td>
<td>(0.5)</td>
<td>Seminar on graduate school and career opportunities by guest speakers.</td>
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<tr>
<td>599R</td>
<td>Academic Internship.</td>
<td>(1-9)</td>
<td>Instructor's consent</td>
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<td><strong>Short graduate-level courses offered on a random basis.</strong></td>
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<td>Total of 1 credit hour required.</td>
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<tr>
<td>601</td>
<td>Planet Earth.</td>
<td>(3)</td>
<td>Undergraduate degree</td>
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<td><strong>Prerequisite(s):</strong> Undergraduate degree</td>
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<td>Rigorous review of the fundamentals of geology, including Earth's origin and the evolution of the major geologic systems. Field trips.</td>
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606. Paleoclimatology. (3)  
Prerequisite(s): Instructor’s consent.  
Quaternary geochronology and stable isotope fundamentals followed by survey of major paleoclimate proxy records. Quantitative methods emphasized where appropriate.

621. Petrophysics and Reservoir Characterization. (3)  
Prerequisite(s): Geol 521.  
Advanced use of well log tools combined with direct (core) or analog (outcrop) lithologic information to characterize underground petroleum or groundwater reservoirs.

635. Advanced Hydrogeology. (3)  
Prerequisite(s): Geol 435 or instructor’s consent.  
Equations governing fluid flow through saturated porous media under various geologic conditions; applying hydraulic characteristics to analysis of well and aquifer conditions.

636. Hydrogeochemistry. (3)  
Prerequisite(s): Geol 404 or instructor’s consent.  
Nature and origin of solutes and isotopes in groundwater systems. Applying geochemistry to evaluation of groundwater recharge conditions and flow patterns.

666. Instrumental Methods. (3)  
Prerequisite(s): Geol 351, 352; or equivalents.  
Use of instrumentation for determining mineralogical, chemical, and isotopic composition of geological materials.

671. Sedimentary Petrology--Carbonate Rocks. (3)  
Prerequisite(s): Geol 370 or equivalent.  
Characteristics and significance of limestones and dolomites.

672. Sedimentary Petrology--Clastic Rocks. (3)  
Prerequisite(s): Geol 370 or equivalent.  
Characteristics of conglomerates, sandstones, and shales. Provenance studies of various terrains by thin section analysis. Extended field trip required.

695R. Research. (1-4)  
696R. Readings and Conferences in Geology. (1-4)  
697R. Directed Field Studies. (1-6)  
699R. Master’s Thesis. (1-9)  

Faculty

Bickmore, Barry R., Associate Professor. PhD, Virginia Polytechnic Institute and State University, 1999. Low Temperature Geochemistry; Mineral Surface Chemistry; Water-Rock Interactions.

Britt, Brooks B., Assistant Professor. PhD, University of Calgary, Canada, 1993. Vertebrate Paleontology; Taphonomy.

Christiansen, Eric H., Professor. PhD, Arizona State University, 1981. Petrology; Volcanology.


Griffen, Dana Thomas, Professor. PhD, Virginia Polytechnic Institute, 1975. Mineralogy; Crystallography.


Keith, Jeffrey D., Professor. PhD, University of Wisconsin, 1982. Economic Geology; Geochemistry.


Morris, Thomas H., Professor. PhD, University of Wisconsin, Madison, 1986. Sedimentology; Stratigraphy; Clastic Petrology.

Nelson, Stephen T., Professor. PhD, University of California, Los Angeles, 1991. Isotope Geochemistry; Environmental Geology.

Radebaugh, Jani, Assistant Professor. PhD, University of Arizona, 2005. Planetary Science; Volcanology.

Ritter, Scott M., Professor. PhD, University of Wisconsin, Madison, 1986. Invertebrate Paleontology; Carbonate Petrology.

Rupper, Summer B., Assistant Professor. PhD, University of Washington, 2007. Paleoclimatology; Glaciology.
GERMANIC AND SLAVIC LANGUAGES

Chair: David Kay Hart
Graduate Coordinator, German Studies: Alan Keele
3112 JFSB
Provo, UT 84602-6713
(801) 422-3153

THE PROGRAM OF STUDIES

One degree is offered through the Department of Germanic and Slavic Languages: German Studies—MA. An additional MA in language acquisition (German, Russian) is offered as part of the collegewide program in language acquisition (see Language Acquisition section of this catalog).

Each year from four to six students are admitted to the literature program. Most students complete the degree within two years.

German Studies—MA

Admission and Entry.

- Semesters of entry and application deadlines: fall, February 28 (international) and April 1 (U.S.); winter, June 30 (international) and September 1 (U.S.).
- Application requirements: entrance examination is GRE general test.
- Prerequisite: baccalaureate degree in German or in a related field such as English, comparative literature, humanities, etc. Minor deficiencies in German linguistics, culture, or other areas may be made up by enrolling in appropriate undergraduate courses. German language proficiency in all four skills at the advanced level as defined by the American Council on Teaching of Foreign Languages (ACTFL)—equivalent to the Interagency Language Roundtable (ILR) level 2.

Requirements for Degree.

- Credit hours (30): minimum 24 course work hours plus 6 thesis hours (Germ 699R).

- Required courses: 24 hours, of which 15 must be German graduate courses and 9 may be interdisciplinary courses approved by a German faculty advisor; 6 hours of Germ 699R (thesis).
- A reading knowledge of a second foreign language (fourth semester or equivalent).
- Examination: oral examination on reading list (see graduate advisor), course work, and thesis.

FINANCIAL ASSISTANCE

Partial tuition assistance is available. Most MA students also work as paid teaching assistants.

RESOURCES AND OPPORTUNITIES

The Department of Germanic and Slavic Languages has access to the Humanities Research Center for computer-assisted language instruction and translation. Other resources are:

The Foreign Language Student Residence. Students who desire a more intensive language experience and practical application of the language under the direction of faculty and native residents may apply to live in the Foreign Language Student Residence. All activities are conducted in the foreign language. Housing is available for men and women in German, French, Spanish, Italian, Portuguese, Russian, Japanese, Chinese, Arabic, and Korean languages. Graduate students may participate as students or as senior residents.

For a more detailed description of the graduate program requirements, send for a copy of the department’s bulletin.

GERMAN

615. Applied German Linguistics. (3)
- Prerequisite(s): Germ 450, 460, or equivalent.
- Applying linguistics to the problems of teaching German grammar.

640R. German Literary Periods and Movements. (3)
- In-depth study of a period or movement such as medieval, Renaissance, baroque, or eighteenth-century Germany; Romanticism; realism; fin-de-siecle Vienna; naturalism; 1890-1945; 1945-present.

641R. Studies in German Literary Genres. (3)
- In-depth study of a genre such as drama, novel, novella, lyric, film.

642R. Major German Authors. (3)
- In-depth study of one author such as Lessing, Goethe, B. V. Arnim, Kleist, Storm, Rilke, Brecht, Mann, Kafka, or Bachmann.

643R. Studies in Literary Theory. (3)
- In-depth study of primary texts by contemporary literary theorists. May include topics such as the Frankfurt School, feminist criticism, reader response, or poststructuralism.

644R. Interdisciplinary Studies. (3)
- Studies linking German literature, film, and the arts within German culture or across national boundaries.

645R. Special Topics in German Cultural Studies. (3)
- Prerequisite(s): Graduate student status.
- German cultural studies courses on a nontraditional nature, as determined by the faculty.

670R. Tutorial Internship in German. (0.5-3)
- Individual research in cooperation with graduate faculty members in problems relating to German. Tutorial work in writing research papers. Topics vary according to interests and expertise of faculty supervisors.

COARSE DESCRIPTIONS
680R. Special Studies in German. (0.5-3)
Individual study supervised by graduate faculty members in varying topics of specific interest in German.

690R. Seminar in German. (3)
Group studies supervised by graduate faculty members in varying topics of specific interest in German.

699R. Master’s Thesis. (0.5-6)

Linguistics
(See Linguistics section of this catalog for courses.)

Russian

670R. Tutorial Internship in Russian. (0.5-3)
Individual research in cooperation with graduate faculty members in problems relating to Russian. Tutorial work in writing research papers. Topics vary according to interests and expertise of faculty supervisors.

680R. Special Studies in Russian. (0.5-3)
Individual study supervised by graduate faculty members in varying topics of specific interest in Russian.

690R. Seminar in Russian. (0.5-3)
Group studies supervised by graduate faculty members in varying topics of specific interest in Russian.

699R. Master’s Thesis. (0.5-9)

FACULTY

Bown, Jennifer Marks, Assistant Professor. PhD, Ohio State University, 2004. Russian Pedagogy (Second Language Acquisition; Teacher Development; Pragmatics and Discourse Analysis).

Brewer, Cindy P., Associate Professor. PhD, University of Utah, 1998. German Literature (Eighteenth- and Nineteenth-Century Prose; Literature by Women).

Brown, N. Anthony, Assistant Professor. PhD, Bryn Mawr College, 2004. Language Policy; Russian Cultural History.

Hart, David Kay, Professor. PhD, University of Washington, 1979. Russian Language (Phonology; Morphology; Syntax).

James, Michelle S., Associate Professor. PhD, University of Utah, 1987. German Literature (Lessing; Eighteenth and Nineteenth Centuries; Women’s Studies).

Keele, Alan F., Professor. PhD, Princeton University, 1971. German Literature (Earlier Twentieth Century; 1945–Present; Rilke; Grass).

Kelling, Hans-Wilhelm, Professor. PhD, Stanford University, 1967. German Literature (Goethezeit); Cultural History.

Lund, Randall J., Assistant Professor. PhD, University of Minnesota, 1986. Foreign Language Methodology; Teacher Education.

McFarland, Robert B., Associate Professor. PhD, University of California, Berkeley, 2000. German Literature (Urban Literature and Modernism); Cultural Studies.

Smith, Laura Catharine, Assistant Professor. PhD, University of Wisconsin, Madison, 2004. German Language (Theoretical Linguistics; Phonology; Historical Linguistics; Second Language Acquisition; Morphology).

HEALTH SCIENCE

Chair: Brad L. Neiger
MPH Director: Michael Barnes
221 RB
Provo, UT 84602-2115
(801) 422-3082

THE PROGRAM OF STUDIES

The mission of public health is to assure the health and well-being of populations. It is the science and art of preventing disease, prolonging life, and promoting health and efficiency through organized research and interventions. The purpose of the graduate program is to prepare students to be leaders in public health and global health promotion. Use of the term global in public health and health promotion reflects the growing reality that the spread of infectious and chronic diseases increasingly crosses political and geographic boundaries. Curricula in the MPH program trains students in global and multicultural issues to prepare them to work with diverse populations, both domestically and internationally.

Health promotion professionals are trained in: epidemiology and biostatistics, community health analysis, health-related behavior and the behavior change process, educational processes, program planning, implementation and evaluation, environmental health, research, administration, health communication and social marketing, community mobilization, and policy and advocacy.

One graduate degree is offered through the Department of Health Science: the Master of Public Health—MPH.

PUBLIC HEALTH—MPH

The most recognized professional credential in public health practice and leadership, the master of public health (MPH) is a practice-based degree that enables students to gain knowledge basic to public health. Although public health is a broad, multidisciplinary profession, the
MPH program at BYU has an emphasis in global health promotion.

The average length of time required to complete the MPH program is two years, depending on course load and previous academic training or professional activity.

**Admission and Entry.**
- Semesters of entry and application deadlines: fall, February 1 (U.S. and international).
- Application requirements: completed BYU Application for Admission to Graduate Study. Include all relevant work experience on the application. Of the three required letters of recommendation, only one may be written by a faculty member in the Department of Health Science.
- Entrance examinations: Graduate Record Examination (GRE) and official TOEFL examination results from persons whose first language is not English, 237 (paper-based 580) with no subscore lower than 21, except for 22 on speaking.
- Prerequisite: baccalaureate or higher-level degree from an accredited U.S. university, or the equivalent from a university outside the U.S., with a GPA of 3.0 in the last 60 semester hours of course work.
- Statement of professional interest and related goals in public health and global health promotion not to exceed 1,000 words. Include the following: your preparation and background for the master of public health program; special emphasis you hope to pursue; basic reasons for your choice of career; specific qualities and talents that could enhance success in your career; research interests; professional goals; and any additional reasons for applying to the MPH program.

**Requirements for Degree.**
- Credit hours (49): 33 hours of required courses; 7 hours of elective credits; 6 hours of fieldwork (300 contact hours); and 3 hours for the graduate project.
- Required core courses: Hlth 600, 602, 604, 606, 607, 608, 612, 614, 615, 618.
- Requirements for the fieldwork experience and graduate project are determined by the student’s graduate committee and are based on prior education, experience, and present professional interests.
- Examinations: oral defense of fieldwork experience, graduate project, and peer-reviewed paper.

**FINANCIAL ASSISTANCE**
Graduate teaching or research assistantship positions may be available for qualified students.

**RESOURCES AND OPPORTUNITIES**
The Department of Health Science is housed in the Richards Building. Students have access to nearby graduate study labs and computer labs that house approximately 45 computers equipped with a range of software including MS Office, Corel Suite, Netscape, Internet Explorer, Minitab, SAS, SPSS, and other course-specific software. The labs also have printers.

Available to MPH students is the 3-million-volume Harold B. Lee Library, which provides seating to 4,000 students, including workstations for graduate students. Most key public health journals are available at the Lee Library. Students have access to the Health Research and Technology Lab (HRTL) for research or other projects related to the fieldwork experience and graduate project. Founded by the department, the HRTL is housed within the College of Health and Human Performance Research Laboratory complex.

**COURSE DESCRIPTIONS**

600. Foundations of Public Health and Health Promotion. (3)
Global perspectives of public health and health promotion. Essential public health services, public health organizations, and current issues in global health promotion.

602. Principles of Epidemiology. (3)
Principles and methods used in epidemiologic research, including study design, confounding, chance, bias, causality, and descriptive and analytic methods.

603R. Special Topics in Public Health. (1-7)
Seminar exploring current global health issues.

604. Principles of Biostatistics. (3)
Basic concepts of biostatistics and their applications and interpretation. Topics include descriptive statistics, graphics, diagnostic tests, probability distributions, inference, regression, and life tables.

606. Environmental Health Sciences. (3)
Environmental risks for human disease. Contributions of physical and biological factors and social, economic, and political determinants relative to sustainable development and promotion of health.

607. Public Health Administration. (3)
Trends, practices, and issues in public health administration, emphasizing organizational theory, administrative management, supervisory and legislative processes, and conflict resolution from global perspectives.

608. Determinants of Health Behavior. (3)
Psychological, social, and cultural determinants of health behavior. Introducing health behavior theories and applying behavior change models to program development.

For a more detailed description of the graduate program requirements, send for a copy of the department’s MPH brochure.
612. Program Planning and Evaluation. (3)
Various program planning and implementation methods, theories, and skills, including needs assessment, priority setting, program development, evaluation and budgeting.

618. Survey and Research Methods. (3)
Designing, administering, and analyzing data collection instruments for research and evaluation in public health. Quantitative and qualitative methods.

619. Infections and Chronic Disease Prevention and Control. (3)
Public health solutions to the leading causes of chronic and infectious disease mortality in the United States and the world.

625. Population-Based Health Promotion Interventions. (3)
Macro- or population-based interventions, including mass communication, policy and legislation, media advocacy, social marketing, and community mobilization.

630. Small-Group Health Promotion Interventions. (3)
Micro-interventions: curriculum and the educational process, group dynamics, training models, consultation, and counseling, including theories used in health education and adult learning.

640. Grant Writing. (2)
For students who are seeking philanthropic, federal, and other sources of funding.

650. Multicultural Health and Diversity Studies. (2)
Prerequisite(s): Be in second year of study.
Development of cultural awareness, sensitivity to health disparities, and exposure to public health diversity.

655. Critical Health Behaviors and Risks in Public Health. (3)
Prerequisite(s): Be in second year of study.
Team-taught seminar addressing six critical health behaviors and related risks pertaining to tobacco use, alcohol and drug use, injury and violence, nutrition, physical activity, and sexual risk behaviors.

688R. Field Experience. (1-6)
Prerequisite(s): HLth 600, 602, 604, 606, 608, 612, 618, 625.
Domestic U.S. and international field experiences in public health settings that expose students to public health strategies and interventions in multicultural settings.

696R. Independent Studies. (0.5-3)

698R. Graduate Public Health Project. (1-3)
Prerequisite(s): HLth 697R.
Applied community-based project in public health demonstrating acquired skills and knowledge and partially completing the MPH capstone experience.

FACULTY


COLE, EUGENE C., Professor. DrPH, University of North Carolina, 1983. Environmental Health.

HANSON, CARL L., Associate Professor. PhD, Southern Illinois University, 1994. Community Health; Public Health Leadership; Rural Health.


LINDSAY, GORDON B., Professor. PhD, Ohio State University, 1984. Community Health; Substance Abuse.


NEIGER, BRAD L., Professor. PhD, University of Utah, 1991. Community Health; Social Marketing.

NOVILLA, M. LELINNETH, Associate Professor. MD, University of the City of Manila, the Philippines, 1990. MPH, University of Utah, 1999. International Health; Chronic and Infectious Diseases.

PAGE, RANDY M., Professor. PhD, Southern Illinois University, 1982. International Health; Adolescent and School Health.

THACKERAY, ROSEMARY, Associate Professor. PhD, University of Utah, 2000. MPH, University of Utah, 1996. Community Health; Social Marketing.

HISTORY

Chair: Shawn W. Miller
Graduate Coordinator:
Mary Stovall Richards
2130 JFSB
Provo, UT 84602-4446
(801) 422-6285

THE PROGRAM OF STUDIES

The History Department has fur-loughed the MA in History program indefinitely and is not currently accepting applications.

History—MA

The MA degree continues to be offered for students currently admitted to the program who desire to do further historical study and research beyond the bachelor’s degree. The advantages of this degree include: opportunities in public history, access to careers in business, greater promotional and employment opportunities for secondary teachers, qualification for teaching positions in many junior colleges, and useful preparation for doctoral work in history, law, government, international affairs, and other relevant fields.

Areas of emphasis within the MA: American History or European History.

Admission and Entry.

1. The History department is not currently accepting applications to the History MA program.

Requirements for Degree.

1. Course requirements:
   American History Emphasis (30 hours): minimum 24 course work hours including Hist 587, 651, 652, 653, 690R; plus 6 thesis hours (699R).
   European History Emphasis (30 hours): minimum 24 course work hours including Hist 587, 661, 662, 663, 690R; plus 6 thesis hours (699R).
   Minor: optional as approved by graduate committee.
   Thesis.

2. Examination: oral defense of thesis.

FINANCIAL ASSISTANCE

A small tuition grant can be provided to graduate students in the History Department. In addition, a teaching assistantship of 10 to 15 hours may be available to qualified graduate students.

RESOURCES AND OPPORTUNITIES

Center for Studies of the Family.

This interdisciplinary research center focusing on studies related to all aspects of the family encourages and supports research on family-related topics ranging from prenatal development to problems of aging.

Women’s Research Institute.

Initially established in 1978, the Women’s Research Institute became a part of the College of Family, Home, and Social Sciences in September 1983. Since then the institute has awarded research fellowships to upper-division and graduate students for conducting research on women and women’s issues in amounts up to $500 annually for selected projects. Faculty grants became available through the institute in 1984.

Museum of Peoples and Cultures.

This museum offers unique research opportunities for students and faculty, several of whom have research offices in the museum. Located south and west of campus in Allen Hall, the museum holds a number of important archaeological and ethnographic collections that have not been systematically analyzed and reported. These collections, which represent Utah Valley, the American Southwest, and Mesoamerica, as well as other parts of the world, provide material for thesis topics, professional publications, and academic credit.

Charles Redd Center for Western Studies.

Established in 1972 under an endowment from Charles Redd, a prominent Utah stockman and philanthropist, the center is charged with promoting the study of all aspects of the American West. The center publishes a monograph series, assists faculty and student research through grants and fellowships, and sponsors lectureships each year.

For a more detailed description of the graduate program requirements, please refer to the department Web site at http://history.byu.edu/.

COURSE DESCRIPTIONS

500R. Special Studies in History. (1-3)

Directed by visiting or resident faculty. Check with department secretary for current topics and instructor.

564. Sources and Problems in Western U.S. History. (3)

Lecture, discussion, readings, and student writing on historians’ sources and points of view regarding the American West.

565. Sources and Problems in Latter-day Saint History. (3)

Lecture, discussion, readings, and student writing on historians’ sources and points of view regarding Latter-day Saint history.

566. Sources and Problems in Utah History. (3)

Lecture, discussion, readings, and student writing on historians’ sources and points of view regarding Utah history.

587. Philosophies of History. (3)

Fundamental problems and types of historical analysis and interpretation, philosophies of history, and work of outstanding historians.

590R. Special Topics. (3)

Western American, religious, family, Asian, Latin American, and Near Eastern history.
598R. Special Readings in History. (1-3)

651. Sources and Problems in Early America. (3)
Through the seventeenth and eighteenth centuries.
Required of American and European history graduate students.

652. Sources and Problems in Nineteenth-Century America. (3)
Through the nineteenth century.

653. Sources and Problems in Twentieth-Century America. (3)
Through the twentieth century.

661. Sources and Problems in Medieval, Renaissance, and Reformation History. (3)
Selected topics in medieval, Renaissance, and Reformation history.

662. Sources and Problems in Early Modern Europe, 1550–1789. (3)
Selected topics in early modern Europe, 1550–1789.
Part of the core curriculum for graduate students.

663. Sources and Problems in Modern Europe, 1789–Present. (3)
Selected topics in nineteenth- and twentieth-century Europe, 1789–present.

690R. Graduate Seminar in History. (1-3)

695R. Coordinated Research. (3)
Prerequisite(s): Prior instructor’s consent.
Student research directed by faculty member on topic of mutual interest.
Research assistants must do additional work for credit.

696R. Practicum in Public History and Family History. (1-5)
College credit for work in local archives, museums, and related areas.
See department chair for openings available and to determine hours of credit.

699R. Master’s Thesis. (1-9)

798R. Special Readings in History. (1-2)

799R. Doctoral Dissertation. (1-18)
HUMANITIES, CLASSICS, AND COMPARATIVE LITERATURE

Chair: Michael J. Call
Graduate Coordinator: Allen J. Christenson
3008 JFSB
Provo, UT 84602-6702
(801) 422-4448

THE PROGRAM OF STUDIES

Widely used in the Renaissance, the term humanities (humanitas or studia humanitatis) refers to the study of human intellectual and artistic creativity. Humanities is both a general academic category (inclusive of literature, history, philosophy, and the history and criticism of art and music) and a discipline in its own right with a methodology for the critical study of intellectual history and aesthetics. The interdisciplinary humanistic fields that the department comprises—humanities, classics, and comparative literature—offer students unusual latitude in pursuing graduate education in the humanities, disciplined by insistence on substantial foreign language skills, competence in critical theory and practice, and the development of scholarly discipline.

One degree is offered through the Department of Humanities, Classics, and Comparative Literature: Comparative Studies—MA. This program admits from ten to twelve students per year. The MA in comparative studies is designed as a two-year program, and most full-time students are able to complete the MA within two years, usually defending the thesis during spring or summer term of the second year.

Comparative Studies—MA

This degree allows for study of the humanities within a comparative context not normally found in single-discipline graduate programs—that is, through interdisciplinary and comparative perspectives that permit a flexibility and breadth of study, without sacrificing rigor. Graduate students thus learn to combine the synthesizing and analytical skills of various humanistic disciplines in order to develop interdisciplinary and comparative approaches to the materials of human culture. Accordingly, program courses expand knowledge in humanistic disciplines and provide intense opportunities to develop wide-ranging research and writing.

Admission and Entry.
- Semesters of entry and application deadlines: fall, March 1. Applicants may submit a written request that transfer, senior, and post-baccalaureate studies credit be applied toward the MA degree according to the criteria set down and defined for such post-baccalaureate studies credit in the BYU Graduate Catalog. This request will be reviewed, and approved or rejected, by the graduate council of the department. However, students intending this course of action are strongly cautioned that pursuing credit before admission to the comparative studies MA program in no way favors their application for admission to the program; there is the risk that admission will not be granted. If the written request is approved, the graduate coordinator, in consultation with the graduate council, will appoint a preliminary advisor to work with the applicant.
- Entrance examination: GRE general test.
- Prerequisite: baccalaureate degree in interdisciplinary humanities, comparative literature, classics, English or a foreign language, art history, history, music, or philosophy; proficiency in at least one foreign language, demonstrated normally by completion of one upper-division literature course in the language.

Requirements for Degree.
- Credit hours (33): minimum 27 course work hours plus 6 thesis hours.
- Required courses: CmpSt 610, 615; two courses from CmpSt 620R,

- Electives: six courses in humanities, classics, comparative literature, art history, musicology, philosophy, history, film, or literature (up to 6 hours may be in upper-division undergraduate classes where equivalent graduate classes are not available). One or more of these may be comparative studies seminars, which, in addition to the two required, are chosen in consultation with the student’s academic advisor and are subject to approval of the department’s graduate council. No more than one directed readings course may be counted toward the MA degree in comparative studies.

- Special field: proficiency in a second foreign language or in a discipline other than literature (e.g., art history, musicology, philosophy, film, history, etc.), demonstrated by course work or examination, as determined by the student’s graduate committee and the program’s graduate council.

- Completion of a reading list, which is determined in consultation with a faculty advisor, subject to approval of the department’s graduate council.

- Thesis.

- Examination: final oral examination on the reading list; thesis defense.

**Financial Assistance**

Aid is available in the form of full or partial tuition grants, teaching and research assistantships, internships, and (for advanced students) some student instructorships. Upon admission to the respective programs, candidates will be considered for all of these possibilities based upon merit and availability of department resources. Financial aid is normally limited to two years.

**Resources and Opportunities**

The Department of Humanities, Classics, and Comparative Literature utilizes the Humanities Research Center and the Reading-Writing Center for the College of Humanities:

The Humanities Research Center provides an array of technological tools, resources, and expertise to foster quality research and scholarship in the College of Humanities. The center is especially active in the production of teaching and research materials. In addition to computer and audio equipment, the center has a variety of video capabilities and in the past few years has become a world leader in computer-assisted language instruction and translation. The department also owns CD-ROM databases for classical Greek and Latin texts, the Thesaurus Linguae Graecae and Thesaurus Linguae Latinae, as well as the complete works of many modern authors.

Faculty from the department currently serve as officers in the Classical Association of the Midwest and South (CAMWS), the International Comparative Literature Association (ICLA), the National Association of Humanities Educators (NAHE), the American Conference on Romanticism, and the Society for the Advancement of Scandinavian Study (SASS). In addition, the journals Scandinavian Studies and Prisms: Essays on Romanticism are edited by department faculty members, assisted by graduate students from the department.

For more information, see [http://hcll.byu.edu/programs_csma.shtml](http://hcll.byu.edu/programs_csma.shtml). E-mail: comparativestudies@byu.edu.

**Course Descriptions**

**Classics**

690R. Seminar in Classics. (3)

699R. Master’s Thesis. (0.5-9)

**Comparative Literature**

590R. Directed Readings. (0.5-3)
Prerequisite(s): Graduate

610. Methods of Study in Comparative Literature. (3)

Introduction to critical study of literature: critical methods and bibliography; linguistic foundations of literature; textual scholarship; literary history, transmission, theory, and criticism; genre theory; literature and other disciplines.

620R. Studies in Periods and Movements. (3)
Prerequisite(s): CmLit 610 or concurrent registration.

Various literary periods, movements, etc., and problems of periodization. Topics vary.

630R. Studies in Literary Genres. (3)
Prerequisite(s): CmLit 610 or concurrent registration.

Various genres (e.g., novel, epic, tragedy, lyric) and problems of genre. Topics vary.

640R. Studies in Themes and Types. (3)
Prerequisite(s): CmLit 610 or concurrent registration.

Major literary themes (e.g., Faust, Don Juan, Ulysses, Arthur), types, motifs, and problems of literary typology. Topics vary.

650R. Studies in Literary Relations. (3)
Prerequisite(s): CmLit 610 or concurrent registration.

Interrelations of national literatures and figures and of literature with other areas of knowledge (art, history, law, psychology, music, etc.). Topics vary.

660R. Studies in Literary Theory. (3)
Prerequisite(s): CmLit 610 or concurrent registration.

Critical theories of literature and literary analysis. Topics vary.

690R. Seminar in Comparative Literature. (3)
Prerequisite(s): CmLit 610.

Problems in comparative literature. Course content varies from semester to semester.
699R. Master’s Thesis (0.5-9)
Prerequisite(s): Graduate coordinator’s consent.

Comparative Studies

610. Introduction to Contemporary Critical Thinking. (3)
Prerequisite(s): CmLit 310, Hum 350, Clsscs 420; or equivalents.
A broad interdisciplinary perspective on contemporary literary and aesthetic theory and critical methods as these relate to the study of literature and the arts.

615. Colloquium in Comparative Studies. (3)
Prerequisite(s): CmpSt 610.
Introduction to a variety of critical methods through presentations of work in progress by graduate and visiting faculty. Topics vary.

620R. Studies in Periods and Movements. (3)
Prerequisite(s): CmpSt 610.
Literature, philosophy, and/or the arts of a particular period or movement in cultural history. Problems of periodization. Topics vary.

625R. Area Studies. (3)
Prerequisite(s): CmpSt 610.
Literature, philosophy, and/or the arts of a particular geographical area. Topics vary.

630R. Genres and Forms in the Humanities. (3)
Prerequisite(s): CmpSt 610.
Interrelations between various art forms, especially literature and one other art (literature and art, film, music, etc.). Topics vary.

640R. Themes in the Humanities. (3)
Topics vary.

650R. Period Studies. (3)
Prerequisite(s): CmpSt 610.
Topics vary.

660R. Critical Theory and Methods. (3)
Prerequisite(s): CmpSt 610.
Theoretical and practical criticism; problems in critical theory. Topics vary.

HUMANITIES

595R. Directed Readings. (0.5-3)
Prerequisite(s): Graduate coordinator’s consent

610. Research Methods in Humanities. (2)
Prerequisite(s): Instructor’s consent.
Use of the library and secondary sources.

615. Writing the Thesis Prospectus. (1)
Prerequisite(s): Hum 610.
Design and development of MA thesis prospectus.

620R. Studies in Periods and Movements. (3)
Interdisciplinary study of literature, philosophy, and the arts of a particular period or movement in cultural history. Problems of periodization. Topics vary.

625R. Area Studies in the Humanities. (3)
Interdisciplinary study of literature, philosophy, and the arts of a particular geographical area. Topics include American, Latin American, and Asian humanities. Topics vary.

630R. Genres and Forms in the Humanities. (3)
Interdisciplinary study of genres and forms. Topics include epic, tragedy, narrative, historiography, film, relationship of text and music. Topics vary.

640R. Themes in the Humanities. (3)
Interdisciplinary study of themes. Topics include Eden, Arthur, Don Juan, Faust, Don Quixote, Ulysses, Troy. Topics vary.

660R. Critical Theory and Methodology. (3)
Theoretical and practical criticism; problems in critical theory. Topics include aesthetics, interrelations of the arts, cultural theory, aspects of contemporary theory, and models of cultural history.

690R. Seminar in the Humanities. (3)
Interdisciplinary study of problems and major figures in the humanities. Topics vary.
HUMANITIES, CLASSICS AND COMPARATIVE LITERATURE

699R. Master’s Thesis. (0.5-9)  
Prerequisite(s): Graduate coordinator’s consent.

Latin

620R. Latin Poets. (3)  
Prerequisite(s): 400-level Latin poetry course or equivalent.  
Detailed study of a major Latin poet or poets. Topics vary.

625R. Cato and Early Prose. (3)  
Prerequisite(s): 400-level Latin prose course or equivalent.

640R. Studies in Genre. (3)  
Prerequisite(s): 400-level Latin course or equivalent.  
Major genres (epic, tragedy, comedy, historiography, etc.). Topics vary.

650R. Period Studies. (3)  
Prerequisite(s): 400-level Latin course or equivalent.  
Various periods in Roman history and culture. Topics vary.

690R. Seminar in Latin. (3)  
Prerequisite(s): 400-level Latin course or equivalent.  
Graduate seminar on one topic in Roman literature, culture, and history. Topics vary.

FACULTY

Ancell, Matthew, Assistant Professor. PhD, University of California, Irvine, 2007.  
Humanities: Seventeenth-Century; Spanish and English Literature and the Arts.

Bay, Stephen M., Assistant Professor.  
PhD, University of Illinois, Urbana-Champaign, 2006.  
Classics: Classical Textual Criticism; Papyrology; Ancient Prose Fiction.

Benfell, V. Stanley, Associate Professor.  
PhD, New York University, 1994.  
Comparative Literature: Medieval and Renaissance Literature (Italian; French; English).

Burns, Mark K., Assistant Professor.  
PhD, Harvard University, 2003.  
Humanities: Nineteenth-Century American Literature; Colonial Latin American Literature; African Literature; Cultural Theory.

Call, Michael J., Professor.  
PhD, Stanford University, 1982.  
Humanities: Eighteenth- and Nineteenth-Century French Culture; Romanticism.

Call, Michael Josiah, Assistant Professor.  
PhD, Yale University, 2007.  
Humanities: Seventeenth-Century French Literature and Culture.

Christenson, Allen J., Associate Professor.  
PhD, University of Texas, Austin, 1998.  
Humanities: Precolumbian Maya and Mesoamerican Literature, Art, and Culture; Early Modernism; North American Art and Culture; Latin American Culture.

Duckwitz, Norbert H. O., Assistant Professor.  
Classics: Latin Poetry; Greek and Roman Mythology.

Hall, John F., Professor.  
PhD, University of Pennsylvania, 1984.  
Classics: Roman History, Religion, and Law; Latin Literature.

Handley, George B., Associate Professor.  
PhD, University of California, Berkeley, 1995.  
Humanities: Nineteenth- and Twentieth-Century American, Caribbean, and Latin American Culture; Ethnic Arts; Cultural Theory.

Kramer, T. Nathaniel, Assistant Professor.  
PhD, University of California, Los Angeles, 2004.  
Humanities: Twentieth-Century Literature; Scandinavian Studies; European Modernism; Literary Theory.

Lawson, Francesca, Assistant Professor.  
PhD, University of Washington, 1988.  
Humanities: Ethnomusicology; Chinese Narrative Performance.

Lounsbury, Richard C., Professor.  
PhD, University of Texas, Austin, 1979.  
Classics and Comparative Literature: Early Imperial Literature; Rhetoric; Classical Tradition.

Macfarlane, Roger T., Associate Professor.  
PhD, University of Michigan, 1991.  
Classics: Republican and Augustan Latin Literature.

Oscarson, Christopher, Assistant Professor.  
PhD, University of California, Berkeley, 2006.  
Humanities: Nineteenth- and Twentieth-Century Scandinavian Literature; Film.

Parry, Joseph D., Associate Professor.  
PhD, University of Utah, 1995.  
Humanities: Medieval and Renaissance Studies (especially English; German; Italian).

Peek, Cecilia M., Assistant Professor.  
PhD, University of California, Berkeley, 2000.  
Classics: Hellenistic History; Roman Imperial History; Greek and Latin Literature.

Peer, Larry H., Professor.  
PhD, University of Maryland, College Park, 1969.  
Comparative Literature: Romanticism; Theory.

Sederholm, Carl H., Assistant Professor.  
PhD, University of Utah, 2002.  
Humanities: Early American Culture; American Gothic; American Religion.

Sondrup, Steven P., Professor.  
PhD, Harvard University, 1974.  
Comparative Literature: Nineteenth- and Twentieth-Century Literature.

Soper, Kerry D., Assistant Professor.  
PhD, Emory University, 1998.  
Humanities: Nineteenth- and Twentieth-Century American Studies; Popular Culture.

Sowell, Debra H., Associate Professor.  
PhD, New York University, 1990.  
Humanities: Performance Studies; Dance History and Criticism; European Romanticism.

Stanford, Charlotte, Assistant Professor.  
PhD, Pennsylvania State University, 2003.  
Medieval Studies; Art History; Gothic Architecture; Gothic Revival.

Tate, George S., Professor.  
PhD, Cornell University, 1974.  
Humanities and Comparative Literature: Medieval Studies (Scandinavian; German; English; Twelfth-Century Renaissance).

Tueller, Michael, Assistant Professor.  
PhD, Harvard University, 2003.  
Classics: Hellenistic Culture; Greek Poetry; Greek Religion.
The Program of Studies

The Information Systems Department administers one graduate program through the Marriott School: the Master of Information Systems Management—MISM.

The master of information systems management program offers a specialization in information systems and the application of information technology in business organizations based on a general background in business and accounting. The MISM degree is awarded at the completion of the professional program, which can begin as early as the senior year of the bachelor of information systems program and culminates in the Marriott School after the fifth year of study. Students who enter the MISM program with a baccalaureate degree in information systems can complete the program in two years or less.

The objective of the MISM program is to develop graduates who exhibit professionalism and are qualified with specialized knowledge in information system areas. The department seeks to educate individuals who are: (1) imbued with a strong sense of professional commitment, (2) qualified with specialized knowledge in the areas of information systems, (3) committed to continued professionalism beyond formal education, and (4) capable of becoming leaders who exhibit high standards of ethical conduct within their chosen profession.

The department admits approximately 40 students per year into its graduate program.

Information Systems Management—MISM

The MISM program is designed for students who want professional careers in information systems. Students seek employment with consulting firms, accounting firms, industrial organizations, and not-for-profit entities performing a variety of services, such as understanding the information needs of an organization, designing, developing, and implementing information systems to meet specified requirements, administering the information systems function, auditing an information system, and formulating an information systems master plan to effectively utilize information technology throughout an organization.

Admission and Entry.

- Semesters of entry and application deadlines: fall, March 1 (U.S. and international).
- Entrance examination: GMAT.
- Prerequisites: minimum 3.0 GPA. Students who have received a BS degree in an area other than business must complete introduction to economics, introduction to statistics, introduction to calculus, business writing, introduction to financial and managerial accounting, introductory course in Java or equivalent, and introduction to management information systems at a college/university in the United States prior to applying for the MISM degree.

Requirements for the MISM Degree.

- Common requirements: MBA 509, 520, 530, 540, 550, 581, 593R; P Mgt 582.
- MISM requirements: I Sys 531, 552; 18 hours from any approved MSM courses not already selected or from other courses as approved by the graduate program coordinator.

Financial Assistance

The Information Systems Department utilizes the Marriott School's financial aid provisions. Qualified students can receive aid from the following: the Marriott School Scholarship Fund, private scholarship donations, assistantship awards, and loan assistance.

Scholarships. The Marriott School currently has over 150 private scholarships. Information and on-line applications are available at http://marriottschool.byu.edu/aid. In addition, limited scholarship funds are available through the department.

Assistantships. Research and teaching assistantships are available for qualified second-year students.

Loans. Several loans are available for Marriott School students:

- Marriott School Loans: available to full-time Marriott School day students. Marriott School loans are handled on an individual basis, dependent on financial need and standing within the participating program.
- BYU Short-Term Loans: available for up to the cost of tuition only.

More information on and applications for these loans are available from the BYU Financial Aid Office, A-153 ASB, (801) 422-4104, e-mail: financial_aid@byu.edu.

Resources and Opportunities

The N. Eldon Tanner Building. The Tanner Building, which houses the Marriott School, is one of the finest facilities of its kind. The dramatic seven-story atrium at the building center is equipped with study tables with Ethernet connections and houses the Marketplace Cafe. Surrounding the atrium are lecture and seminar rooms, study rooms, and a computer laboratory.

The Marriott School of Management. The Marriott School is recognized as one of the outstanding management schools in the nation. Faculty are actively engaged in research and publication, and they fill leadership positions in a number of national professional organizations. The school has developed...
innovative educational programs that include internships, executive visitation programs, special student consulting and research projects, and other activities designed to bring management education and training closer to management practice. This is accomplished, in part, through the Marriott School’s National Advisory Council, and the Executives on Campus Program.

National Advisory Council. Consisting of sixty-five to seventy prominent business and government executives, the National Advisory Council lends major support to the Marriott School. Students benefit by interacting with council members in special campus lectures and seminars and by visiting or working with these executives in their respective organizations. Furthermore, the council assists students with placement opportunities, helps develop funding sources for scholarships, and provides professional development for faculty members.

The Executives on Campus Program. This program gives students an opportunity to interact with distinguished business and government leaders who come to campus. These executives visit classes and meet with student organizations as well as participate in the Executive Lecture Series and Entrepreneurship Lecture Series.

COURSE DESCRIPTIONS

Information Systems

520. Spreadsheet Automation and Modeling. (3) Prerequisite(s): ISys 201 or equivalent.

Programming in Excel VBA; automating common tasks; retrieving data from web servers; building optimization models.

531. Enterprise Infrastructure. (3) Prerequisite(s): Admission to MISM program; ISys 412 or equivalent.

Principles of IT enterprise infrastructure management, including platform choices, functionality, cost, security, deployment, controls, flexibility, and adaptability.

532. Information Architecture. (3) Prerequisite(s): Admission to MISM program; ISys 413 or equivalent.

Principles of enterprise systems development; middleware and its applications; enterprise system security and control.

533. Advanced Data Communications. (3) Prerequisite(s): ISys 412 or 523; or equivalent.

Design, management, and strategic use of local area networks (LANs), wide area networks (WANs), intranets, and the Internet to solve business problems.

542. Web Development. (3) Prerequisite(s): ISys 403 or equivalent.

Web development techniques, including server-side and client-side processing, database integration, and advanced browser techniques.

552. Management Consulting and Projects. (3) Prerequisite(s): BSIS core or admission to a Marriott School graduate program.

Projects-oriented course offering both in-class instruction and hands-on experience doing consulting jobs for businesses in Utah.

560. Information Systems Security. (3) Prerequisite(s): ISys 202 and 412, or concurrent enrollment in ISys 523.

Security and control for e-business, emphasizing methods of ensuring confidentiality, authentication, message integrity, non-repudiation, access control, digital signatures, and electronic payment mechanisms.

564. Process Innovation Management Consulting. (3) Prerequisite(s): Marriott School Graduate Core.

Gaining real-world experience with Process Innovation Consulting; learning practical process management skills while synthesizing learning from foundational business management and information systems courses.

565. Digital Evidence for Business Investigations. (3) Discovery, retrieval, preservation, organization, and presentation of digital evidence to support business and legal investigations.

571. Introduction to Academic Research in Information Systems. (3) Prerequisite(s): Admission to MISM program, PhD track.

Conducting academic information systems research, including philosophy of science, causality, validity, research proposal development, and research methods.

572. Research Seminar. (3) Prerequisite(s): ISys 571 or instructor’s consent.

Empirical and quantitative research methods; information systems research publication process; hands-on practice performing research, writing and submitting academic papers.

590R. Seminar in Information Systems. (0.5-3) Special topics by announcement.

599R. Academic Internship: Information Systems. (0.5-3) Approved on-the-job experience.

Applying classroom theory and technology to actual problems; exploring career opportunities; learning role of information systems in business environment.

693R. Readings and Conference. (0.5-3) Prerequisite(s): SOAIS director’s consent.

In-depth study one-on-one with chosen professor on topic of mutual interest not currently covered in an existing course.
INSTRUCTIONAL PSYCHOLOGY AND TECHNOLOGY

FACTOR


Ball, Nicholas, Assistant Professor. PhD, University of Minnesota, 2005. Information Systems.


Hansen, Gary W., Associate Professor. PhD, Indiana University, 1974. Information Systems.


Liddle, Stephen W., Associate Professor. PhD, Brigham Young University, 1995. Information Systems.


McKell, Lynn J., Professor. PhD, Purdue University, 1973. Information Systems.

Meservy, Rayman D., Associate Professor. PhD, University of Minnesota, 1985. Audit; Information Systems.


INSTRUCTIONAL PSYCHOLOGY AND TECHNOLOGY

Chair: Andrew S. Gibbons

Graduate Coordinator: Richard Sudweeks

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Provo, UT 84602-5089
(801) 422-3674
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www.byu.edu/ipt/

THE PROGRAM OF STUDIES

Instructional psychology and technology is a branch of educational study concerned with the ideas, principles, and theories related to the improvement of learning. Students of instructional psychology and technology seek to identify and implement improvements in instruction while endeavoring to understand the principles that govern these improvements. These solutions are implemented in educational settings in public schools and universities, business, industry, the government, the military, the community, and the church.

The objective of the Department of Instructional Psychology and Technology is to enhance learning by improving instruction and teaching. In partnership with others, the department will (1) search for knowledge that improves instruction, (2) apply knowledge and technology to solve instructional problems, and (3) empower students with knowledge and skills in instructional development, research, evaluation, and measurement.

Students in each degree program are required to take basic courses in the following areas of disciplined inquiry in instruction: design and development, research, measurement, and evaluation. They are also required to acquire collateral tools from other disciplines such as statistics, computer science, human resource management, and communications. Specialized courses are offered to deepen the candidate’s knowledge and theoretical sophistication. Professional skills are developed through extensive project and internship experiences offered in the schools, church, home, and community.

The Department of Instructional Psychology and Technology offers two degrees: Instructional Psychology and Technology—MS and Instructional Psychology and Technology—PhD.

Approximately thirty students are enrolled in the MS program and fifty students in the PhD programs. Full-time students should be able to complete an MS degree within approximately two years; full-time PhD students with an MS in instructional psychology and technology should be able to complete the PhD within three years.

Master's and doctoral students in other departments wishing to take a minor in instructional psychology and technology should counsel with the instructional psychology and technology faculty member appointed to their graduate committee in selecting the appropriate courses (9 hours of course work required for a master’s minor, 12 hours for a doctoral minor).

Instructional Psychology and Technology—MS

The MS program prepares students to assume professional positions in instructional design and evaluation or to pursue a doctorate in these fields. All MS students will be required to complete at least 6 credit hours each fall and winter semester to remain enrolled in the program.

Admission and Entry.

Fall semester, spring and summer term entry only.

• Semesters of entry and application deadlines: all application materials must be completed and on file in Graduate Studies by February 1 to be considered for admission to graduate study the coming spring or summer term or fall semester.
Application requirements: letter of intent and three letters of recommendation.

Entrance examination: GRE general test. When taking GRE, use institutional number R 4019. Application will not be considered without GRE scores.

Prerequisite: (3 hours) EdLF 517 or Engl 316 (must be completed by end of first year in program).

Requirements for Degree.

- Credit hours (minimum 36): 30 course work hours plus 6 thesis hours (IP&T 699R) or 6 project hours (698R).
- Required courses (19 hours): IP&T 520, 550, 564, 652, 661.
- Emphasis: 7 hours to be determined in consultation with graduate committee.
- Internship: 3 hours (IP&T 599R).
- Seminar: 2 hours (IP&T 690R).
- Thesis: 6 hours (IP&T 699R) or project: 6 hours (IP&T 698R).

**Instructional Psychology and Technology—PhD**

The PhD program prepares students to assume positions of leadership in instructional design and evaluation. Graduates may take positions as faculty at colleges and universities, direct other instructional designers in private or public institutions, or work as an individual consultant.

The instructional psychology and technology doctoral program is designed for full-time study. All PhD students will be required to complete the equivalent of 9 credit hours each fall and winter semester to remain enrolled in the program.

**Admission and Entry.**

Fall semester, spring and summer term entry only.

- Semesters of entry and application deadlines: all application materials must be completed and on file in Graduate Studies by February 1 to be considered for admission to graduate study the coming spring or summer term or fall semester.

**Requirements for Degree.**

- Credit hours (minimum 72): 54 course work hours plus 18 dissertation hours (IP&T 799R).
- Required courses (16 hours): IP&T 520, 564, 620, 652, 661.
- Specialization: 18 hours as determined in consultation with graduate committee.
- Internship: 12 hours (IP&T 599R).
- Seminar: 2 hours (IP&T 690R).
- Two projects: 6 hours.
- Residence: the equivalent of 9 credit hours each fall and winter semester.
- Examinations: (A) comprehensive written examination; (B) oral defense of dissertation.
- Time limit: all requirements for the doctorate must be completed within an eight-year period.

**Financial Assistance**

Financial assistance is available mainly in the form of paid internships through the Instructional Psychology and Technology Department, other departments within the university, and various agencies external to the university. Limited funds are available for partial tuition scholarships for students with emergency financial needs. Other financial aid is available through the university.

**Resources and Opportunities**

Instructional psychology and technology utilizes the David O. McKay Education Building for the majority of its classrooms and resource centers.

The school and department provide extensive microcomputer and multimedia facilities for student use. Macintosh and Windows computers are available in various computer laboratories. Most of these computers are connected to the university's broad-band network, which provides convenient access to a large number of computer-based software tools, such as SPSS and SAS statistical analysis programs, the university library card catalog, the ERIC index, and the Internet.

For a more detailed description of the program requirements, see the department Web site at www.byu.edu/ipt/.

**Course Descriptions**

514R. Special Topics in Instructional Psychology. (0.5-3) Topics vary. Topics may include technical applications, effective teaching, student assessment.

515R. Special Topics in Instructional Psychology and Technology. (0.5-3)

Integration of empirical research and statistical analysis in evaluation. Designing, conducting, analyzing, reporting, and critically evaluating research studies.

560. Microcomputer Materials Production. (3)
Prerequisite(s): IP&T 286 or 515R (Microcomputers in Schools).
Designing, programming, and debugging educational applications of microcomputers using a high-level computer language.

564. Instructional Design. (3)
Identifying instructional problems; specifying objectives, instructional strategies, and media; analyzing learning outcomes; developing instructional materials and assessment instruments; validating instructional systems.

599R. Academic Internship. (0.5-6)
Prerequisite(s): Departmental consent.

620. Principles of Learning. (3)
Improving classroom learning through understanding underlying psychological principles and theories.

650. Quantitative Reasoning. (3)
Prerequisite(s): IP&T 550.
Use of analysis of variance and multiple regression/correlation in analyzing and interpreting results of educational research and evaluation.

652. Assessing Learning Outcomes. (4)
Prerequisite(s): IP&T 550.
Selecting and constructing instruments and procedures for assessing affective, behavioral, and cognitive outcomes of education.

654. Computers in Educational Measurement. (0.5-4)
Prerequisite(s): IP&T 652 or instructor's consent.
Types of computerized measurement and assessment methods and item forms, as well as their development, delivery, and statistical theory.

655. Instructional Print Design and Production. (2)
Prerequisite(s): IP&T 564.
Applying instructional and visual design principles to produce instructional print materials, using computer-based tools.

656. Qualitative Inquiry in Education. (3)
Introduction emphasizing assumptions made, methods used, and standards for judging qualitative studies

657R. Measurement Project. (0.5-3)
Prerequisite(s): IP&T 652, Stat 510; or equivalents.
Designing, conducting, and reporting a comprehensive measurement project.

661. Introduction to Evaluation in Education. (3)
Introduction to the nature, purposes, and functions of educational evaluation in making judgments about teachers, instructional materials, academic programs, curricula, and school systems.

664. Advanced Instructional Design. (3)
Prerequisite(s): IP&T 564.
Advanced laboratory in instructional system design, production, formative evaluation, packaging, and implementation. Systematic critical analysis of all phases of development.

665. Instructional Visual/Video Production. (4)
Designing, producing, and integrating audio, visual, and video instructional materials. Applying digital and other technologies in audio recording and mixing, and photographic and video production.

667R. Evaluation Project. (0.5-3)
Prerequisite(s): IP&T 661.
Designing, conducting, and reporting a comprehensive project in evaluation.

674R. Quasi-Experimental Studies. (0.5-3)

677R. Research Project. (0.5-3)
Prerequisite(s): IP&T 672.
Designing, conducting, and reporting a comprehensive project in research.

682. Project and Instructional Resource Management. (3)
Managing research, development, and evaluation projects in public schools and higher education. Planning, budgeting, supervising, managing personnel, and scheduling.

687R. Development Project. (0.5-3)
Prerequisite(s): IP&T 564.
Designing, conducting, and reporting a comprehensive project in development.

690R. Seminar. (0.5-3)
Check current class schedule for seminar topics.

692R. Advanced Topics. (0.5-3)

693R. Directed Individual Study. (0.5-3)
Prerequisite(s): Instructor's consent.

698R. Master's Project. (0.5-6)

699R. Master's Thesis. (0.5-6)

750. Research Synthesis and Conceptualization. (3)
Prerequisite(s): IP&T 550.
Survey of major research problems, questions, and theories that have been investigated in instructional psychology and technology. Preparing critical, integrative synthesis of completed research; conceptualizing problems for further inquiry. Research prospectus required.

752. Measurement Theory. (3)
Prerequisite(s): IP&T 652.
Classical and modern models for measuring human attributes. Issues related to reliability, validity, item selection, scoring, standard setting, and test equating. Use of item response theory and generalizability theory.

756. Advanced Qualitative Inquiry in Education. (3)
Prerequisite(s): IP&T 656.
Emerging issues, theories, practices, and problems associated with qualitative inquiry in education.

760R. Advanced Computer-Based Instruction. (3)
Prerequisite(s): IP&T 560.
Current issues, research, and applications of computer technology in education. Advanced programming,
The Program of Studies

The College of Humanities offers one collegewide degree in language acquisition: Language Acquisition and Teaching—MA.

Generally not more than two students per language specialty are admitted to the language acquisition program per year. Most students complete the degree within two years.

Language Acquisition and Teaching—MA

This program offers professional preparation to students seeking careers in applied linguistics, foreign language education, computer-assisted language learning and instruction, and other related areas.

Students become familiar with current theories of second language acquisition and develop basic skills in applying that knowledge to teaching, testing, and classroom-oriented research in their language of specialization.

The program is flexible, with emphasis varying according to students’ interests and faculty members’ expertise. It is ideally suited to the needs of the following types of students:

- Students who have completed undergraduate majors in foreign languages, applied linguistics, or related fields, and who are preparing for careers in academic settings.
- Foreign language teachers who wish to further their professional education and acquire more specialized competency in their fields.
- Students seeking the necessary preparation for advanced research or PhD work in the field of second language acquisition and instruction, including related technology applications.

Students are admitted to the program with a specific language specialization in Arabic, Chinese, French, German, Japanese, or Russian.

Admission and Entry.

- Semesters of entry and application deadlines: fall, February 1 (U.S. and international).
- Application requirements: participate in an oral proficiency interview conducted in the language of specialization. (The interview may be carried out in person or by telephone). Submit an example of applicant’s scholarly writing in English.
- Entrance examinations: GRE general test and TOEFL (international applicants only).
- Prerequisites: -Baccalaureate degree.
- Strong background and advanced proficiency in the applicant’s language of specialization.

Requirements for Degree.

- Credit hours (34): minimum 28 course work hours and 6 thesis hours (699R) plus prerequisite courses—Ling 330 and 577 or equivalent.
- Required courses: Ling 500, 540, 595, 600; 641 or 660; 677.
- Elective courses: 3 hours of advanced linguistic study of the language of specialization, plus 9 hours as approved by the graduate committee for a total of 12 hours.
- Additional language requirement: competency (at least 12 hours or 200+ level competency) in a language other than English in addition to the language of specialization; or 12 hours of approved computer science, computers and the humanities, or computing and information courses; or, with the approval of the candidate’s graduate committee, a total of 12 hours selected from these two categories of courses.
FACULTY

Over twenty faculty members are associated with the program and are available for consultation. See faculty names and research interests under the Linguistics and English Language section of this catalog and the various language departments. The primary advisor is usually associated with one’s language specialty.

FINANCIAL ASSISTANCE

Fellowships and full- or partial-tuition scholarships are available. Applicants may also contact the respective language department directly to apply for teaching assistantships.

RESOURCES AND OPPORTUNITIES

Humanities Technology and Research Support Center. Students in the language acquisition program utilize the Humanities Technology and Research Support Center for world-class computer-assisted language instruction and research.

The Foreign Language Student Residence. Students who desire a more intensive language study experience and practical application of the language under the direction of faculty and native residents may apply to live in the Foreign Language Student Residence. All activities in the individual apartments in the residence are conducted in the foreign language. Housing is available for men and women in the languages of specialization. Graduate students may participate in this program as students or as senior residents.

For a more detailed description of the graduate program requirements, send for a copy of the handbook.

COURSE DESCRIPTIONS

See course descriptions under the Linguistics and English Language section of this catalog and under the desired area of specialization.

THE PROGRAM OF STUDIES

Students admitted to the highly competitive programs of the Law School receive a breadth and depth of training that prepare them to function in the wide range of activities that occupy the professional lawyer’s life. Students gain firsthand experience with a variety of teaching and learning methods, among them Socratic or inductive teaching, problem solving, seminars, individual research, and clinical experience.

The specific objective of the curriculum is to maximize the student’s mastery of legal reasoning and legal method—in addition to teaching a core of the basic substantive rules of law and imparting an appreciation for its institutions and traditions.

Students are taught to analyze complex factual situations; to separate the relevant from the irrelevant; and to reason inductively, deductively, and by analogy. Students are also schooled in the arts of written and oral advocacy.

Legal education at this school does not include the sponsorship of particular political objectives, except as may flow from loyalty to the United States Constitution and from a commitment to the highest ideals of personal character and individual liberty. These make up the foundation upon which an enduring legal system must rest.
Two degrees are offered through the J. Reuben Clark Law School: Law—JD and Comparative Law—LLM. The university has also approved programs whereby qualified students can obtain a concurrent master’s degree in business administration, public administration, accountancy, education, or public policy while pursuing a law degree.

The Law School seats approximately 150 students each year in its first-year class. The juris doctorate (JD) may be completed no earlier than five fall or winter semesters and no later than sixty months after a student has begun law study at an ABA-approved law school. The LLM students receive their degree on completion of 24 credit hours earned during at least two semesters in residence.

**Law—JD**

The J. Reuben Clark Law School offers a course of graduate professional study leading to the juris doctorate (JD) degree. Additional information about legal education, admissions standards, and procedures—including information about the Law School Admission Test (LSAT) and registration with the Law School Data Assembly Service (LSDAS)—can be obtained from the admissions office of the Law School or on our Web site at http://www.law2.byu.edu/admissions/index.php.

**Admission and Entry.**

- Semesters of entry and application deadlines: fall, March 1. (Admissions are for fall semester only.) By the posted deadline, all parts of the completed application must have been received by the Law School Admissions Office, 340 JRCB, Provo, UT 84602-8000. To be considered complete, application must include the following:
  - Completed official Law School application form.
  - Check or money order for $50 payable to Brigham Young University. (This is an application fee and is neither refundable nor credited toward tuition.)
  - Two letters of recommendation, including one academic letter and one from a supervisor of work or service (including church, military, or other).
  - Report of the applicant’s interview with an LDS bishop, branch president, or mission president; religious leader of another faith; or judge of a court of general jurisdiction indicating the applicant’s willingness to comply with the BYU Honor Code.
  - LSDAS Law School Report that includes transcripts and LSAT scores.
  - A personal statement.
  - Résumé.

  - Application requirements: to be admitted to the Law School, an applicant must be a college graduate who has attained an acceptable LSAT score, has excelled academically, and has demonstrated an ability to add value to the legal profession through exceptional life experience. In addition, applicants must meet the general university admission requirements, including the personal standards required of all students.

  - Prerequisite: a bachelor’s degree is required to ensure that the entering student has the soundest possible foundation for the study of law. Because the study of law ranges so broadly, no specific undergraduate major is required. The greater the student’s diversity with the human experience, the better.

  - Skills: ability to analyze, reason, read carefully, think in abstract terms, and express thoughts clearly and precisely.

**Requirements for Degree.**

- Credit hours (90): credits toward the JD degree may be completed no earlier than five fall or winter semesters and no later than sixty months after a student has begun law study at an ABA-approved law school.

- Required courses: the following first-year courses are required for graduation: Torts, Contracts, Civil Procedure, Criminal Law, Property, Introduction to Legal Research and Writing, Introduction to Advocacy, Perspectives on Law, and Structures of the Constitution. Each student will then be required to take Professional Responsibility during the second or third year.

- Substantial paper: each student will be required to prepare, during his or her second or third year, a substantial paper of satisfactory quality.

- Professional skills requirement: each student must complete at least two credit hours of extern-ship credit or at least one of the second-year or third-year courses designated as a “Professional Skills Course.”

- Residency requirement: graduation requires six regular semesters in residence. Enrollment in summer programs can reduce the number of regular semesters from six to five.

- Graduation interview: to be held with the Law School registrar four months prior to graduation.

**Comparative Law—LLM**

The J. Reuben Clark Law School created the Master of Law (LLM) program in 1988 to provide an opportunity for lawyers trained in jurisdictions outside the United States to study the U.S. legal system. The program provides maximum exposure to the U.S. legal system and interaction between master of law students and students seeking the juris doctorate degree. Students obtain a solid foundation in the basic principles of U.S. law while being allowed the flexibility to pursue personal academic interests. To ensure a superior educational experience for students in the program, admission is generally limited to six to eight students per year.

The master of law (LLM) degree is conferred upon successful completion of a minimum 24 credit hours earned during at least two semesters in residence following completion of a JD degree or its equivalent outside the United States.

**Admission and Entry.**

- Semesters of entry and application deadlines: fall, February 1.
(Admissions are for fall semester only.) By the posted deadline, all parts of the completed application must have been received by the Law School Admissions Office. To be considered complete, the application must include the following:

—Completed application on the official Law School application form.
—Check or money order for $50 payable to Brigham Young University. (This is an application fee and is neither refundable nor credited toward tuition.)
—Two completed evaluations from (1) a faculty member who taught the applicant in law school courses and (2) one other person who has supervised the applicant’s academic or professional work or service.
—Report of the applicant’s interview with an LDS bishop, branch president, or mission president; religious leader of another faith; or judge of a court of general jurisdiction indicating the applicant’s willingness to comply with the BYU Honor Code.
—Official transcripts of the applicant’s academic record listing courses and corresponding grades and, if available, a statement of rank in class. Applicants are required to submit all application materials through the Law School Admission Council Data Assembly Service which can be accessed at www.lsac.org.
—Evidence of English Language Proficiency: All applicants whose first language is not English and who have not earned an equivalent of a four-year bachelor’s degree in the United States or from an English-speaking country must score a total IELTS band score of at least 7.0, with no band score below 6.0 on each module; at least 243 on the computer-based TOEFL test (590 if paper-based); or at least 96 on the TOEFL iBT, with a minimum score of 22 in the Speaking section and a minimum score of 21 in other sections of the iBT.
—Written statement explaining the applicant’s reasons for wanting to pursue postgraduate studies in law and the applicant’s career plans.
—Official verification of admission, or eligibility for admission, to the practice of law in the applicant’s native country.
—Proof of the applicant’s financial capability to be self-supporting while enrolled in the Law School.

Application requirements: an applicant for admission to the LLM program must have completed a bachelor of law in a country other than the United States and be certified or eligible to be certified to practice law in that country. In addition, applicants must meet the general university admission requirements, including the personal standards required of all students.

Requirements for Degree.

• Credit hours (24): credits toward the LLM degree must be earned during at least two regular BYU Law School semesters.
• Required courses: each student will be required to complete Introduction to American Law, as well as Legal Research and Writing during the fall semester. Additionally, each student is required to complete one of the regular first-year courses in the JD program. The course chosen to fulfill this requirement is determined by the student in consultation with his or her faculty-appointed advisor.
• Written thesis: a student may earn up to 6 credit hours for a written thesis project supervised by an appointed thesis advisor and defended before that advisor and two additional readers. Although the written thesis is encouraged, it is not required for completion of the LLM degree.
• The student chooses the remainder of his or her curriculum from the regular juris doctor course offerings.

Joint Law and Management Degrees—JD/MBA, JD/MPA, and JD/MAcc

The Law School and the Marriott School of Management have approved arrangements whereby qualified students may earn joint degrees from the two schools in four years of full-time graduate study. Students may earn a juris doctor (JD) degree and either a master of business administration (MBA), master of public administration (MPA), or master of accountancy (MAcc) degree. Candidates must satisfy the admission requirements for and be admitted to each program separately.

Joint Law and Master of Education Degree—JD/MEd

The Law School and the McKay School of Education have approved arrangements whereby qualified students may earn a joint degree from the two schools. Students may earn a juris doctor (JD) degree and a master of education (MEd) degree. Candidates must satisfy the admission requirements for and be admitted to each program separately.

Joint Law and Master of Public Policy Degree—JD/MPP

The Law School and the Public Policy Graduate Program have approved arrangements whereby qualified students may earn a joint degree from the two programs in four years of full-time graduate study. Students may earn a juris doctor (JD) degree and a master of public policy (MPP) degree. Candidates must satisfy the admissions requirements for and be admitted to each program separately.

Credit for Other Nonlaw Courses

In special cases the Law School will accept credit earned in other graduate programs offered by the university. The Law School has details about specific programs.

FINANCIAL ASSISTANCE

Some scholarship and loan funds are available to law students. Those interested in these opportunities should inquire at the Law School Admissions Office and the BYU Financial Aid Office.

Tuition. Since a significant portion of the cost of operating the Law School comes from the tithes of The Church
of Jesus Christ of Latter-day Saints, students and the families of students who are tithe-paying members have already made a significant contribution to the university and are thus charged a lower tuition than non-members. This disparity is similar to the higher tuition charged by law schools of state universities to nonresidents.

Annual tuition: $9,240 LDS
$18,480 non-LDS

RESOURCES AND OPPORTUNITIES

J. Reuben Clark Law School Building. The J. Reuben Clark Law School building is located near the eastern edge of campus. Its five floors house classrooms with electrical connectivity to each student seat, wireless capabilities from all locations within the building, faculty offices, and the law library.

Howard W. Hunter Law Library. The Howard W. Hunter Law Library contains approximately 500,000 volumes or equivalents available for student and faculty use. In addition to offering the latest in technological facilities and services, the library also provides individual study carrels with hookups for computer access to networks, as well as study rooms for group use. Law students also have access to the holdings in the university library, the Harold B. Lee Library.

Cocurricular Programs. Law students publish the Brigham Young University Law Review, the BYU Journal of Public Law, the Brigham Young University Education and Law Journal, and the BYU International Law and Management Review. Law students also participate in the Moot Court Board of Advocates and Trial Advocacy programs.

Externship Program. This program offers an opportunity for students to participate in practical training with private law firms, the judiciary, governmental offices, or international regional offices of legal counsel for The Church of Jesus Christ of Latter-day Saints in many foreign nations.

Student Organizations. Within the Law School, students may participate in a number of organizations, among them the Student Bar Association, the Alternative Dispute Resolution (ADR) Society, the American Constitution Society for Law and Policy (ACS), the Asian Legal Society, the Asian Pacific American Law Students Association (APALSA), the Federalist Society, the Government and Politics Legal Society (GPLS), the International Law Society (ILS), the Latino/a Law Student Association (LALSA), the Minority Law Student Association (MLSA), the Native American Law Student Association (NALSA), the National Resources Law Society, Phi Alpha Delta, Phi Delta Phi, the Public Interest Law Foundation (PILF), the Student Intellectual Property Law Association (SIPLA), the Sports and Entertainment Law Society (SpEnt), and the Women’s Law Forum. For spouses of married law students there is Law Partners, and for single law students there is the Private Practice Society.

COURSE DESCRIPTIONS

First Year Courses

Note: Some courses may not be offered every year.

505. Torts. (4)
Prerequisite(s): Admission to law school.
Study of the judicial process in civil actions for damages or equitable relief for physical, appropriational, and defamatory harms to personality, property, and relational interests, with some consideration of alternative reparation systems such as workers’ compensation.

510. Contracts. (4)
Prerequisite(s): Admission to law school.
Examination of the promises enforced by law, and the nature of the protection given. Inquiry made into the formation, performance, and discharge of contracts; their assignment, termination, and modification; and the variety, scope, and limitations on remedies. Attention will be given to Article 2 of the Uniform Commercial Code.

515. Civil Procedure. (4)
Prerequisite(s): Admission to law school.
Basic study of the operation of courts, including an introduction to the organization of state and federal courts and relationships between them. Topics include: jurisdiction over persons, things, and subject matter; venue; the scope of litigation as to claims, defenses, and parties; pleading, pretrial motions, discovery, and pretrial conferences; trials and the functions of judges, juries, and lawyers; appeals and the role of appellate courts; and the enforcement and finality of judgments and decrees.

520. Property. (4)
Prerequisite(s): Admission to law school.
Inquiry into the nature of “property” and “ownership” of land and structures on land and the ways in which ownership may be established, restricted, transferred, and divided among various persons.

525. Criminal Law. (3)
Problems in defining what conduct should be subjected to criminal penalties; the limitations of criminal law as a means for prevention and control of undesirable conduct.

530. Structures of the Constitution. (3)
Prerequisite(s): Admission to law school.
The constitution’s distribution of sovereign power between the federal government and the states; its allocation of federal sovereign power among Congress, the president, and the judiciary.
540. Perspectives on Law. (3)
Prerequisite(s): Admission to law school.

One or more accounts of the Anglo-American legal system, such as alternative dispute resolution, American legal history, comparative law, or jurisprudence. Includes the principal criticisms of the accounts studied and is designed to provide first-year students with multiple perspectives and tools with which to critically analyze existing law.

545. Introduction to Legal Research and Writing. (3)
Prerequisite(s): Admission to law school.

Introduction to tools and techniques essential to law practice and legal scholarship: legal analysis, research using print sources, and objective writing. Student will write three predictive office memoranda based on library research and complete a series of legal research quizzes and a legal research final exam.

546. Introduction to Advocacy. (2)
Prerequisite(s): Law 545.

Focuses on appellate legal writing and oral advocacy. Student will prepare an appellate brief and orally argue the case in the first-year moot court competition. Also includes training for online legal databases and introduction to administrative law and legislative history research.

549. Professional Seminar. (0.5)
Prerequisite(s): Admission to law school.

The intersections of law, religion, values, and professionalism; relations between legal education, legal system, practice of law, and roles of lawyers.

550. Professional Development Lecture Series 1. (0.5)
Prerequisite(s): Admission to law school.

Determining which career path to pursue. Practicing attorneys discuss the nuts and bolts of areas of practice.

551. Professional Development Lecture Series 2. (0.5)
Prerequisite(s): Admission to law school.

Determining which career path to pursue. Practicing attorneys discuss the nuts and bolts of areas of practice.

552. Professional Development Skills Training. (0.5)
Prerequisite(s): Admission to law school.

Creating resumes, business correspondence, and marketing plans; effective interviewing and networking; incorporating technology and published resources in the job search.

599R. Externship. (1-12)
Prerequisite(s): First-year law courses.

554. Legal Writing. (2)
Prerequisite(s): First-year law courses.

Resources informal logic brings to ability to evaluate the work of judges; introduction to logical reasoning, fallacies, and biasing influences.

600. Adjudication: Law and Logic. (2)
Prerequisite(s): First-year law courses.

Advanced legal research sources and methodologies.

601. Advanced Legal Research. (2)
Prerequisite(s): First-year law courses.

Advanced legal research sources and methodologies.

602. Administrative Law. (3)
Prerequisite(s): First-year law courses.

Examination of the administrative process: why administrative agencies are created, how they obtain and use information, what proceedings (rulemaking/adjudication) agencies can commence, and what controls (political/judicial) over agency action exist.

603. Criminal Procedure. (3)
Prerequisite(s): First-year law courses.

Problems in administering a system of criminal law; constitutional and policy limitations upon public officers in dealing with suspected, charged, and convicted offenders.

604. Advanced Legal Writing. (2)
Prerequisite(s): First-year law courses.

Study and application of sound writing techniques that are most challenging for lawyers. Extensive writing, editing, and classroom participation required.

605. Antitrust. (3)
Prerequisite(s): First-year law courses.

Development of legal doctrine under the Sherman Act and supplemental legislation, including price fixing, division of market, monopolization, mergers, tying and exclusive dealing arrangements, boycotts, and special relationships between principles of patent and antitrust law. Emphasis: the relationships between principles of law and economics, examined in the context of certain key cases.

606. Anglo-American Legal History. (2)
Prerequisite(s): First-year law courses.

Survey of the legal systems and values that influenced Western civilization, with emphasis on the history of Anglo-American common law.

607. Ancient Laws in the Bible and Book of Mormon. (3)
Prerequisite(s): First-year law courses.

Comparative study of selected legal topics in the law codes of the Sumerians, Babylonians, Hittites, Assyrians, and Israelites, as well as legal cases in the Book of Mormon and the New Testament.

608. Law of Debtors and Creditors. (3)
Prerequisite(s): First-year law courses.

Exploration of our human condition as debtors and creditors.

609. Law and Religion. (3)
Prerequisite(s): First-year law courses.

Appropriateness of public action based on religious belief, with specific application to questions of abortion, same-sex orientation, gender discrimination, and pornography.
610. Business Associations. (3)
Prerequisite(s): First-year law courses.
Introduction to business associations, agency, uniform partnership acts, the essentials of corporate formation, shareholders rights, special problems of closely held businesses, preemptive rights, etc.

611. Advising Closely Held Business. (2)
Prerequisite(s): First-year law courses; Law 641.
Advanced work in partnerships, corporations, and federal taxation in the context of business planning and counseling. Based on readings and problems that consider a broad range of matters commonly faced by lawyers who advise closely held businesses, including: drafting partnership agreements, determining whether and how to incorporate, organizing the closely held corporation and preparing basic corporate documents, counseling the owners of an ongoing corporate business, working with accountants and other professional business advisors, arranging business financing, getting earnings out of a corporate business, forming professional corporations, and avoiding common malpractice and ethical problems. Course grade will be determined from performance on a series of document-drafting exercises.

613. Community Lawyering. (3)
Prerequisite(s): First-year law courses.
Christian reconstruction of the lawyer’s role in public life, especially how that role is performed among the disadvantaged.

614. Advanced Corporate Tax. (3)
Prerequisite(s): Law 640, 641.
Selected federal tax problems with respect to forming a corporation; federal taxation of corporate acquisitions, divisions, and capital restructurings.

615. Secured Transactions. (3)
Prerequisite(s): First-year law courses.
All aspects of security in personal property (personal property includes everything except land). Problems and legal principles relevant to the creation of the security interest, to its perfection, to priorities between competing security interests and between a security interest and other kinds of property interest, to payment and redemption, and to realization procedures. Article 9 of the Uniform Commercial Code.

616. Commercial Paper. (3)
Prerequisite(s): First-year law courses.
Negotiable instruments (checks, drafts, notes) under Articles 3 and 4 of the Uniform Commercial Code; letters of credit and electronic transfers.

617. Comparative Law. (3)
Non-common-law legal tradition, emphasizing civil law. Legal traditions of Islamic and socialist countries.

618. Community Property. (2)
Prerequisite(s): First-year law courses.
Community property: the basic concept and underlying policies; initiation and existence of a marital community; property capable of community ownership; classification of property as community or separate; and property management and control

619. Conflicts of Law. (2-3)
Prerequisite(s): First-year law courses.
Jurisdictional issues, choice of law, and recognition of judgments in cases involving interstate and state-federal conflicts.

620. The Fourteenth Amendment. (3)
Prerequisite(s): first-year law courses.
Express and implied individual rights guaranteed by the privileges or immunities, equal protection, and due process clauses of the Fourteenth Amendment.

621. The First Amendment. (3)
Prerequisite(s): First-year law courses.
Rights guaranteed by the speech, press, and religion clauses of the First Amendment.

622. Selected Issues in Employment Law. (3)
Prerequisite(s): First-year law courses.
Employment discrimination: benefits, compensation, and hours; workplace safety and health.

623. Business Reorganization Under the Bankruptcy Code. (3)
Prerequisite(s): First-year law courses; Law 608.
Practical analysis of the law and policy underlying business reorganizations in Chapter 11 from filing the petition to confirming the plan.

624. Environmental Law. (3)
Major federal laws relating to environmental protection, including the Endangered Species Act, the Clean Air Act, the Clean Water Act, the National Environmental Policy Act, and CERCLA. Crosscutting issues of environmental and regulatory concern, including strengths and limitations of differing regulatory approaches; role status, agencies, and private litigants in administering and enforcing such laws; extent to which economic analysis is appropriate to formulating environmental policies.

625. Evidence. (3)
Prerequisite(s): First-year law courses.
Law of evidence, including principles governing admissibility of evidence, competency of witnesses, and function of lawyer, judge, and jury in presenting and evaluating evidence.
628. Remedies. (3)
Prerequisite(s): First-year law courses.

General principles and basic rules governing the rich inventory of remedies available through American courts, which cuts across substantive fields and guides the lawyer in fashioning or defending against various remedial schemes in any substantive context. Issues and developments of contemporary importance, including public as well as private law remedies.

629. Advanced Corporation Law. (3)
Prerequisite(s): First-year law courses.

Application of corporation law in complex corporate transactions.

630. Criminal Trial Practice. (2)
Prerequisite(s): First-year law courses.

Develops the art and practical skill of trial advocacy. Typical situations that arise in the trial of a criminal case.

631. Tax Planning for Individuals. (3)
Prerequisite(s): Law 640, 641, 681.

Tax planning techniques involved in accumulating, preserving, and disposing of wealth.

632. Family Law. (3)
Prerequisite(s): First-year law courses.

General survey of laws regulating the creation, continuation, and dissolution of spouse and parent-child relations.

Prerequisite to children and the law and advanced family law.

633. Children and the Law. (2)
Prerequisite(s): First-year law courses; Law 632.

Issues relating to state regulation of parent-child relations, including children’s rights, parent rights, juvenile courts, adoption, health decisions, educational decisions, child abuse and neglect, youth status offenses, and delinquency.

634. Law and Public Education. (2)
Prerequisite(s): First-year law courses.

Constitutional issues of public education: free speech, student conduct, teacher rights and discipline, equal access, special education, home schools, and religion in the public schools.

635. Federal Courts 1. (3)
Prerequisite(s): First-year law courses.

An advanced study of the federal structure of our judicial system, with emphasis on the limits of the federal judicial power and the respective powers of federal and state courts.

Topics studied include the power of Congress to restrict the jurisdiction of federal courts, use of legislative courts, Supreme Court review of state court decisions, federal injunctions of state officers and proceedings, state governmental immunity from federal court litigation, abstention, removal, and habeas corpus. The course also examines sophisticated problems of federal questions and other ‘heads’ of federal judicial power and considers aspects of federal government litigation.

636. Federal Courts 2. (2)
Prerequisite(s): First-year law courses, Law 635.

A continuation of Law 635.

637. Advanced Estate Planning. (3)
Prerequisite(s): First-year law courses, Wills and Estates, Tax 1 and 2, Business Associations.

Effective disposition of wealth by <i>inter vivos</i> gift and testamentary transfer.

638. Contemporary Legal Theory. (3)
Central topics include theories of interpretation, postmodern approaches to law, theories of judicial review; and tensions between autonomy and community in legal theory.

639. International Business Transactions. (3)

Making, regulating, and breaking international business transactions. (1) Formation of international business transactions, focusing on contracting for and financing the international sale of goods, licensing and distributorship agreements, and foreign direct investment. (2) Regulation stage of international business transactions, including the transactional reach of U.S. government regulation, regulation of corrupt payments to foreign officials, international protection of intellectual property, and securities and antitrust aspects of international transactions.

(3) Breaking international business transactions; transnational dispute resolution through arbitration and through transnational litigation in U.S. courts.

640. Federal Taxation 1. (4)
Prerequisite(s): First-year law courses.

Federal personal income tax, with an introduction to business and corporate income tax and federal tax procedure. Examining and understanding statutory, judicial, and administrative tax law and applying the law in solving specific problems.

641. Federal Income Taxation 2. (4)
Prerequisite(s): First-year law courses; Law 640.

Federal income tax consequences flowing from creation, operation, merger, dissolution, and sale of partnerships and corporations; federal tax considerations bearing on choice between conducting a business in partnership or corporate form.

642. Intellectual Property Law. (3)
Prerequisite(s): First-year law courses.

Patent, copyright, and trademark law, with particular attention to the issues common to them and the interrelationship among them in practice.
643. Taxation of Foreign Businesses’ and Investors’ U.S. Income. (3) Prerequisite(s): First-year law courses; Law 640.
Rules governing U.S. taxation of income earned within the U.S. by foreigners. Critique of these rules in light of economic and international law norms.

644. Insurance Law. (3) Prerequisite(s): First-year law courses.
Insurance law including formation, interpretation, and enforcement of the insurance contract; coverage issues, legal aspects of the regulation of the insurance industry.

645. Federal Indian Law. (3) Prerequisite(s): First-year law classes.
Law of the federal government and the states respecting Native Americans and their land. Relationship of European discoverers and Native Americans during colonial period; Native American treaties, executive orders, and agreements; changing United States policy respecting Native Americans; federal, state, and tribal jurisdictions, civil and criminal; tribal courts; Native American hunting and fishing rights, water rights, and civil rights.

646. Jurisprudence. (3)
Basic legal conceptions that pervade the theory of practice and law: the idea of the rule of law itself, the tension between natural law and positivism, rules and discretion, discourse, justice, desert, consent, equality, morality, efficiency, loyalty, and consistency. How these ideas lie at the heart of the legal discipline, and how some of the world’s greatest minds have come to terms with them. Readings drawn from classical and contemporary sources.

647. International Organizations. (3)
Makeup and expanding operations of the UN system. Expanding role of international law on domestic policy.

648. Workers’ Compensation. (2) Prerequisite(s): First-year law courses.
Substance and procedure of workers’ compensation law. Coverage of workers’ compensation system; medical, disability, and death benefits; administration of the system, including integration of workers’ compensation with other accident benefits systems.

650. Real Estate Finance. (3)
Review of real estate finance transactions, including mortgages, trust deeds, installment sales contracts, other mortgage substitutes, receiverships, transfer of real estate security interests, discharge, deeds in lieu of foreclosure, foreclosure, foreclosure sales, redemption, deficiency payments, priorities, mechanics liens, judgment liens, purchase money mortgages, and ground leases.

651. Advanced Appellate Advocacy. (3) Prerequisite(s): First-year law courses.
Written and oral advocacy in the appellate process, including strategy, persuasion techniques, circuit splits, policy argument, standards of review, adverse authority, and counterargument.

652. Legislation. (2) Prerequisite(s): First-year law courses.
Process by which policy is translated into statutory law and how that law is applied and interpreted, emphasizing legislative process, separation of powers, and statutory interpretation.

653. Legal Interviewing and Counseling. (3) Prerequisite(s): First-year law courses.
Theory and techniques of legal interviewing and counseling. Materials drawn from legal, psychological, and related literature.

654. International Law. (3) Prerequisite(s): First-year law courses.
Nature of international law; bases of state jurisdiction; law of sea; law of air space; sovereign immunity; the individual in the international legal system; statehood and recognition of states; diplomatic and consular protection and immunity; international agreements.
660. Professional Responsibility. (2)
Prerequisite(s): First-year law courses.
Ethical and professional responsibilities of practicing lawyers. Model Rules of Professional Conduct.

661. Public Policy Negotiations. (3)
Prerequisite(s): First-year law courses.
Applying negotiation theories and skills to civil rights issues and public law conflicts. For students pursuing careers in public interest law, poverty law, or a public policy-oriented practice (e.g., environmental, education, housing, healthcare issues).

662. Securities Regulation. (3)
Prerequisite(s): First-year law courses.

663. State and Local Government 1. (3)
Prerequisite(s): First-year law courses.
Interrelationship among national, state, and local governments and the powers of each, as well as examination of separation-of-powers principles and impact of political process at state and local level.

664. Taxation of Natural Resources. (3)
665. Origins of the Constitution. (3)
Prerequisite(s): First-year law courses.
Review of drafting and adoption of Constitution and Bill of Rights; development of the ideas of the Constitution--what was intended and why.

666. Wills and Estates. (3)
Prerequisite(s): First-year law courses.
Transfer of property through intestate succession; wills and will substitutes; effect of community property ownership; legal and ethical issues surrounding end-of-life decisions, including living wills, medical directives, and medical powers of attorney; administration of decedents’ estates.

667. Unfair Trade Practices. (2)
Prerequisite(s): First-year law courses.
Various remedies that competitors or dealers may pursue outside of or in addition to antitrust remedies.

668. Legal Negotiation and Settlement. (3)
Prerequisite(s): First-year law courses.
How to develop a coherent approach to legal negotiation. (A) Negotiation analysis: learn the concepts and vocabulary necessary for understanding and communicating with others about negotiation; learn how to build a conceptual framework to critically evaluate the functions, strengths, and weaknesses of various negotiation approaches, and learn to organize and structure negotiation skills as a negotiation profile. (B) Negotiation practice: through participation in increasingly complex negotiation exercises, experiment with various negotiation models within the safe environment of the classroom; gain realistic experience in preparing, negotiating, and evaluating typical legal, business, and public policy issues, and learn to prepare a negotiation discovery map that anticipates issues, keeps the negotiation on track when discussing those issues with opponent, and guides the parties to a mutually satisfying settlement. (C) Negotiation evaluation: through various forms as assessment, engage in reflective learning that involves use of journal entries to reflect upon and improve negotiation comprehension and performance in class and out; examine how psychological and social projections influence expectations, perceptions, and behavior in negotiation; wrestle with moral and ethical dilemmas in negotiation, and improve course content and methods by giving feedback and suggestions.

670. Advanced Real Estate Transactions. (2)
Prerequisite(s): First-year law courses; Law 650.
Development and financing of subdivisions, condominiums, and income properties, as well as the impact of bankruptcy on real estate ownership and financing.
671. Oil and Gas. (2)  
Prerequisite(s): First-year law courses.  
Coverage of the following: nature of interests in oil and gas, oil and gas lease and associated problems, title and conveyancing problems with respect to transfers of oil and gas interests, and pooling and unitization.

672. North American Free Trade Agreement. (2)  
Prerequisite(s): First-year law courses.  
Introduction to NAFTA. Critical issues examined from perspective of Canada, Mexico, and the United States.

673. Selected Issues in Entertainment and Sports Law. (3)  
Prerequisite(s): First-year law courses.  
Introduction to the third largest industry in the United States, entertainment: mass media, movies, music, sports, and theatre. Limited number of legal issues discussed.

674. Law Practice Management. (2)  
Prerequisite(s): First-year law courses.  
The organization of the law firm; the partnership, the professional corporation, and the proprietorship including the partnership or shareholder agreement. The roles of partners/shareholders and associates, particularly with respect to the income production and compensation. One segment examines nonlaw personnel: secretaries, paralegals, and other employees. Another segment addresses the law office itself: equipment, library, layout and design, supplies, and furniture. An important aspect of any office is the effectiveness of its system—both substantive and administrative—and how to implement such systems.

675. U.S. Taxation of U.S. Business and Investors’ Foreign Income. (3)  
Prerequisite(s): Law 640 or concurrent enrollment.  
How the U.S. taxes its own residents on income earned from foreign business and investment activities. Critique of the U.S. approach in light of economic and international law norms.

676. Advising Nonprofit and Tax-Exempt Organizations. (2)  
Prerequisite(s): First-year law courses.  
Practical and theoretical concerns in organizing and representing nonprofit or tax-exempt entities.

677. Social Policy and Feminist Legal Thought. (3)  
Prerequisite(s): First-year law courses.  
Feminist jurisprudence. Various doctrinal strains in development of feminist legal theory and method; applying them to facially neutral legal issues. Rape, domestic violence, employment discrimination, historical and sociological gender treatment, and practical changes in legal profession accompanying influx of greater numbers of women lawyers.

678. Dispute Resolution. (3)  
Prerequisite(s): First-year law courses; Law 668.  
Non-trial-based methods of dispute resolution including negotiation, mediation, arbitration, mini-trials, summary jury trials, and innovative uses of third-party neutrals.

679. State and Local Government 2. (3)  
Prerequisite(s): First-year law courses.  
Trends and perspectives in state and local government, emphasizing state and local control over, and federal limitation on, licensing, land use, and taxation, as well as state and local governmental liability under federal civil rights statutes.

680. Federal Estate and Gift Tax. (3)  
Prerequisite(s): First-year law courses; Law 666.  
Federal estate and gift tax, including basic estate-planning concepts.

681. International Securities Regulation. (2)  
Prerequisite(s): First-year law courses.  
Survey of basic concepts and institutions in the American legal system. For persons who have received their law degree or its equivalent from a university outside the United States.

682. Employee Benefit Plans. (2)  
Prerequisite(s): First-year law courses.  
Qualified and nonqualified plans (pensions, profit sharing, IRAs, ESOPs, medical benefits, etc.), including federal tax qualification issues, Department of Labor regulations, and fiduciary duties.

683. Trusts. (2)  
Prerequisite(s): First-year law courses.  
Legal framework of private and charitable trusts as vehicles for the donation disposition and management of personal wealth both inter vivos and testamentary; emphasizes the nature of trustees’ fiduciary obligations and trust grantors and beneficiaries’ rights and obligations.

684. Water Law. (3)  
Prerequisite(s): First-year law courses.  
State, federal, and international law respecting water resources allocation, development, management, and conservation. Substantial paper on transboundary—shared water resources regulation required.

685. Introduction to American Law. (3)  
Prerequisite(s): First-year law courses.  
Survey of basic concepts and institutions in the American legal system. For persons who have received their law degree or its equivalent from a university outside the United States.

686R. Special Topics in Law. (2)  
Prerequisite(s): First-year law courses.  
U.S. and international religious liberty issues - principles, methodologies, international human rights. Analyzing religious liberties in countries around the world.

700. International Protection of Religious Freedom. (2)  
Prerequisite(s): First-year law courses.  
U.S. and international religious liberty issues - principles, methodologies, international human rights. Analyzing religious liberties in countries around the world.

701. U.S. Taxation of U.S. Businesses’ and Investors’ Foreign Income. (3)  
Prerequisite(s): Law 640 or concurrent enrollment.  
How the U.S. taxes its own residents on income earned from foreign business and investment activities. Critique of the U.S. approach in light of economic and international law norms.
703. Real Estate Development. (3) 
Prerequisite(s): First-year law courses.
Skills course teaching dynamics of real estate development through practical experience. Students select site, pick a use, and complete transactional and planning stages.

704. Immigration Law. (2) 
Prerequisite(s): First-year law courses.
Overview of the powers to regulate immigration law; admission and removal of foreigners; refugee and asylum law; impact of business/employment-based immigration.

705. Civil Trial Practice 1. (2) 
Prerequisite(s): First-year law courses.
Interviewing, drafting, negotiating, and using time efficiently in the context of preparing a legal matter; carrying a case through all stages.

706. Civil Trial Practice 2. (2) 
Prerequisite(s): First-year law courses.
Interviewing, drafting, negotiating, and using time efficiently in the context of preparing a legal matter; carrying a case through all stages.

707. Health Care Law. (2) 
Prerequisite(s): First-year law courses.
Introduction to health care industry, including regulation quality of health care, relationship of provider and patient, organizing delivery, access to care, cost controls, antitrust, decision making.

708. Comparative Constitutional Law. (2) 
Prerequisite(s): First-year law courses.
Initial constitutional formation and constituents power, separation of powers, judicial review, federalism, freedom of religion and speech, equal protection, privacy, etc.

709. Disability Law. (2) 
Prerequisite(s): First-year law courses.
Rehabilitation Act of 1973, Americans with Disabilities Act of 1990, Education for All Handicapped Children Act, housing, insurance, access to health services, AIDS, and ethical issues.

710. Advanced Comparative Law 1. (2) 
Prerequisite(s): First-year law courses.
Papers written on transnational and comparative topics during fall prepared for possible inclusion in law review.

711. Advanced Comparative Law 2. (2) 
Prerequisite(s): First-year law courses.
Papers written on transnational and comparative topics during fall prepared for possible inclusion in law review.

712. Economic Analysis of Law. (2) 
Prerequisite(s): First-year law courses.
Economic theory on principles of tort, contract, criminal law; insights into certain rules of procedure, employment law, and constitutional principles.

713. Supreme Court. (2) 
Prerequisite(s): First-year law courses.
Examining the U.S. Supreme Court emphasizing participation in hands-on exercises. Student will draft one opinion on a case on which he or she sits.

714. North American Free Trade Agreement. (3) 
Prerequisite(s): First-year law courses.
Main agreement and two side agreements (environmental and labor). Issues from the Canadian, Mexican, and American points of view.

715. Alternative Dispute Resolution. (2) 
Prerequisite(s): First-year law courses.
Theory and practice of dispute resolution, emphasizing alternatives to traditional litigation such as negotiation, mediation, and arbitration as well as "hybrids."

716. Individual Employment Rights. (2) 
Prerequisite(s): First-year law courses.
Law governing non-union employment relationship from formation through terms and conditions to termination, emphasizing lawyer's role in auditing personnel practices to prevent legal liability.

718. Wildlife Law. (2) 
Prerequisite(s): First-year law courses.
Emphasizing Federal Endangered Species Act and the tension between preserving biological diversity and private property rights. Applying law to Indian tribes and international legal norms for endangered species.

719. International Environmental Law. (3) 
Prerequisite(s): First-year law courses.
Developing international regimes and norms relating to protection of global environment, including climate change, preservation of wildlife, and biodiversity; freshwater resources and Law of the Sea.

720. Legal Research and Writing. (2) 
Prerequisite(s): Must be an LLM candidate.
Basic research in American legal tradition and personalized training in writing legal documents in English for non-U.S. attorneys in the LLM program.

721. Racketeer-Influenced and Corrupt Organizations (RICO). (2) 
Prerequisite(s): First-year law courses.
Extent RICO has affected substantive and procedural criminal law jurisprudence and civil commercial litigation.

722. Principles of Trial Advocacy. (2) 
Prerequisite(s): First-year law courses.
Basic principles of litigation skills and trial advocacy, including opening statements, direct examination, admissibility of proof, objections, and closing statements.
723. International Human Rights. (3) Prerequisite(s): First-year law courses.

724. Basic Mediation. (3) Prerequisite(s): First-year law courses.
   Fundamental communication and mediation skills. Simulated exercises and role playing. Participation in community mediation or small claims court.

725. Telecommunications. (2-3) Statutory and constitutional issues relating to government regulation of broadcasting, cable television, the Internet, and other electronic media.

726. Basic Estate Planning. (2) Prerequisite(s): Law 666, 683.
   Problem-based examination of planning strategies commonly used to accumulate, manage, and dispose of family wealth.

792R. Co-curricular Programs. (1) 793R. Co-curricular--Special Assignments. (1-2) Prerequisite(s): Participation in co-curricular programs.
795R. Law School Seminar. (1-18) Prerequisite(s): First-year law courses.
796R. Law School Seminar. (1-18) Prerequisite(s): First-year law courses.
798R. LLM Thesis. (1-6) Prerequisite(s): Completion of fall semester LLM program.

FACULTY

Augustine-Adams, Kif, Professor. JD, Harvard, 1992. Public International Law; Race and Race Relations; Social Policy and Feminist Legal Thought; The Fourteenth Amendment; Torts.

Backman, James H., Professor. JD, University of Utah, 1972. Director, Externship Program; Director, LLM Program; Community-Based Legal Research.

Dominguez, David, Professor. JD, University of California, Berkeley, 1980. Community Lawyering; Criminal Law; Individual Employment Rights; Labor Law.

Durham, W. Cole, Jr., Professor. JD, Harvard University, 1975. Church and State in the United States; Comparative Law; Contemporary Legal Theory; International Protection of Religious Freedom.

EchoHawk, Larry, Professor. JD, University of Utah, 1973. Criminal Law; Evidence; Federal Indian Law.

Farmer, Larry C., Professor. PhD, Brigham Young University, 1975. Computer-Based Practice Systems; Legal Interviewing and Counseling.

Fee, John E., Professor. JD, University of Chicago, 1995. Land-Use Planning; Property; First Amendment.


Floyd, C. Douglas, Professor. LLB, Stanford University, 1967. Antitrust; Civil Procedure; Complex Litigation; Federal Courts.

Gedicks, Frederick M., Professor. JD, University of Southern California, 1980. Structures of the Constitution; Telecommunications Law; Fourteenth Amendment.

Gerdy, Kristin, Director, Rex E. Lee Advocacy Program. JD, Brigham Young University, 1995. Appellate Brief Writing; Legal Writing.

Goldsmith, Michael, Professor. JD, Cornell University, 1975. Criminal Procedure; Evidence; Racketeer-Influenced and Corrupt Organizations (RICO); Trial Advocacy.


Hansen, H. Reese, Professor. JD, University of Utah, 1972. Estate Planning; Trusts; Wills and Estates.

Lee, Thomas R., Professor. JD, University of Chicago, 1991. Civil Procedure; Copyright, Trademarks, and Trade Secrets; Economic Analysis of Law; Supreme Court.

Neeleman, Stanley D., Professor. JD, University of Denver, 1972. Business Associations; Estate Planning; Federal Taxation; Professional Responsibility.

Preston, Cheryl Bailey, Professor. JD, Brigham Young University, 1979. Business Associations; Contracts; Internet Regulation and Decency.

Rasband, James R., Professor. JD, Harvard University, 1989. International Environmental Law; Public Lands and Natural Resources; Torts; Water Law.

Scharffs, Brett G., Professor. JD, Yale University, 1992. Adjudication; Business Associations; Church and State in the United States; International Business Transactions; International Protection of Religious Freedom; Law and Logic.

Smith, D. Gordon, Professor. JD, University of Chicago, 1990. Business Associations; Contracts; Law and Entrepreneurship; Securities Regulation.

Thomas, David A., Professor. JD, Duke University, 1972. Legal History; Property; Real Estate Finance.

Wardle, Lynn D., Professor. JD, Duke University, 1974. Biomedical Ethics; Children and the Law; Conflicts of Law; Family Law; Origins of the Constitution.

Welch, John W., Professor. JD, Duke University, 1975. Advising Non-Profit and Tax-Exempt Organizations; Ancient Laws in the Bible and Book of Mormon; Employee Benefit Plans; Jewish, Greek, and Roman Law in the New Testament.
LINGUISTICS AND ENGLISH LANGUAGE

WILKINS, RICHARD G., Professor, JD, Brigham Young University, 1979. Structures of the Constitution; Fourteenth Amendment.

WOOD, STEPHEN G., Professor, JD, University of Utah, 1969; JSD, Columbia University, 1980. Administrative Law; Comparative Law; Remedies; Employment Law; Entertainment and Sports Law.

WORTHEN, KEVIN J, Professor, JD, Brigham Young University, 1982. Federal Indian Law; Legislation; State and Local Government.

LINGUISTICS AND ENGLISH LANGUAGE

Chair: William G. Eggington
Associate Chair: Diane Strong-Krause
Associate Chair: Royal Skousen
Graduate Coordinator: Dee Gardner

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THE PROGRAM OF STUDIES

The Department of Linguistics and English Language offers two graduate degrees (Linguistics MA; TESOL MA) and one graduate certificate (TESOL Graduate Certificate). Both MA degrees have two options—thesis or project. These graduate programs continue to have a significant influence at Brigham Young University with its rich language resources, and in a world setting where the demand for skilled language professionals is at an all-time premium, especially in the areas of English as a second or foreign language. Students enrolling in the graduate programs receive state-of-the-art instruction in both the theoretical and applied aspects of linguistics.

Linguistics—MA

The purpose of the linguistics MA program is closely related to the department’s definition of linguistics, which is the scientific study of language. The program aims to prepare the student to become a linguistic specialist in government, enterprise, or educational settings, or to enter a PhD program for more advanced training. The linguistics curriculum develops such skills as analyzing language in its phonology, morphology, syntax, and semantics. It also offers more specialized instruction in areas such as natural language processing, sociolinguistics, and anthropological linguistics. A more applied, but popular track allows students to meet the language requirements of the MA by taking several courses which combine linguistics with computer skills. There are currently nineteen graduate students enrolled. Students average 2.7 years for completion.

Admission and Entry.

• Semesters of entry and application deadlines: spring, summer, fall; January 15 (U.S. and international).
• Entrance examinations: GRE general test; all applicants whose first language is not English and who have not earned an equivalent of a four-year bachelor’s degree in the United States or from an English-speaking country must score a total IELTS band score of at least 7.0, with no band score below 6.0 on each module; at least 237 on the computer-based TOEFL test (580 if paper-based); or at least 90 on the TOEFL iBT, with a minimum score of 23 in the Speaking section and a minimum score of 22 in other sections of the iBT.
• Prerequisite: Ling 330 (or equivalent) and competency in three languages.
  —For native English speakers the language requirement includes competency (300 level or higher) in one language other than English and competency in one non-Germanic, non-Romance language (minimum of 12 credit hours or 200-level competency). The latter requirement can also be satisfied by successfully completing 12 credit hours of approved courses in linguistic computing.
  —For nonnative English speakers the language requirement includes the following:
    ● Competency in English (ESL 404; ESL 301, 302 if indicated by OPI results). Ling 330 and ESL 404 should be completed before or during the first semester of course work.
    ● Competency in one non-Germanic, non-Romance language. If the student’s native language satisfies this requirement, then one additional language besides English, or 12 credit hours of
approved courses in linguistic computing.

Requirements for Degree.
- Credit hours (30).
- Required courses: Ling 596, 690; 698R or 699R.
- Electives: analytical core, two courses (6.0 credits) from the following list: Ling 521, 535, 630; applications core, two courses (6.0 credits) from the following list: Ling 550, 558, 581, 615; approved applications, three courses (9.0 credits) from the following list: ELang 522, 525, 529, 623, Ling 540, 545, 551, or other courses approved by the department or the student's MA advisory committee (including any of the analytical and applications core courses listed above).
- Thesis or project.
- Examinations: oral defense of thesis or project (consult department for details).

**TESOL—Graduate Certificate**

The TESOL Graduate Certificate Program provides the student with core training in teaching English as a second or foreign language to learners of various ages and backgrounds outside the United States, and to adult learners in the United States. (Note: The certificate does not satisfy K-12 certification or endorsement requirements for U.S. public schools). There are currently thirty-five graduate students in the TESOL Graduate Certificate Program. The average time for completion is 1.1 years.

Admission and Entry.
- Semesters of entry and application deadlines: summer and fall, January 15 (U.S. and international).
- Entrance examinations: all applicants whose first language is not English and who have not earned an equivalent of a four-year bachelor's degree in the United States or from an English-speaking country must score a total IELTS band score of at least 7.0, with no band score below 6.0 on each module; at least 237 on the computer-based TOEFL test (580 if paper-based); or at least 90 on the TOEFL iBT, with a minimum score of 23 in the Speaking section and a minimum score of 22 in other sections of the iBT.
- Prerequisite: Ling 330 (or equivalent); computer literacy; ESL 404 is prerequisite for all nonnative English speakers; ESL 301, 302 if indicated by OPI results. Ling 330 and ESL 404 should be completed before or during the first semester of course work.

Requirements for Graduate Certificate.
- Credit hours: minimum 16 course work hours and 3–9 prerequisite hours.
- Required courses: Ling 500, 540, 577, 579.
- Electives: 3 hours from Ling 555, 625, 631, 660, 672.
- Language learning experience for native English speakers (at least 200-level proficiency in a foreign language).

**TESOL—MA**

The purpose of the TESOL MA program is to prepare students to become professionals in the field of teaching English to speakers of other languages, primarily in foreign countries or in various adult-learner settings in the United States, such as Intensive English Programs, private language schools, community literacy programs, and so forth. The program also provides excellent preparation for further study at the PhD level. It offers two options—the thesis or project. In addition to the core training received in the TESOL Graduate Certificate Program, an MA candidate receives training in TESOL research and scholarly writing, as well as specialized instruction in at least two areas of expertise (teaching methodology, supervision-administration, materials development, testing, literacy, pronunciation, grammar, culture, etc). There are currently nine graduate students enrolled, with an approximate average of 2.93 years for completion of the degree, including time in the TESOL Graduate Certificate Program.

Admission and Entry.
- Application deadlines: January 15; application made while completing TESOL Graduate Certificate (see above).
- Application requirements: letter of intent; brief proposal of thesis research or project; and acceptance by a review board for admission; program of study.
- Entrance examinations: GRE general test.
- Prerequisite: completion of TESOL Graduate Certificate; intermediate-level proficiency in a modern foreign language (through the 200 level or equivalent; language courses may be taken concurrently with TESOL graduate courses).

Requirements for Degree.

**Thesis Option**
- Credit hours (33): minimum 27 course work hours (including 16 hours from TESOL Graduate Certificate) plus 6 thesis hours (Ling 699R).
- Required courses: Ling 595, 600, 695, 699R.
- Electives: 6 hours chosen from Ling 420, 521, 555, 625, 631, 641, 660, 672, 677, 678, 679, 696R, other courses by approval.
- Thesis.
- Oral defense of thesis.

**Project Option**
- Credit hours (35): minimum 32 course work hours (including 16 hours from TESOL Graduate Certificate) plus at least 3 master's project hours (Ling 699R).
- Required courses: Ling 678 or 660; 695; 699R.
- Electives: 12 hours chosen from Ling 420, 521, 555, 625, 631, 641, 660, 672, 677, 679, 696R; IP&T 560, 564, 654, 655, 665; CHum 489R.
- Project.
- Oral defense of project.

For a more detailed description of the graduate program requirements, see http://linguistics.byu.edu.

**Financial Assistance**

Financial assistance has been available over the past several years, particularly in the form of partial-tuition scholarships. One of the benefits that comes to both linguistics and TESOL

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students is the fact that many professors use teaching and research assistants. Also, many of those studying TESOL have the opportunity to become teaching assistants or part-time teachers at the English Language Center, where there are about fifteen graduate student teachers.

**Course Descriptions**

**English Language**

521R. Studies in Language. (3)
Prerequisite(s): ELang 324 or equivalent.
Topics vary.

522. Language Policy and Planning in English Language Contexts. (3)
Prerequisite(s): ELang 223 or Ling 330 or equivalent.
Theories and practices of governing entities as they formulate policies relating to the status and codification of the English language.

524. History of the Book. (3)
History and development of the book, including modern methods and practices.

525. Old English 1. (3)
Prerequisite(s): ELang 223, 324; or equivalents.
Old English grammar and vocabulary; traditional syntactical patterns in various types of Old English prose and poetry.

526. Middle English. (3)
Prerequisite(s): ELang 223, 324; or equivalents.
Detailed study of the principal dialects of Middle English, as illustrated in the literature of the period.

527. Early Modern English. (3)
Prerequisite(s): ELang 223, 324; or equivalents.
English language from about 1500 to 1800, with special emphasis on language of Shakespeare and the King James Bible.

528. Varieties of English. (3)
Prerequisite(s): ELang 223, 324; or equivalents.
Regional and social variation in English, especially standard and nonstandard national and world Englishes, including English-based pidgins and creoles.

529. Structure of Modern English. (3)
Prerequisite(s): ELang 325, or instructor’s consent.
English syntax through modern grammars; theories underlying those grammars.

535. Language and Literature. (3)
Prerequisite(s): ELang 223 or Ling 330 or equivalent.
Literature from a language perspective; applying linguistic constructs to literary language; examining literary style; linguistic analysis of unfamiliar texts.

548. Old English 2. (3)
Prerequisite(s): ELang 525.
Additional reading in Old English, emphasizing sound changes, dialects, and textual production.

623. Discourse and Pragmatics. (3)
Prerequisite(s): ELang 223, 273; or equivalents.
Mental and social processes involved in communicating through language; how we construct and interpret meaning through various contexts.

**Linguistics**

500. Introduction to Research in TESOL. (3)
Prerequisite(s): Admission to TESOL graduate certificate or language acquisition MA program.
Research questions in language teaching and learning, literature review, research design, data collection, and interpretation. Understanding research methods as used in others’ studies.

521. Phonology. (3)
Prerequisite(s): Ling 330.
Distinctive values of speech sounds: their function in the communicative process. Analysis of phonological data via postulation of underlying forms and derivational rules.

535. Semantics. (3)
Prerequisite(s): Ling 330.
Theory and practice of semantic analysis with special emphasis on Jakobsonian and Peircean semiotics.

540. Language Acquisition. (3)
Prerequisite(s): Ling 330 or equivalent.
First- and second-language acquisition viewed in light of psycholinguistics and sociolinguistics.

545. Psycholinguistics. (3)
Prerequisite(s): ELang 223 or Ling 330 or equivalent.
How the mind interprets, stores, retrieves, and produces language. Anatomical structures, stores, and processes of the brain dealing with language.

550. Sociolinguistics. (3)
Research and theory in anthropological linguistics and sociolinguistics.

551. Anthropological Linguistics. (3)
Language in culture and society: development, typology, and description.

555. Teaching Culture. (3)
What culture is, how it affects language learners and teachers, and development of U.S. lifestyle patterns.

558. Historical-Comparative Linguistics. (3)
Prerequisite(s): Ling 450 or equivalent.
Language and method of language change via comparing daughter languages and reconstructing ancestral languages. Language universals and typology.

577. TESOL Methods and Materials. (4)
Prerequisite(s): ESL 404 or native English speaker.
Foundation course surveying concepts, procedures, and techniques in second/foreign language teaching methodology and materials selection. Includes observing actual classes and participating in a mentored teaching practicum.

579. TESOL Student Teaching. (3)
Prerequisite(s): Ling 577 and departmental consent.
Sustained and supervised practice teaching at the English Language Center.
580R. Problems in Linguistics and Applied Linguistics. (1-3)
Advanced research in language acquisition, sociolinguistics, psycholinguistics, linguistics field study, applied linguistics.

581. Natural Language Processing. (3)
Prerequisite(s): Good programming skills in at least one language (preferably LISP, Prolog, C, C++, Perl, or Java) and a knowledge of basic, discrete math. Upper-division linguistics/computers and the humanities students with less programming experience may enroll with permission.

590R. Readings in Linguistics. (1-3)
Prerequisite(s): instructor’s consent.
Individual study of current linguistic literature. Occasional discussion sessions with instructor and other class members. Pass/fail grade only.

595. (Ling-FLang) Research Design in TESOL. (1)
Prerequisite(s): Ling 500; admission to TESOL MA (thesis option) or language acquisition MA program; preliminary draft of rationale and review of literature for MA thesis.
Research design options for examining language acquisition and teaching. Designing research and writing the third chapter of the MA thesis.
Students may enroll concurrently for up to 2 hours of Ling 699R (thesis) credit.

596. Research Design in Linguistics. (1)
Prerequisite(s): Admission to linguistics MA program.
Students may enroll concurrently for up to 2 hours of Ling 699R (thesis) credit.

599R. Academic Internship: Linguistics. (1-9)
On-the-job experience under faculty supervision, with department approval.

600. Research Data Analysis. (3)
Prerequisite(s): Ling 595.
Use of statistics and other procedures for analyzing and interpreting qualitative and quantitative research data. Writing chapters four and five of MA thesis.

615. Analogical Modeling of Language. (3)
Prerequisite(s): Ling 330 or equivalent.
Nondeclarative approaches to language description; work within the connectionist or neural net framework; analogical or exemplar modeling.

625. Pronunciation Theory and Pedagogy. (3)
Prerequisite(s): Ling 330 or equivalent.

630. Topics in Syntax. (3)
Prerequisite(s): Ling 430 or equivalent.
Theory of generative grammar, emphasizing its history, the competition between different versions of generative theory, and their recent extensions.

631. Grammar Usage. (3)
Prerequisite(s): Ling 330 or equivalent.
Examining English grammar and usage as they reflect different theories about language description and applying this knowledge in the ESL/EFL classroom. Limited teaching practicum included.

641. Interlanguage Analysis. (3)
Prerequisite(s): Ling 330 or equivalent.
Methods for comparing and analyzing aspects of languages as they relate to language acquisition and teaching, including aspects of phonology, lexicon, grammar, syntax, and discourse.

660. Language Testing. (3)
Construction, analysis, use, and interpretation of language tests.

672. TESOL Reading and Writing. (3)
Processes involved in reading and writing, emphasizing how these skills are developed in a second language. Limited teaching practicum included.

677. Advanced Methodology and Curriculum Development. (3)
Prerequisite(s): Ling 577 or equivalent.
Analysis and understanding of various language-teaching methods and the process of developing language-teaching curricula for specific purposes.

678. Advanced Materials Development. (3)
Prerequisite(s): Ling 577, 579.
Principles and procedures for designing, developing, and evaluating professional-quality teaching/learning materials of various types: textbooks, software, audiovisual aids, etc.

679. TESOL Supervision-Administration Internship. (3)
Prerequisite(s): Instructor’s consent.
Actual fieldwork in TESOL settings involving supervision, in-service training, and program administration.

688R. Academic Internship: TESOL. (1-9)
Prerequisite(s): Graduate advisory committee chair’s consent.
Field experience involving language teaching, testing, or materials development in a domestic or international setting. Supervised by graduate advisory committee chair.

690. Seminar in Linguistics. (2)
Prerequisite(s): Ling 630.
Advanced research and analysis of various linguistic problems.
695. TESOL Seminar. (1)
Prerequisite(s): Completion of majority of TESOL MA courses and not-yet-defended thesis or project.
Integrating TESOL theory and practice; final preparation for TESOL career paths; refining and publicly presenting and defending thesis or project results.

698R. Master’s Project. (1-3)
Prerequisite(s): Ling 660 or 678 for 698R. Master’s Project. 
May involve various media: paper/print, computer software, audio recordings, or video recordings. Supervised by graduate advisory committee chair.

699R. Master’s Thesis. (1-9)

FACULTY

ANDERSON, NEIL J., Professor. PhD, University of Texas, Austin, 1989. TESOL; Learning Styles and Strategies; Reading; Research.

BAKER, WENDY, Assistant Professor. PhD, University of Illinois, 2002. Second Language Acquisition; Psycholinguistics; Phonetics; Speech Perception and Production.

CHAPMAN, DON W., Associate Professor. PhD, University of Toronto, 1995. Old English Language and Literature; History of the English Language; Medieval Literature.

DAVIES, MARK, Professor. PhD, University of Texas, Austin, 1992. Corpus Design and Use; Linguistic Databases; Historical Syntax and Syntactical Variation; Spanish and Portuguese.

EDDINGTON, DAVID, Associate Professor. PhD, University of Texas, Austin, 1993. Experimental Linguistics; Phonology; Morphology; Spanish Language.

EGGINGTON, WILLIAM G., Professor. PhD, University of Southern California, 1985. Varieties of English; Contrastive Rhetoric; Language Policy.

ELZINGA, DIRK A., Assistant Professor. PhD, University of Arizona, 1999. Phonological Theory and Analysis; Uto-Aztecan Languages.


GARDNER, DEE, Assistant Professor. PhD, Northern Arizona University, 1999. ESL Literacy; Applied Corpus Linguistics/ Vocabulary Acquisition.

GRAHAM, CHARLES R., Associate Professor. PhD, University of Texas, Austin, 1977. Second Language Acquisition/Attrition; ESL K–12; Spanish.

HALLEN, CYNTHIA, Associate Professor. PhD, University of Arizona, 1991. Rhetoric; Lexicography; Philology; Stylistics; Poetics.

HENRICHSEN, LYNN E., Professor. EdD, University of Hawaii, 1987. TESOL; Methodology; Materials Development; Teacher Education; ESL K–12; EFL.


MANNING, ALAN, Professor. PhD, Louisiana State University, 1988. Information Design; Syntax.

MELBY, ALAN K., Professor. PhD, Brigham Young University, 1976. Computer Aids for Translators; Syntax; French.

NUCKOLLS, JANIS, Associate Professor. PhD, University of Chicago, 1990. Quechua Grammar; Ideophony; Morphology; Anthropological Linguistics; Cultural Semantics; Discourse Pragmatics.

OAKS, DALLIN D., Associate Professor. PhD, Purdue University, 1990. English Linguistics; Structure of English; Ambiguity; Old English Language.

SKOUSEN, ROYAL, Professor. PhD, University of Illinois, 1972. Analogical Modeling; Textual Criticism.

TANNER, MARK, Assistant Professor. PhD, University of Pennsylvania, 1991. Language Acquisition; TESOL, Sociolinguistics.

MATHEMATICS

Chair: Tyler Jarvis
Assistant Chairs: Michael Dorff and Kening Lu
Graduate Coordinator: William E. Lang

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Provo, UT 84602-6539
(801) 422-2062

THE PROGRAM OF STUDIES

The Department of Mathematics has approximately thirty graduate students, most of whom are supported by teaching assistantships. These students receive help with tuition as well as a stipend for the teaching support they provide in college algebra and calculus.

Two degrees are offered through the Department of Mathematics: Mathematics—MS; and Mathematics—PhD.

MS students study mathematics courses in preparation for careers in business, industry, government, or education. Other students use a master’s degree in mathematics in preparation for a doctoral degree in mathematics or a closely related discipline or a discipline where technical competence is appreciated. Master’s students graduate in an average of two years.

The department supports from ten to twelve PhD students. Designed for gifted and dedicated students, the program requires about four years past a master’s degree. The department has special strength in the areas of applied mathematics, algebraic geometry, geometric analysis, dynamical systems, number theory, geometric and low-dimensional topology, mathematical biology, and group theory.

Mathematics—MS

The master of science is designed to prepare students for positions in business and industry. It also provides preparation for further graduate study leading to a doctoral degree.
Information for Degree—Thesis and Nonthesis Programs. Graduate mathematics courses: approved graduate mathematics courses include all classes numbered 500 and above. Faculty sponsor: the graduate coordinator will assign each student a faculty sponsor on admission to the graduate program. Students should communicate with the sponsor as soon as they arrive on campus.

Admission and Entry.
- Semesters of entry and application deadlines: fall, summer, March 1; winter, September 15; spring, February 15.
- Entrance examinations: GRE general test and subject test in mathematics. Every international applicant whose native language is not English is required to submit Test of English as a Foreign Language (TOEFL) scores.
- Prerequisite: credit at least equivalent to BYU requirements for a baccalaureate degree in mathematics; a year’s sequence in abstract algebra; and a year’s sequence in advanced calculus.

Requirements for Degree—Thesis Program.
- Credit hours (30): minimum 24 course work hours in approved graduate mathematics, with a grade of C+ or better in each, including 12 hours in courses numbered 600 or above, and 6 thesis hours (Math 699R).
- Examination: pass a written master's examination. The examination should be attempted no later than the end of the first semester of the second year. One more attempt is allowed.
- Thesis.
- Oral defense of thesis.

Requirements for Degree—Nonthesis Program.
- Credit hours:
  - Traditional Mathematics Option (32): minimum 30 course work hours in approved graduate mathematics, with a grade of C+ or better in each, including 18 hours in courses numbered 600 or above and 2 project hours (698R).
  - Minor Option (35): minimum 24 course work hours in approved graduate mathematics, with a grade of C+ or better in each, including 6 hours in courses numbered 600 or above, 9 hours in an approved minor, and 2 project hours (698R).
  - Applied Option (38): minimum 24 course work hours in approved graduate mathematics, with a grade of C+ or better in each, including 6 hours in courses numbered 600 or above, 12 hours in areas related to applications of mathematics, and 2 project hours (698R). The 12 hours of applications must be approved by the graduate coordinator.
- Project and presentation: write a paper on an area of advanced mathematics and give a 45-minute presentation based on the paper.
- Examination: pass a written master's examination. The examination should be attempted no later than the end of the first semester of the second year. One more attempt is allowed.

Mathematics—PhD
The doctoral program prepares students for a career in research and teaching at the university level or in basic research in a nonacademic setting.

Admission and Entry.
- Semesters of entry and application deadlines: fall, summer, March 1; winter, September 15; spring, February 15.
- Entrance examinations: GRE general test and GRE subject test in mathematics. Every international applicant whose native language is not English is required to take the Test of English as a Foreign Language (TOEFL).
- Prerequisite: undergraduate degree in mathematics or its equivalent; one year of mathematical analysis (or advanced calculus); one year of abstract algebra.

Requirements for Degree.
- Credit hours (54): minimum 36 course work hours in mathematics courses numbered 600 or above with a grade of B or better in each, plus 18 dissertation hours (Math 799R).
- Required courses: complete at least 3 hours each in algebra, analysis, applied mathematics, and geometry/topology.
- Examinations:
  - Written Examinations: at the beginning of the second year, pass examinations in three of the four areas of algebra, analysis, applied mathematics, and geometry/topology. Four hours are allotted to each examination. A failed examination may be repeated once at the beginning of the winter semester of the student’s second year, after which permission must be obtained from the department graduate committee to retake the examination. Passed examinations need not be repeated. Syllabi are available for each examination.
  - Oral Examination: pass an oral qualifying examination covering the background necessary for research in a specific area. The student, having chosen a research area and having a dissertation advisor approved, will, with the advisor, outline suitable examination topics. These topics must be approved by an examination committee of three (including advisor) appointed by the department graduate committee, which conducts the examination.
  - Defense of Dissertation: a final oral defense of the dissertation is conducted by a faculty committee consisting of the student’s research advisor, two other readers of the dissertation (one of whom may be an outside examiner) and two other members of the faculty.
- Language requirement.
  - For native speakers of English: demonstrate proficiency in one approved foreign language by reading a mathematical research article written in the language, as chosen by the student’s committee and at least one faculty member who is proficient in the language (this faculty member may be a regular member of the student’s committee), and making a 45-minute presentation on the article to this expanded committee. The
approved languages are French, German, and Russian.

For non-native speakers of English: speakers of English as a second language are required to enroll in an ESL course each semester until they reach a level of proficiency that the advisory committee and graduate coordinator deem appropriate for professional work. In addition, students are required to read a mathematical research article in English, chosen by the student's committee, and make a 45-minute presentation on the article to the committee.

• Dissertation.

FINANCIAL ASSISTANCE
Most of the graduate students in mathematics are supported by teaching assistantships. Current teaching assistants generally receive a salary as well as tuition support. For exact amounts of financial support and other details, contact the Mathematics Department online at http://www.math.byu.edu or by e-mail at gradschool@math.byu.edu.

RESOURCES AND OPPORTUNITIES
Faculty research interests currently include: algebraic geometry, combinatorial and geometric group theory, dynamical systems, geometric and low-dimensional topology, mathematical biology, matrix analysis, number theory, numerical methods, and partial differential equations.

For a more detailed description of the graduate program requirements, send for a copy of the department’s bulletin.

COURSE DESCRIPTIONS

510. Numerical Methods for Linear Algebra. (3)
Prerequisite(s): Math 343, 410; or equivalents.
Numerical matrix algebra, orthogonalization and least squares methods, unsymmetric and symmetric eigenvalue problems, iterative methods, advanced solvers for partial differential equations.

511. Numerical Methods for Partial Differential Equations. (3)
Prerequisite(s): Math 303 or 347; 410; or equivalents.
Finite difference and finite volume methods for partial differential equations. Stability, consistency, and convergence theory.

513R. Advanced Topics in Applied Mathematics. (3)
Prerequisite(s): instructor’s consent

521. Methods of Applied Mathematics 1. (3)
Prerequisite(s): Math 334, 343; or equivalents.
Possible topics include variational, integral, and partial differential equations; spectral and transform methods; Green's functions; scaling and asymptotic analysis; perturbation theory; continuum mechanics.

522. Methods of Applied Mathematics 2. (3)
Prerequisite(s): Math 334, 343; or equivalents.
Possible topics include variational, integral, and partial differential equations; spectral and transform methods; Green's functions; scaling and asymptotic analysis; perturbation theory; continuum mechanics.

532. Complex Analysis. (3)
Prerequisite(s): Math 332 or instructor’s consent.
Introduction to theory of complex analysis at beginning graduate level. Topics: Cauchy integral equations, Riemann surfaces, Picard's theorem, etc.

534. Introduction to Dynamical Systems 1. (3)
Prerequisite(s): Math 315, 334; or equivalents.
Discrete dynamical systems; iterations of maps on the line and the plane; bifurcation theory; chaos, Julia sets, and fractals. Computational experimentation.

541. Real Analysis. (3)
Prerequisite(s): Math 315, 343; 214 or 316.
Rigorous treatment of differentiation and integration theory; Lebesgue measure; Banach spaces.

542. Real Analysis. (3)
Prerequisite(s): Math 315, 343; 214 or 316.
Rigorous treatment of differentiation and integration theory; Lebesgue measure; Banach spaces.

543. Advanced Probability 1. (3)
Prerequisite(s): Math 214 or equivalent.
Probability theory and its applications. Topics include random variables, independence and conditioning, laws of large numbers, random walks, martingales, Markov chains, renewal processes, ergodic theorems, Brownian motion, and stochastic integration.

544. Advanced Probability 2. (3)
Prerequisite(s): Math 214 or equivalent.
Probability theory and its applications. Topics include random variables, independence and conditioning, laws of large numbers, random walks, martingales, Markov chains, renewal processes, ergodic theorems, Brownian motion, and stochastic integration.

547. Partial Differential Equations 1. (3)
Prerequisite(s): Math 214, 334; or equivalents.
Topics include the method of characteristics, elliptic equations, potential theory, parabolic equations and systems, maximum principles, linear and nonlinear waves, Hamilton-Jacobi equations, Fourier transforms, Green’s functions, distributions, and energy methods.
548. Partial Differential Equations
2. (3)
Prerequisite(s): Math 214, 334; or equivalents.
Topics include the method of characteristics, elliptic equations, potential theory, parabolic equations and systems, maximum principles, linear and nonlinear waves, Hamilton-Jacobi equations, Fourier transforms, Green’s functions, distributions, and energy methods.

553. Foundations of Topology 1. (3)
Prerequisite(s): Math 451 or instructor’s consent.
Naive set theory, topological spaces, product spaces, subspaces, continuous functions, connectedness, compactness, countability, separation axioms, metrization, complete metric spaces, function spaces, and Baire spaces.

554. Foundations of Topology 2. (3)
Prerequisite(s): Math 553 or instructor’s consent.
Fundamental group, retractions and fixed points, homotopy types, separation theorems, classification of surfaces, Seifert-van Kampen Theorem, classification of covering spaces, and applications to group theory.

561. Introduction to Algebraic Geometry. (3)
Prerequisite(s): Math 671 or concurrent enrollment.
Projective varieties, curves, surfaces, differential forms, and divisors.

562. Introduction to Algebraic Geometry. (3)
Prerequisite(s): Math 671 or concurrent enrollment.
Projective varieties, curves, surfaces, differential forms, and divisors.

570. Matrix Analysis. (3)
Prerequisite(s): Math 302 or 343; or equivalents.
Special classes of matrices, canonical forms, matrix and vector norms, localization of eigenvalues, matrix functions, applications.

586. Introduction to Algebraic Number Theory. (3)
Prerequisite(s): Math 372 or equivalent; instructor’s consent.
Algebraic integers; different and discriminant; decomposition of primes; class group; Dirichlet unit theorem; Dedekind zeta function; cyclotomic fields; valuations; completions.

587. Introduction to Analytic Number Theory. (3)
Prerequisite(s): Math 332 or equivalent; instructor’s consent.
Arithmetical functions; distribution of primes; Dirichlet characters; Dirichlet’s theorem; Gauss sums; primitive roots; Dirichlet L-functions; Riemann zeta-function; prime number theorem; partitions.

621. Matrix Theory. (3)
Prerequisite(s): Math 570.
Zero-one matrices, spectra of graphs, Laplacian matrix, irreducible and primitive matrices, cycle expansion of the determinant, matrix completion problems, permanents, generalized matrix functions.

622. Matrix Theory. (3)
Prerequisite(s): Math 570.
Zero-one matrices, spectra of graphs, Laplacian matrix, irreducible and primitive matrices, cycle expansion of the determinant, matrix completion problems, permanents, generalized matrix functions.

631. Complex Analysis. (3)
Prerequisite(s): Math 332, 542.
Prerequisite(s): Math 332, 542.

632. Complex Analysis. (3)
Prerequisite(s): Math 631.

634. Theory of Ordinary Differential Equations. (3)
Prerequisite(s): Math 315, 334.

635. Theory of Ordinary Differential Equations. (3)
Prerequisite(s): Math 315, 334.

641. Functions of Real and Complex Variables 1. (3)
Prerequisite(s): Math 542 or instructor’s consent.

642. Functions of Real and Complex Variables 2. (3)
Prerequisite(s): Math 641.
Advanced topics chosen by the instructor, such as but not limited to probability, Haar measures, Fourier analysis on locally compact groups, Sobolev spaces, ergodic theory, differentiation theory of Radon measures, area and co-area formulas, etc.

643R. Special Topics in Analysis. (3)
Prerequisite(s): Math 642 or instructor’s consent.
Advanced topics in analysis drawn from pure and applied mathematics. Possible topics include nonlinear partial differential equations, nonlinear functional analysis, asymptotic analysis, wavelets, numerical analysis, and analysis applied to biological and medical systems.

644. Harmonic Analysis. (3)
Prerequisite(s): Math 532, 542.
Harmonic analysis on the torus and in Euclidean space; pointwise and norm convergence of Fourier series and functional-analytic aspects of Fourier transforms emphasized.

645. Functional Analysis. (3)
Prerequisite(s): Math 641.

646. Functional Analysis. (3)
Prerequisite(s): Math 645.

647. Theory of Partial Differential Equations. (3)
Prerequisite(s): Math 347, 542.

648. Theory of Partial Differential Equations. (3)
Prerequisite(s): Math 647.

651. Topology 1. (3)
Prerequisite(s): Math 553, 554.
Advanced topics in topology.

652. Topology 2. (3)
Prerequisite(s): Math 651.
655. Algebraic Topology 1. (3)
Prerequisite(s): Instructor’s consent.

656. Algebraic Topology 2. (3)
Prerequisite(s): Math 655.

663. Algebraic Geometry. (3)
Prerequisite(s): Math 672; Math 676 or concurrent enrollment.
Varieties, sheaves, and schemes; their cohomology and classification; applications.

664. Algebraic Geometry. (3)
Prerequisite(s): Math 672; Math 676 or concurrent enrollment.
Varieties, sheaves, and schemes; their cohomology and classification; applications.

667. Homological Algebra. (3)
Prerequisite(s): Math 671, 672.
Chain complexes, derived functors, cohomology of groups, ext and tor, spectral sequences, etc. Application to algebraic geometry and algebraic number theory.

671. Algebra. (3)
Prerequisite(s): Math 372.

672. Algebra. (3)
Prerequisite(s): Math 671.

675R. Special Topics in Algebra. (3)
Prerequisite(s): Math 672.

676. Commutative Algebra. (3)
Prerequisite(s): Math 671, 672.
Commutative rings, modules, tensor products, localization, primary decomposition, Noetherian and Artinian rings, application to algebraic geometry and algebraic number theory.

677. Homological Algebra. (3)
Prerequisite(s): Math 671, 672.
Chain complexes, derived functors, cohomology of groups, ext and tor, spectral sequences, etc. Application to algebraic geometry and algebraic number theory.

686R. Topics in Algebraic Number Theory. (3)
Prerequisite(s): Math 542 or instructor’s consent
Current topics of research interest.

687R. Topics in Analytic Number Theory. (3)
Prerequisite(s): Math 542 or instructor’s consent
Current topics of research interest.

695R. Readings in Mathematics. (1-2)

698R. Master’s Project. (2)

699R. Master’s Thesis. (1-9)

751R. Advanced Special Topics in Topology. (3)
Prerequisite(s): Instructor’s consent and Math 651, 652.
Current topics in topology of research interest.

799R. Doctoral Dissertation. (1-9)

Faculty


Bakker, Lennard F., Assistant Professor. PhD, Queens University, 1997. Dynamical Systems; Celestial Mechanics.

Barrett, Wayne W., Professor. PhD, New York University, 1975. Matrix Theory; Graph Theory; Combinatorics.


Chow, Shue-Sum, Associate Professor. PhD, Australian National University, 1983. Complex Analysis.

Conner, Gregory R., Associate Professor. PhD, University of Utah, 1992. Geometric Group Theory; Combinatorial Group Theory; Topology.

Dallon, John C., Associate Professor. PhD, University of Utah, 1996. Mathematical Biology.

Dorff, Michael J., Associate Professor. PhD, University of Kentucky, 1997. Geometric Function Theory; Complex Analysis; Minimal Surfaces.


Halverson, Denise M., Associate Professor. PhD, University of Tennessee, 1999. Geometric Topology.

Humpherys, Jeffrey C., Assistant Professor. PhD, Indiana University, 2002. Applied Mathematics.

Humphries, Stephen P., Professor. PhD, University of Wales, 1983. Low-Dimensional Topology; Classical Groups.


Li, Xian-Jin, Associate Professor. PhD, Purdue University, 1993. Number Theory.


SWENSON, Eric L., Associate Professor. PhD, Brigham Young University, 1993. Geometric Group Theory.

MATHEMATICS EDUCATION
Chair: Gerald M. Armstrong
Associate Chair: Blake E. Peterson
Graduate Coordinator:
Keith R. Leatham
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THE PROGRAM OF STUDIES
The department’s graduate program grants the degree master of arts in mathematics education. Through the experiences this program offers, graduate students will extend their own understanding of mathematics and deepen their understanding of learners’ mathematical thinking. Our department values close, detailed mentoring of each graduate student as an active member of the scholarly community—a community devoted to exploration and inquiry into the learning and teaching of mathematics.

Mathematics Education—MA
Our program emphasizes course interactions with faculty, both in and out of the classroom, that (1) allows students to explore new mathematical understanding in both personal and social contexts; (2) immerses students deeply in exploration, inquiry, analysis, and exposition; and (3) familiarizes students with the ever-expanding body of research literature on learning and teaching mathematics and with prevailing research methodologies.

Admission and Entry.
• Semesters of entry and application deadlines: summer, fall, March 1, (U.S. and international).
• Required entrance examinations: GRE general test. Every international applicant whose native language is not English is required to submit Test of English as a Foreign Language (TOEFL) scores.
• Academic prerequisite: BS in mathematics education or equivalent academic credentials (as determined by Mathematics Education Department).
• Certification prerequisite: Recognized state teacher certification. (Note: Work required to meet the certification requirement may not be counted as part of a graduate program.)
• Advisement: The graduate coordinator is an entering student’s academic sponsor (preliminary advisor). Entering students should contact their academic sponsor as soon as they arrive on campus.

Requirements for Degree—Thesis Program.
• Credit hours (30): minimum of 24 credit hours of approved course work plus 6 thesis hours (MthEd 699R). Note: Credit for prerequisite courses such as Math 315 or 371 or certification courses is not allowed.
• Required courses: MthEd 590, 591; Math 316, 372; 12 credit hours of approved 500- or 600-level mathematics or mathematics education course work (at least 6 credit hours must be considered mathematics content course work).
• Comprehensive examination: pass a written comprehensive examination. Full-time students take the exam in June following their first year; part-time students take the exam in June following their second year.
• Thesis: write a thesis based on an approved research project. Note: A formal thesis proposal is required.
• Oral defense of thesis.
• Minor (optional): any approved minor.

Requirements for Degree—Nonthesis Program.
• Credit hours (32): minimum of 30 approved course work hours plus 2 project hours (Math 698R). Note: Credit for prerequisite courses such as Math 315 or 371 or certification courses is not allowed.
• Required courses: MthEd 590, 591; Math 316, 372; 18 credit hours of approved 500- or 600-level mathematics or mathematics education courses (at least 9 credit hours}
must be considered mathematics content course work).
• Comprehensive examination: pass a written comprehensive examination. Full-time students take the exam in June following their first year; part-time students take the exam in June following their second year.
• Project paper: write a paper based on an approved project. Note: A formal project proposal is required.
• Presentation: prepare and deliver a 45-minute presentation of the project paper.
• Minor (optional): any approved minor.

Mathematics Education—Minor
The mathematics education minor is designed for graduate students in fields related to mathematics who have an interest in mathematics learning and teaching.

Requirements for Degree—Minor.
• Credit hours: 9
• Required courses: MthEd 590, 591, and 3 hours of approved 500- or 600-level mathematics education courses.
• Examination: pass a written examination based on the content of the 9 credit hours.

Financial Assistance
We see our graduate students as part of the department’s active research and teaching community. Thus most full-time graduate students receive support from our department in the form of teaching assistantships. This support includes (1) a stipend, for which the recipient performs teaching duties equivalent to two 3-hour classes each semester and (2) a tuition scholarship for program courses. Information on current levels of support is available from the department.

Resources and Opportunities
The research interests and active projects of the mathematics education faculty touch all levels of mathematics learning and learners. Designed as “research internships in mathematics education,” the MA program gives each graduate student opportunities to engage with faculty in one or more research settings. Through course work and interactions with faculty, students are included in the research community’s practice of exploration, inquiry, and analysis. In our view, the development and refinement of ways of thinking and practices of inquiry that are needed for strong, meaningful investigations into issues emerging in the context of mathematics learning constitute a solid foundation on which students might build in two important ways: (1) to step confidently into the nation’s top mathematics education doctoral programs and (2) to assume important leadership roles in practicing school mathematics education communities.

See www.mathed.byu.edu for a more detailed description of the graduate program in mathematics education.

Course Descriptions

550. Problem Solving. (3)
Prerequisite(s): Strong background in undergraduate mathematics; instructor’s consent.
Solving and building explanations and presenting solutions to conceptually important problems. Connections between problem solving and understanding, and implications for teaching and learning.

562. Euclidean Geometry: Content, Learning, and Teaching. (3)
Prerequisite(s): Math 362 or equivalent.
Euclidean geometry, including classical problems, polyhedra, transformations, congruence, similarity, integer geometry, minimization; technology in geometry, Van Hiele levels, role of proof, and high school curriculum.

585R. Research Practicum. (3)
Prerequisite(s): Graduate student status or instructor’s consent.
Hands-on introduction to department research projects. Data analysis, discussion of theoretical frameworks, and reflection on possible implications.

590. Foundational Issues in Learning Mathematics. (3)
Prerequisite(s): Teaching certificate or completion of student teaching.
Introduction to research in mathematics learning; mathematical thinking; cognitive, social, and philosophical approaches to describing mathematics learning. Lab experience in classrooms.

591. Scholarly Inquiry in Mathematics Education. (3)
Prerequisite(s): MthEd 590.
Introduction to scholarly inquiry in mathematics education; issues in research methodology. Lab experience in classrooms.

598R. Topics in Mathematics Education. (0.5-3)
Prerequisite(s): Instructor’s consent.
Includes specific research areas and curriculum studies of school mathematics topics (i.e. geometry, algebra, and calculus).

608. Technology for Learning and Teaching Mathematics. (3)
Prerequisite(s): BA in mathematics education or equivalent; MthEd 308 or equivalent.
Analyzing research relative to mathematics learning with technology; exploring mathematical problems using technology; design curriculum; conducting research in the learning and teaching of technology.

611R. Graduate Student Seminar. (1)
Prerequisite(s): Instructor’s consent.
Reading, discussing, and writing about relevant public discourse, policies, and issues in the broad arena of mathematics education.

660. Number and Number Sense. (3)
Prerequisite(s): BA in mathematics education or equivalent.
Research on children’s understanding of early numbers, number operations, number sense, multidigit arithmetic, fractions, decimals, and proportions.
661. Algebraic Reasoning. (3) 
Prerequisite(s): BA in mathematics education or equivalent. 
Fundamental concepts (e.g., variables, equality, pattern recognition, function, covariation, equations), processes (e.g., mathematizing, generalizing, modeling), and research in algebraic reasoning.

663. Calculus Teaching and Learning. (3) 
Prerequisite(s): BA in mathematics education or equivalent. 
Fundamental calculus concepts as well as the curricula, reform efforts, and research associated with teaching and learning calculus.

695R. Readings in Mathematics Education. (0.5-3) 
Prerequisite(s): Instructor’s consent.

698R. Master's Project. (2) 
Prerequisite(s): Instructor’s consent.

699R. Master's Thesis. (0.5-9) 
Prerequisite(s): Instructor’s consent.

FACULTY

ARMSTRONG, GERALD M., Associate Professor. PhD, University of Wisconsin, Madison, 1971. Real Analysis; Calculus Reform.

BELNAP, JASON K., Assistant Professor. 
PhD, University of Arizona, 2005. Teaching Development of Graduate Mathematics Teaching Assistants.

COREY, DOUGLAS L., Assistant Professor. PhD, University of Michigan, 2007. Knowledge of Mathematics for Teaching; Advanced Mathematical Thinking; Quantitative Methods; Instructional Measures.

GERSON, HOPE H., Assistant Professor. 
PhD, University of New Hampshire, 2000. Learning and Understanding; Task-Based Learning; Connections.


LEATHAM, KEITH R., Assistant Professor. PhD, University of Georgia, 2002. Preservice Mathematics Teacher Education; Teaching and Learning Mathematics with Technology.

PETerson, BLAKE E., Professor. PhD, Washington State University, 1993. Student Mathematics Teaching; Mathematics Teacher Education in Japan.

SIEBERT, DANIEL K., Associate Professor. PhD, University of California, San Diego, 2000. Communication, Discourse and Literacy in Mathematics Classrooms.

SPEISER, ROBERT D., Professor. PhD, Cornell University, 1970. Mathematics Learning and Cognition at All Levels.

WALTER, CHARLES N., Associate Professor. PhD, University of New Mexico, 1970. Mathematics Learning at All Levels; Cognition; Algebraic Geometry.

WALTER, JANET G., Assistant Professor. EdD, Rutgers University, 2004. Mathematics Learning and Teaching; Mathematics Teacher Professional Development.

WILLIAMS, STEVEN R., Professor. PhD, University of Wisconsin, Madison, 1989. Mathematical Discourses; Advanced Mathematical Thinking.

MECHANICAL ENGINEERING

Chair: Timothy W. McLain
Graduate Coordinator: 
Matthew R. Jones

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THE PROGRAM OF STUDIES

The Department of Mechanical Engineering offers strong graduate programs in a variety of areas, including combustion processes; computational and experimental fluid mechanics; dynamic and mechatronic systems and controls; heat transfer; integrated product design and development; manufacturing systems and processes; and materials and materials processing; optimization; and robotics. Specific research activities in these areas are described on the Mechanical Engineering Department Web page at http://www.me.byu.edu.

The Mechanical Engineering Department offers two graduate degrees: Mechanical Engineering—MS (Thesis or Project) and Mechanical Engineering—PhD.

The graduate program in mechanical engineering has about one hundred graduate students. The typical time to obtain an MS degree is approximately two years, whereas a PhD degree usually takes about four and a half years beyond the BS degree.

Mechanical Engineering—MS-Thesis

Learning Outcomes Established for the MS-Thesis Option.

• Program graduates will develop an advanced understanding of the governing principles which serve as the basis for the practice of mechanical engineering and have the ability to apply these principles in the design and analysis of a system or process to meet specified needs.
• Program graduates will participate in the creation of new knowledge and/or will advance the state-of-the-art in a specific sub-discipline of mechanical engineering through the completion of a thesis project. The thesis project will contain elements of design, experimentation and analysis and will require innovation and creativity.

• Program graduates will develop technical writing and oral presentation skills.

• Program graduates will demonstrate a pattern of living consistent with high ethical and moral standards.

Admission and Entry.

• Semesters of entry and application deadlines: fall, spring, summer, January 15 (U.S. and international); winter, September 15 (U.S. and international).

• Entrance examinations: the GRE general exam is required for admission. The range of expected GRE scores are: V-460-480; Q-710-730; AW-4-5. It is recommended that the GRE be taken a minimum of six weeks prior to the application deadline. International applicants are required to take the TOEFL or IELTS exam. University minimum scores are required.

• Prerequisite: BS in mechanical engineering or allied discipline with approval; minimum 3.0 GPA in last 60 hours.

• Statement of intent: each applicant should clearly indicate that he or she intends to pursue the thesis option.

Requirements for Degree.

• Credit hours: a minimum 30 hours, half of which must be offered by ME, including 6 thesis hours and 6 hours of advanced mathematics.

• Program of study: each student must submit a study list of approved courses during the first semester.

• Prospectus: each student must submit a prospectus during the second semester.

• Biannual reviews: each student’s progress will be evaluated twice a year, in January and July.

• Residency requirements: residency is required for the major part of the work toward the MS-Thesis. This work must be completed under the specific direction of a graduate faculty member while the student is in residence at BYU (at least two consecutive semesters of 6 or more hours of registration). “In residence” is defined as (1) being registered for credit as a graduate student and (2) living and conducting research in the general vicinity of the university, where the student has ready access to research facilities and consultation with the faculty.

• Graduate Seminar: all MS students in residence in the department are required to attend at least 75 percent of the graduate seminars that are held on a weekly basis during fall and winter semesters. The seminars include technical presentations by graduate students, faculty members, and invited guests. MS students are required to present at least once during their graduate program, after completion of an accepted thesis prospectus.

• Thesis: Students may register for a maximum of six thesis credits (Me En 699R). All work toward the thesis must be completely open for public review and publication. Any exceptions must have written approval from the department and college in advance of any work performed.

• Examination: MS students are required to pass an oral examination (thesis defense).

• Time requirement: The MS student has one year minimum and five years maximum to complete the degree.

• GPA requirement: Cumulative 3.0 GPA or above in all courses to be counted toward master’s degree.

Please see the MS-Thesis Handbook at: www.me.byu.edu for more details regarding requirements.

Mechanical Engineering—MS-Project

Learning Outcomes Established for the MS-Project Option.

• Program graduates will demonstrate a mastery of mechanical engineering.

• Program graduates will learn innovation and creativity through the completion of a mentored project which includes elements of design, experimentation and/or analysis.

• Program graduates will develop technical writing and oral presentation skills.

• Program graduates will demonstrate a pattern of living consistent with high ethical and moral standards.

Admission and Entry.

• Semesters of entry and application deadlines: fall, spring, summer - January 15; winter semester - September 15.

• Entrance examinations: the GRE general exam is required for admission. The range of expected GRE scores are: V-460-480; Q-710-730; AW-4-5. It is recommended that the GRE be taken a minimum of six weeks prior to the application deadline. International applicants are required to take the TOEFL or IELTS exam. University minimum scores are required.

• Prerequisite: BS in mechanical engineering or allied discipline with approval; minimum 3.0 GPA in last 60 hours.

• Statement of intent: each applicant should clearly indicate that he or she intends to pursue the MS-Project option.

Requirements for Degree.

• Minimum 39 credit hours:
  - Technical courses -12 hours
  - Focus Area - 6 hours
  - Electives - 9 hours
  - Advanced Mathematics - 6 hours
  - Professional Preparation - 3 hours
  - Project – 3 hours

• Program of Study: each student must submit a study list of approved courses during the first semester.

• Project Proposal - each student must submit a project proposal.
prior to the semester in which the student enrolls in project credit (Me En 695R).

- Biannual reviews: each student’s progress will be evaluated twice a year, in January and July.
- Residency requirements: residency is required for the major part of the work toward the MS-Project. This work must be completed under the specific direction of a graduate faculty member while the student is in residence at BYU (at least two consecutive semesters of 6 or more hours of registration). “In residence” is defined as (1) being registered for credit as a graduate student and (2) living and conducting research in the general vicinity of the university, where the student has ready access to research facilities and consultation with the faculty.
- Graduate Seminar: all MS students in residence in the department are required to attend at least 75 percent of the graduate seminars that are held on a weekly basis during fall and winter semesters. The seminars include technical presentations by graduate students, faculty members, and invited guests. MS students are required to present the results of their project in the graduate seminar during the semester following completion of their project.
- Project: Students may register for a maximum of 3 hours of project credit (Me En 595R). All work toward the project must be completely open for public review and publication. Any exceptions must have written approval from the department and college in advance of any work performed.
- Examination: students are required to take the FE exam.
- Time requirement: The MS student has one year minimum and five years maximum to complete the degree.
- GPA requirement: Cumulative 3.0 GPA or above in all courses to be counted toward master’s degree.

Please see the MS-Project Handbook at: www.me.byu.edu for more details regarding requirements.

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**Mechanical Engineering—PhD**

**Learning Outcomes Established for the PhD.**

- Program graduates will develop an in-depth understanding of the fundamental principles related to a sub-discipline of mechanical engineering.
- Program graduates will have demonstrated a mastery of a broad range of topics related to mechanical engineering, including applied mathematics, and an ability to study and learn independently.
- Program graduates will have demonstrated the ability to perform independent research by completing a dissertation project which results in the creation of new knowledge and/or the advancement of the state-of-the-art in specific sub-disciplines of mechanical engineering. The dissertation project will contain elements of design, experimentation and/or analysis and will require innovation and creativity.
- Program graduates will develop technical writing and oral presentation skills.
- Program graduates will demonstrate a pattern of living consistent with high ethical and moral standards.

**Admission and Entry.**

- Semesters of entry and application deadlines: fall, spring, summer, January 15 (U.S. and international); winter, September 15 (U.S. and international).
- Entrance examinations: the GRE general exam is required for admission. The range of expected GRE scores are: V-460-480; Q-710-730; AW-4-5. It is recommended that the GRE be taken a minimum of six weeks prior to the application deadline. International applicants are required to take the TOEFL or IELTS exam. University minimum scores are required.
- Prerequisite: BS degree (or equivalent) in mechanical engineering with a minimum 3.0 GPA in the last 60 hours. A BS in any other field requires provisional admission. Consult the department for specific details.

**Requirements for Degree.**

- Credit hours: a minimum 66 credit hours beyond the baccalaureate degree, which may include up to 18 hours of dissertation credit and 30 hours of combined master’s course work and thesis credit (by committee approval) and must include 9 total credit hours of approved math and statistics. No undergraduate courses may apply toward a doctoral degree (except those already applied to a master’s degree).
- Program of Study: a study list must be submitted during the first semester of doctoral study.
- Comprehensive qualifying examination: a written examination must be taken within the first year of the PhD program (it may be retaken only once). Exams are offered in March and September of each year. Students should notify the graduate advisor one month in advance of their intention to take an exam.
- Prospectus: a written prospectus should be submitted and defended as soon after passing the qualifying examination as possible. The prospectus must be approved at least one year prior to the dissertation oral examination.
- Biannual reviews: each student’s progress will be evaluated twice a year, in January and July.
- Residency requirements: residency is required for the major part of the work toward the PhD. This work must be completed under the specific direction of a graduate faculty member while the student is in residence at BYU (at least two consecutive semesters of 6 or more hours of registration). “In residence” is defined as (1) being registered for credit as a graduate student and (2) living and conducting research in the general vicinity of the university, where the student has ready access to research facilities and consultation with the faculty.
- Graduate Seminar: all doctoral students in residence in the department are required to attend at least
MECHANICAL ENGINEERING

75 percent of the graduate seminars that are held on a weekly basis during fall and winter semesters. The seminars include technical presentations by graduate students, faculty members, and invited guests. Doctoral students are required to present at least twice during their graduate program.

- Dissertation: students may register for a maximum of 18 hours of dissertation credit (ME En 799R). All work toward the dissertation must be completed and open for public review. Any exceptions must have written approval from the department and college in advance of any work performed.

- Examination: All students are required to pass an oral examination (defense of dissertation).

- Time requirement: The PhD student has ten years maximum to complete the degree.

- GPA requirement: Cumulative 3.0 GPA or above in all courses to be counted toward the PhD degree.

Please see the PhD Handbook at www.me.byu.edu for more details regarding requirements.

Mechanical Engineering - Integrated—BS/MS

Students who desire to obtain a master's degree in engineering, and who have been accepted to a department professional program, may elect to enter the integrated master's program during the junior year by filling out the necessary form obtained from the ME department graduate advisor. The purpose of the program is to afford greater flexibility in scheduling course work than is normally available through a traditional BS degree followed by an MS degree program.

In this program the BS degree must be received simultaneously with the MS degree. Specific requirements for admission and the MS degree are the same as those listed for the mechanical engineering MS (Thesis or Project), plus the following:

- Admission and Entry.
  - Admission to graduate school must occur before taking the final 30 hours of combined BS/MS course work. A student may not be admitted as a graduate student fewer than two semesters prior to graduation. Application to graduate school must meet usual university and department graduate application deadlines.

Product Development—MS/ MBA

The Mechanical Engineering Department and the Marriott School of Management offer a joint program in product development (PD) leading to a master of science degree in mechanical engineering and a master of business administration (MBA) degree. The program takes an average of three years to complete. The degrees are approved and conferred separately by the two departments, but since course work for the two degrees may overlap and similarities between the two programs may be emphasized, the PD program offers students advantages to separate programs in these two fields.

The PD program addresses important needs for engineers, designers, and managers who excel in world-class product development, which is a cross-functional process requiring both technical and managerial skills. The program provides students who have undergraduate training in engineering the management skills of the MBA program along with advanced training in engineering. Courses teach specific expertise in product and process development through projects, industrial interaction, and research in development and interdisciplinary methods.

Students must apply to both the mechanical engineering MS program and the MBA program, meeting the requirements of each department and mentioning their intention to participate in the PD program in each statement of intent.

Please visit: http://mariottschool.byu.edu/mba/ for more information about the program.

Engineering Management—Minor

Offered to MS students in the College of Engineering and Technology, the -engineering management minor provides a way to include some elements of modern management in a technical graduate program.

Requirements.

- The minor requires 9 hours. Mgt 501 and 511 are required courses. The other 3 hours are selected from Mgt 541, MBA 679 and 650, MPA 615, 622, 675, 676, or approved Marriott School courses.

- Students should carefully plan how they will meet the requirements of the minor since these courses are taught only once a year.

- This minor should be declared as part of a student's graduate study list. Admittance approval to enroll in class will be derived from approved graduate study lists.

FINANCIAL ASSISTANCE

The department offers research and teaching assistantships for graduate students. Graduate internships and tuition awards are also available for qualified students, but normally through a major professor. Select tuition scholarships are provided from industrial firms, as well.

COURSE DESCRIPTIONS

500. (MeEn-CEEEn) Design and Materials Applications. (3)
Prerequisite(s): CEEEn 203; MeEn 372 or CEEEn 321; or equivalents.
Applied and residual stress; materials selection; static, impact, and fatigue strength; fatigue damage; surface treatments; elastic deflection and stability—all as applied to mechanical design.
501. (MeEn-CEEn) Stress Analysis and Design of Mechanical Structures. (3)
Prerequisite(s): CEEn 321 or MeEn 372 or equivalent.
Stress analysis and deflection of structures; general bending and torsion, with computer applications to mechanical and aerospace structure design.

503. (MeEn-CEEn) Plasticity and Fracture. (3)
Prerequisite(s): CEEn 203; MeEn 250; Math 303; senior standing or instructor’s consent.
Tensor algebra; stress and deformation tensors; relationships between dislocation slip, yielding, plastic constitutive behavior, and microstructre development; cracks and linear elastic fracture mechanics.

504. (Me En-CE En) Computer Structural Analysis and Optimization. (3)
Prerequisite(s): Linear algebra; CE En 321 or Me En 372; or equivalents.
Matrix analysis of rods, shafts, beams, trusses, frames, and grids using the generalized stiffness method. Optimization methods for these structures. Organizing computer programs for structural analysis and structural optimization.

506. (MeEn-CEEn) Continuum Mechanics and Finite Element Analysis. (3)
Prerequisite(s): Linear algebra; CE En 321 or Me En 372; or equivalents.
Equilibrium, constitutive, and compatibility equations; closed-form solutions from elasticity; finite element theory, programming, and usage; membrane, axisymmetric, and solid elements. Application to heat transfer, fluid mechanics, and seepage.

508. (Me En-CE En) Structural Vibrations. (3)
Prerequisite(s): CE En 321 or Me En 372 or equivalent.
Dynamic analysis of single degree-of-freedom, discrete multi-degree-of-freedom, and continuous systems.

510. Compressible Fluid Flow. (3)
Prerequisite(s): Me En 312 or equivalent.
One-dimensional analysis of compressible flow with area change, friction, heat transfer, shock waves, and combined effects, including experimental methods.

512. Intermediate Fluid Dynamics. (3)
Prerequisite(s): Me En 312 or instructor’s consent.
Review of fluid properties, Navier-Stokes equations, exact and similarity solutions, introduction to potential flows, stream functions, lift and drag, boundary layers, vorticity, and turbulence.

521. Intermediate Thermodynamics. (3)
Prerequisite(s): Me En 422 or equivalent.
Review of first and second law analysis; exergy; equations of state and other thermodynamic relations; properties of mixtures and multiphase systems; chemical reactions and equilibrium.

522. Combustion. (3)
Prerequisite(s): Chem 105, Me En 422; or instructor’s consent.
Introduction to first- and second-law ideal gas combustion systems along with elementary models of homogeneous and heterogeneous premixed and/or diffusion flames.

523. (Me En-CE En) Aircraft Structures. (3)
Prerequisite(s): CE En 321 or Me En 372; or equivalents.
Requirements, objectives, loads, materials, and tools for design of airframe structures; static behavior of thin-wall structures; durability and damage tolerance; certification and testing. Airframe component team design project.

534. Dynamics of Mechanical Systems. (3)
Prerequisite(s): Me En 335 or equivalent.
Hamiltonian and Lagrangian dynamics, generalized coordinates, linear and angular momentum, Euler angles, rigid-body motions, and gyroscopic effects. Theory taught with applications integrated.

535. Mechanical Vibrations. (3)
Prerequisite(s): Me En 335 or equivalent.
Introduction to energy methods for system modeling, eigenvalues and mode shapes, frequency response, and spectral characterization of vibrations.

537. Advanced Mechanisms, Robotics. (3)
Prerequisite(s): Me En 437 or equivalent.
Kinematics and dynamics of advanced mechanisms, such as robots, with computer simulation of mechanism motion.

538. Compliant Mechanisms. (3)
Prerequisite(s): Me En 372; 475 or concurrent enrollment; or instructor’s consent.
Design and analysis of compliant mechanisms and compliant structures. Large-deflection analysis/force displacement relationships; mechanisms synthesis.

540. Intermediate Heat and Mass Transfer. (3)
Prerequisite(s): Me En 340 or equivalent.
Analytical approaches to conduction, convection, and radiation heat transfer. Introduction to mass transfer.

541. Numerical Heat Transfer. (3)
Prerequisite(s): Me En 340 or instructor’s consent.
Heat transfer analysis by numerical methods. Finite difference and finite element methods, stability, and error analysis.

550. (Me En-EC En) Microelectromechanical Systems (MEMS). (3)
Prerequisite(s): EC En 450 or Me En 372 or equivalent.
Design, fabrication, and applications of MEMS. Mechanical properties governing their design and reliability and the processing technologies used to fabricate them.

557. Corrosion. (3)
Prerequisite(s): Chem 105 or equivalent.
Basic principles, eight common forms of corrosion, testing, materials, applications, modern theory, and high temperature metal-gas reactions.
558. Metallurgy. (3)
Prerequisite(s): MeEn 250 or instructor’s consent.
Fundamental principles of physical metallurgy and their application to design.

561. (Me En-Phscs) Fundamentals of Acoustics. (3)
Prerequisite(s): Phscs 123 or equivalent; Math 303 or 334 or equivalent.

562. (Me En-Phscs 660) Analysis of Acoustic Systems. (3)
Prerequisite(s): Phscs 561 or instructor’s consent.

564. Digital Instrumentation and Mechatronic Systems. (3)
Prerequisite(s): MeEn 363 or equivalent.
Design and analysis of instrumentation systems, fundamental sensor characteristics, and computer data acquisition; time and frequency domain modeling with analog and digital components.

570. (Me En-CE En) Computer-Aided Engineering Software Development. (3)
Prerequisite(s): Me En 373 or C programming.
Programming methods for development of engineering software. Data structures, architecture, libraries, and graphical user interfaces, with applications to CAD systems.

572. (Me En-CE En) Computer-Aided Geometric Design. (3)
Prerequisite(s): Proficiency in C programming.
Mathematical theory of free-form curves and surfaces and solid geometric modeling. Bezier and B-spline curve and surface theory, parametric and implicit forms, intersection algorithms, topics in computer algebra, and free-form deformation. Several programming projects.

574. Product Development Automation. (3)
Prerequisite(s): Prerequisite: Me En 475, 476; or equivalents.
Design automation, network modeling of design systems, mass customization, agent-based methods, transnational design systems. Aerospace, automotive, and consumer product applications.

575. (Me En-CE En) Optimization Techniques in Engineering. (3)
Prerequisite(s): Math 302 and FORTRAN, C, or similar computer language.
Application of computer optimization techniques to constrained engineering design. Theory and use of state-of-the-art computer routines. Robust design methods.
Fee.

576. Product Design. (3)
Prerequisite(s): MeEn 475 or instructor’s consent.
Emerging design methodology and design strategies for complex systems, including decomposition methods and sensitivity analysis. Advanced CAD/CAE/CAM technologies applied to design.

578. CAD/Cam Applications. (3)
Prerequisite(s): Advanced FORTRAN, C, or C++.
Principles and practices involved in parametric surface and solid modeling, associativity, NC tool path generation, etc. Construction of complete CAD models for design, analysis, and manufacture.

584. Manufacturing Process Machine Design. (3)
Prerequisite(s): MeEn 372 or equivalent.
Applying machine design principles to manufacturing process machines and tooling; integrating machine elements; precision machine design. Designing and analyzing the effects of loading, combined stresses, and deflections on machine process capability. Sensors applied to process machines.

585. Manufacturing Competitiveness: Quality and Productivity. (3)
Prerequisite(s): Stat 332, Me En 282; or equivalents.
Production strategies to improve quality, decrease cost, and increase throughput to create market advantage; effective production management systems; applying quality improvement tools to process data; theory of constraints and lean production.

595R. Special Topics in Mechanical Engineering. (0.5-18)
Prerequisite(s): department chair’s consent.

602. (Me En-CE En) Composite Structures. (3)
Prerequisite(s): Me En-CE En 506.
Design of advanced composite structures; deflections, buckling, and vibration of thin plates and sandwich plates; design guidelines; design examples; project.

606. (Me En-CE En) Plates and Shells. (3)
Prerequisite(s): Me En-CE En 506.
Beam and plate theories, including flexural and shear deformation. Large displacement beam and plate theory. Axisymmetric shells and general curved shells. Finite element analysis of beams, plates and shells, including buckling analysis.

608. (Me En-CE En) Nonlinear Structural Analysis. (3)
Prerequisite(s): Me En-CE En 506, 508.
Geometrically nonlinear analysis of trusses, frames, membranes, and plates, including buckling and large deformation analysis. Materially nonlinear analysis, including plasticity and viscoelasticity.
609. (MeEn-CEEn) Spectral Analysis of Dynamic Systems. (3)
Prerequisite(s): Math 302 or equivalent.
Digital signal processing and analysis applied to computer-aided testing, system identification, and characterization of random processes. Applications include vibration and acoustic testing, seismic recording and analysis, and system identification for control.

611. Turbulence. (3)
Prerequisite(s): MeEn 512.
Introduction to turbulence, flow instability and transition, concept of scale, Reynolds averaging, wall-bounded and free shear flows, closure modes, and measurement techniques.

612. Computational Fluid Dynamics. (3)
Prerequisite(s): MeEn 512; Me En 541 or instructor’s consent.
Intermediate theory, algorithms, and implementation: conservation laws, boundary conditions, formulations and discretization techniques, turbulence modeling, and verification and validation of numerical results.

613. Experimental Fluid Mechanics. (3)
Prerequisite(s): Me En 312 or equivalent.
Experimental methods for analyzing fluid flow and heat transfer. Theory and application of techniques in velocimetry, pressure sensing, thermometry, and flow visualization.

625. Advanced Internal Combustion Engines. (3)
Prerequisite(s): Me En 425 or equivalent.

633. (Me En-EC En 673) Digital Control Systems. (3)
Prerequisite(s): Me En 431 or EC En 483 or equivalent.
Design of digital controllers for dynamical systems, analysis using the z-transform, digital filter implementation, application of transform-based classical design methods, and modern state-space techniques.

634. (Me En-EC En 674) Flight Dynamics and Control. (3)
Prerequisite(s): Me En 431 or EC En 483 or equivalent.
Dynamics of flight, stability, and control derivatives, longitudinal and lateral control design; state-space control strategies for aircraft; and unmanned air vehicle applications.

642. Radiative Heat Transfer. (3)
Prerequisite(s): Me En 540.
Advanced engineering analysis of radiant heat exchange between surfaces, in enclosures, and in absorbing, emitting, and scattering media.

643. Convective Heat Transfer (3)
Prerequisite(s): Me En 540.
Advanced engineering analysis of convective heat transfer in internal and external laminar and turbulent flows.

651. Microstructure and Properties. (3)
Prerequisite(s): Me En 506.
Representations of inhomogenous material microstructure, crystallography, orientation distribution functions, Fourier representations, bounding theories for defect-insensitive properties, grain boundaries and grain boundary engineering, microstructure sensitive design.

671. Advanced Strategies for Product Development. (3)
Prerequisite(s): Me En 475 or instructor’s consent.
Theory of advanced strategies for product development. New concepts developed, tested, and applied to real products.

672. Advanced Product Development Lab. (0.5-3)
Prerequisite(s): Me En 475 or equivalent.
Laboratory experience to support advanced independent product development projects.

673. Advanced Design Tool Development. (3)
Prerequisite(s): Me En 570 and instructor’s consent.
Development and implementation of advanced tools and methods for mechanical design.

684. Production System Design. (3)
Prerequisite(s): Me En 671 or instructor’s consent.
Designing manufacturing systems for competitive advantage. Factory layout, simulation and design, and tooling design. Integration of manufacturing design into product development process.

685. (MeEn-Mfg 675) Advanced Manufacturing Strategies for Product Development. (3)
Prerequisite(s): Mfg 232 or equivalent.
Theoretical and experimental study of manufacturing methods such as machining, forming, casting, welding, etc.

695R. Special Problems for Master’s Students. (1-3)
Prerequisite(s): department chair’s consent.

697R. Research. (1-9)

699R. Master’s Thesis. (1-9)

733. (Me En-EC En 773) Linear System Theory. (3)
Prerequisite(s): Me En 431 or EC En 483 or equivalent; EC En 671.
Mathematical introduction to time-varying linear systems; state-space descriptions, controllability, observability, Lyapunov stability, observer-based control. Design of linear quadratic regulators and infinite-horizon Kalman filters.

734. (Me En-EC En 774) Non-Linear System Theory. (3)
Prerequisite(s): Me En 431 or EC En 483 or equivalent; EC En 671.
Mathematical introduction to non-linear dynamic systems. Topics include Lyapunov methods, passivity, input-output stability, and non-linear feedback design.
795R. Selected Topics in Mechanical Engineering. (1-3)

799R. Doctoral Dissertation. (1-18)

FACULTY


Blotter, Jonathan D., Associate Professor. PhD, Virginia Polytechnic Institute and State University, 1996. Experimental Mechanics; Vibrations and Acoustics.

Bowden, Anton E., Assistant Professor. PhD, University of Utah, 2003. Biomechanics; Continuum Mechanics; Nonlinear FEA; Biomaterials.


Colton, Mark B., Assistant Professor. PhD, University of Utah, 2006. Haptic Interfaces; Dynamic Systems; Robotics.

Cox, Jordan J., Associate Professor. PhD, Purdue University, 1991. Design Methodologies; Mass Customization; CAD/CAE/CAM.

Fullwood, David, Associate Professor. PhD, University of London, 1992. Composites; Computational Materials.

Gorrell, Steven E., Associate Professor. PhD, Iowa State University, 2001. Experimental and Computational Fluid Dynamics; Turbomachinery.

Howell, Larry L., Professor. PhD, Purdue University, 1993. Compliant and Rigid Body Mechanisms; Microelectromechanical Systems (MEMS).


Mclain, Timothy W., Professor. PhD, Stanford University, 1995. Dynamic Systems; Controls; Autonomous Air Vehicles.

Nelson, Tracy W., Associate Professor. PhD, Ohio State University, 1998. Materials and Joining.

Parkinson, Alan R., Professor. PhD, University of Illinois, 1982. Optimization; Computer-Aided Engineering; Robust Design Methods.


Smith, Craig C., Professor. PhD, Massachusetts Institute of Technology, 1973. Dynamic Systems and Controls; Automation; Auto Safety.

Sorensen, Carl D., Associate Professor. PhD, Massachusetts Institute of Technology, 1985. Design for Manufacture; Manufacturing Processes; Friction Stir Welding.

Thomson, Scott L., Assistant Professor. PhD, Purdue University, 2004. Fluid Mechanics; Biomechanics; Acoustics.


Vanderhoff, Julie C., Assistant Professor. PhD, University of California, San Diego, 2007. Fluid Mechanics; Computational Fluid Mechanics; Environmental Engineering; Geophysical Fluid Flow.

Webb, Brent W., Professor. PhD, Purdue University, 1986. Heat Transfer.
Microbiology and Molecular Biology

Chair: Brent L. Nielsen
Graduate Coordinator: Laura Bridgewater

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The Program of Studies

The fields of microbiology and molecular biology are closely intertwined and are at the center of some of the most exciting current advances in the biological sciences. With the recent completion of genome-sequencing projects for a number of organisms, including human, the model plant species Arabidopsis thaliana, rice, and a growing number of bacteria and yeasts, including pathogenic organisms, this is an exciting time to study infectious and genetic diseases, genetic diversity, and gene expression.

Graduate programs in microbiology emphasize a combination of course work and research experience, and current theory and informational material are presented in a variety of courses. Graduate study in molecular biology offers a comprehensive and interdisciplinary degree program, supported by faculty from other departments in this college and from the Department of Chemistry and Biochemistry in the College of Physical and Mathematical Sciences. Supporting courses in molecular biology may include appropriate courses from any of these departments. Completion of degree programs in the department qualifies students for further graduate study at other universities; employment in educational, industrial, medical, and research institutions; or postdoctoral opportunities leading to careers as research or academic scientists.

The Department of Microbiology and Molecular Biology offers four degrees: Microbiology—MS, Microbiology—PhD, Molecular Biology—MS, and Molecular Biology—PhD. The advanced degrees offered by the Department of Microbiology and Molecular Biology contain subject emphases available in molecular mechanisms of (A) pathogenesis, (B) generation and maintenance of genetic diversity, and (C) gene expression.

Typically there are between twenty and twenty-five graduate students in the department at any time. They are divided fairly equally between MS and PhD students. Average times in the programs are about two years for an MS degree, about three years beyond a master’s for the PhD degree, and about five years for the PhD, going directly from the bachelor’s without the master’s degree.

Admission and Entry.
All graduate programs in the department have the same admission and entry requirements:

- Semester of entry and application deadline: fall, February 1 (U.S. and international).
- Entrance examination: GRE general test and TOEFL for international students.
- Statement of intent must explicitly state field of interest and career goals.

Microbiology—MS

Admission and Entry.
- Complete preceding general requirements.
- Prerequisite: baccalaureate degree in microbiology or equivalent discipline.

Requirements for Degree.
- Credit hours: candidates without a master’s degree: 54 semester hours beyond the baccalaureate, including no more than 18 hours of dissertation credit. Minimum of 36 hours beyond master’s degree, including 18 hours of dissertation (MMBio 799R).
- Required courses: Bio 503, MMBio 691R, Stat 510 or equivalent, and at least one of the following: MMBio 603, 605, or 641. Additional courses as determined by student’s advisory committee and approved by department graduate committee.
- Comprehensive examination: students will be required to pass a comprehensive examination after the formal course work is completed. The format and content of the comprehensive examination will include (1) a written grant proposal and (2) an oral defense of that proposal and course work taken.
- Thesis: standard university thesis or journal publication format.
- Final public seminar on thesis research.
- Examination: (A) oral examination on course work and (B) oral examination on thesis.

Molecular Biology—MS

Admission and Entry.
- Complete preceding general requirements.
- Prerequisite: baccalaureate degree in molecular biology or biological or biochemical science, including one semester each of cell biology, molecular biology, and biochemistry.

Requirements for Degree.
- Same as MS in microbiology.

Microbiology—PhD

Admission and Entry.
- Complete preceding general requirements for microbiology MS. Any course deficiencies, as determined by the advisory committee, must be completed during the first year following admittance.

Requirements for Degree.
- Credit hours: candidates without a master’s degree: 54 semester hours beyond the baccalaureate, including no more than 18 hours of dissertation credit. Minimum of 36 hours beyond master’s degree, including 18 hours of dissertation (MMBio 799R).
- Required courses: Bio 503, MMBio 691R, Stat 510 or equivalent, and at least one of the following: MMBio 603, 605, or 641. Additional courses as determined by student’s advisory committee and approved by department graduate committee.
- Comprehensive examination: students will be required to pass a comprehensive examination after the formal course work is completed. The format and content of the comprehensive examination will include (1) a written grant proposal and (2) an oral defense of that proposal and course work taken.
- Thesis: standard university thesis or journal publication format.
- Final public seminar on thesis research.
- Examination: (A) oral examination on course work and (B) oral examination on thesis.

Microbiology—PhD

Admission and Entry.
- Complete preceding general requirements.
- Prerequisite: baccalaureate degree in microbiology or equivalent discipline.

Requirements for Degree.
- Credit hours (30 hours): minimum 24 course work hours plus 6 thesis hours (MMBio 699R).
- Required courses: Bio 503, MMBio 691R, Stat 510 or equivalent, and at least one of the following: MMBio 603, 605, or 641. Additional courses as determined by student’s advisory committee and approved by department graduate committee.
- Comprehensive examination: students will be required to pass a comprehensive examination after the formal course work is completed. The format and content of the comprehensive examination will include (1) a written grant proposal and (2) an oral defense of that proposal and course work taken.
**Microbiology and Molecular Biology**

- Dissertation: standard university dissertation or journal publication format.
- Public seminar and oral defense of dissertation.

**Molecular Biology—PhD**

**Admission and Entry.**
- Complete preceding general requirements for molecular biology MS. Any course deficiencies, as determined by the advisory committee, must be completed during the first year following admittance.

**Requirements for Degree.**
- Same as PhD in microbiology.

**Financial Assistance**
Teaching and research assistantships are offered by the department.

**Resources and Opportunities**

**Electron Optics Laboratory.** Researchers can accomplish all standard electron optics procedures. The laboratory has transmission and scanning electron microscopes equipped with X-ray microanalysis capabilities, plus accessory equipment for freeze-fracture, freeze-drying, and necessary support facilities, including confocal laser scan microscopy.

**Research Instrumentation Core Facility** is a shared facility for protein purification, separation, and analysis. It is equipped with a GC system, flow cytometer, image analysis system for gels and blots, a high-speed centrifuge, a fluorescent microscope, and a spectrophotometer.

**DNA Sequencing Center** provides advanced, efficient, and economical services for DNA sequence and DNA fragment acquisition and analysis.

**Proteomics and Biological Mass Spectrometry Facility** offers instrumentation to resolve complex proteomes and to identify and characterize the component proteins. Instrumentation assists in identifying proteins in the femtomole range, noncovalent protein interactions, and post-translational modifications, and determining differences in protein expression. The facility is equipped with an Applied Biosystem QSTAR Pulsar Hybrid QqToF Mass Spectrometer and 2D Gel technologies.

**Cancer Research Center** is an independent organization with members coming from the Colleges of Life Sciences, Engineering and Technology, Health and Human Performance, and Physical and Mathematical Sciences. A primary goal of the Cancer Research Center is to provide a rigorous research training program for students. Our ultimate goal is to find a cure through research and education.

**Other Campus Facilities** include a microscopy lab, greenhouses, gardens arboretum, small-animal vivarium, and tissue culture rooms.

**Faculty research interests** currently include DNA replication, gene regulation, virology, immunology, cancer biology, pathogenesis, host-microbe interactions, molecular evolution, microbial ecology, and clinical laboratory science.

**For a more detailed description of the graduate program requirements, see MMBIO graduate student handbook online at http://mmbio.byu.edu.**

**Course Descriptions**

518. Select Pathogens. (2)
Prerequisite(s): MMBio 453 or equivalent.
Current literature in special pathogens.

551R. Current Topics in Microbiology and Molecular Biology. (1-3)
Readings from current literature on a specific topic; student presentations and discussion.

554. Molecular Virology. (2)
Prerequisite(s): MMBio 354, 454; or equivalents.
Molecular mechanisms of virus architecture, attachment and entry pathways, replication strategies, oncogenesis, evolution, and mechanisms of pathogenesis.

557. Genes and Cancer. (2)
Prerequisite(s): MMBio 441 or equivalent.
Molecular basis of human cancers, emphasizing oncogenes, tumor suppressor genes, chromosomal instability, hereditary cancers, chemical and physical carcinogens, and viral carcinogenesis.

603. Molecular Aspects of Gene Expression. (3)
Prerequisite(s): Graduate status.
Regulatory mechanisms governing gene expression, including transcriptional, post-transcriptional, and post-translational controls.

604. Advanced Immunology. (3)
Prerequisite(s): Graduate status.
Advanced topics of immunology.

605. Molecular and Microbial Pathogenesis. (3)
Prerequisite(s): Graduate status.
Pathology of viral, parasitic, and bacterial diseases.

611. Advanced Cellular and Molecular Immunology. (2)
Current topics in immunology.

613. Philosophy of Biology. (2)
Epistemological, metaphysical, and ethical issues in the biological sciences. Philosophical questions concerning the theory of evolution, debate between evolution and creationism, fitness, adaptationism, the units of selection, systematics, sociobiology, and evolutionary ethics.

614. Prokaryotic Signal Transduction. (2)
Current literature integrating cell signal pathways and the regulation of prokaryotic gene expression.

615. RNA-Mediated Gene Regulation. (2)
Current advances in studies on RNA processing, including RNA splicing and editing, riboswitches, ribozymes, and the role of small RNAs in RNA interference and regulation of gene expression.
631. Coevolution. (3)
Prerequisite(s): Bio 640 or concurrent enrollment.
Current methods of analyzing multiple evolutionary patterns, including cophylogeny, comparative phylogeography, and gene tree/species tree reconciliation. Students who have data appropriate for comparative analyses will benefit most.

641. (MMBio - Bio) Molecular Evolution. (4)
Prerequisite(s): Bio 420 or equivalent.
Theoretical foundations of molecular evolution; molecular phylogenetics, estimates of population genetic parameters, gene duplication, horizontal gene transfer, rates of evolution, molecular clocks.

651R. Special Topics in Microbiology and Molecular Biology. (1-3)

691R. Graduate Seminar. (1)

695R. Research. (0.5-18)

699R. Master’s Thesis. (1-9)

799R. Doctoral Dissertation. (1-9)

FACULTY

ADAMS, BYRON J., Assistant Professor.
PhD, University of Nebraska, 1998. Molecular Evolution and Systematics; Entomopathic Nematology.

BREAKWELL, DONALD P., Associate Professor. PhD, Purdue University, 1992. Microbial Ecology.

BRIDGEWATER, LAURA C., Associate Professor. PhD, George Washington University, 1995. Transcriptional Regulation; Developmental Biology.

BURNETT, SANDRA, Assistant Professor.
PhD, University of Kentucky, 2000. Veterinary Science; Molecular Immunology; Virology.

ERICKSON, DAVID, Assistant Professor.

EVANS, R. PAUL, Assistant Professor.
PhD, Medical College of Virginia, 1983. Molecular Biology.

GRIFFITTS, JOEL, Assistant Professor.

HARKER, ALAN R., Professor. PhD, University of Utah, 1982. Microbial Physiology.

JOHNSON, F. BRENT, Professor. PhD, Brigham Young University, 1970. Virology.

LIN, CHIN-YO, Assistant Professor.

MCCLEARY, WILLIAM R., Associate Professor. PhD, University of California, Berkeley, 1990. Microbial Physiology; Bacterial Signal Transduction.

NIELSEN, BRENT L., Professor. PhD, Oregon State University, 1985. Plant Molecular Biology.

ONEILL, KIM L., Professor. DPhil, New University of Ulster, Northern Ireland, 1986. Genetics; Oncology.

ROBISON, RICHARD A., Professor.
PhD, Brigham Young University, 1988. Molecular Biology; Immunology.

WILSON, ERIC, Assistant Professor.
PhD, Montana State University, 2000. Immunology.

THE PROGRAM OF STUDIES

The graduate programs in the School of Music are designed to preserve and develop an art form that is essential to human progress and well-being and to provide advanced instruction in the art and craft of music.

The School of Music provides graduate education in composition, music education, musicology, and music performance, and it maintains accreditation for all of its degree programs through the National Association of Schools of Music.

Two degrees are offered through the School of Music: Music—MA, Music—MM. A music minor is also offered.

The School of Music has an average enrollment of seventy graduate students from various U.S. and international areas. The average time for a student to complete a master’s degree in music is two years.

Admission and Entry.
• Application deadlines, regardless of date of entry, are February 1 for U.S. students and January 1 for international students. Music education applicants for the MM and MA must enter summer term only.
• Application requirements: each applicant must submit specific materials relating to the applicant’s intended specialization, which are reviewed by faculty members in that specialization. See specific areas.
• After being admitted, all students take the Graduate Placement Exam from 8:00 to 10:00 a.m. the Friday immediately preceding the beginning of fall semester classes. Any deficiencies diagnosed by the exam
must be removed during the first year of study. Students may arrange to take the exam earlier by contacting the graduate coordinator.

Music—MA

The master of arts degree is offered with specializations in Music Education and Musicology. A student whose background exhibits deficiencies in academic areas of music may be required to complete additional prerequisite courses during the MA.

MA in Music Education. This program offers the student an opportunity to contribute to the body of knowledge in music education by completing a thesis based on qualitative or quantitative research. The document will also be prepared in article form for submission to a scholarly journal or for presentation at an appropriate professional conference.

MA in Musicology. This program prepares students to be teachers and scholars who will promote musical understanding and appreciation for the arts. Students are expected to add to the body of historical and analytical publication that has increased understanding of the history, practice, sociology, and aesthetics of the cultural heritage of Western (and to a lesser degree non-Western) music. This effort should also increase awareness of cultural and historical diversity represented in concert programs and recordings.

Admission and Entry.

MA Music Education: submit the following with application:
- Outline of teaching history including schools, locations, dates, and courses taught.
- 800- to 1200-word proposal for a possible research study/thesis topic related to music education.
- Recording (preferably video) containing (1) a representative instrumental (major instrument) or vocal performance of the applicant and (2) a group performance conducted by the applicant.
- A sample of scholarly writing. The sample may be either previously or newly written but must be a complete document of some kind.

MA Musicology: submit the following with application:
- Sample scholarly research paper.
- List of publications, if any.

Requirements for Specialization—Music Education.
- Prerequisite: baccalaureate degree in music or equivalent.
- Credit hours (32): minimum 26 course work hours plus 6 thesis hours (Music 699R).
- Required courses: Music 501, 699R; 4 hours from Music 671, 672, 673, 674, 675; Stat 510.
- Electives: 8–10 hours from graduate music courses and 7–9 hours from graduate courses outside the music field.
- Thesis.
- Examinations: (A) comprehensive written examination; (B) defense of thesis.

Requirements for Specialization—Musicology.
- Prerequisite: baccalaureate degree in music or equivalent.
- Credit hours (32): minimum 26 course work hours plus 6 thesis hours (Music 699R).
- Required courses: Music 500, 699R.
- Any four courses (12 hours) from 601, 602, 603, 604, 605, 606.
- Any three courses (9 hours) from Music 483, 503, 581, 583, 595, 596, 683.
- Electives: 3 hours in music or other departments.
- Thesis.
- Examinations: (A) department language proficiency examination, normally in French or German; (B) comprehensive written examination; (C) defense of thesis.

Music—MM

The master of music degree is offered with specializations in Composition, Conducting, Music Education, and Performance.

MM in Composition. The purpose of this specialization is to produce graduates who are prepared to make a significant contribution to the art form, either as composers or as teachers and scholars in composition and theory, and to provide aesthetic enrichment to both the composer and listener.

MM in Conducting. Students develop advanced, personal conducting skills and techniques that are precise and suited to a variety of musical needs; attain confidence, poise, and clarity with the baton; learn effective rehearsal techniques; and become familiar with a variety of instrumental and choral scores representing the repertoire of various music periods and sacred and secular styles. They learn to convey through gesture music’s power and gentleness and its directness and subtlety to both the performer and audience and to select and bring to the community the great masterpieces of instrumental and choral literature.

MM in Music Education. The focus of this program is on the professional improvement of music educators. Emphasis is placed on effective educational and musical leadership in classrooms and communities. Emerging graduates should be advocates and champions of musical excellence and should serve as exemplars to other music educators. A substantial professional improvement project accompanied by a descriptive scholarly document is required.

MM in Performance. The intent of the specialization is to prepare students with outstanding performance potential to be competitive in performance and teaching careers and to be advocates for the arts in their communities. They may help meet the needs for skilled performers of solo and small and large ensemble music, and they will be able to teach privately and help meet the considerable community demand for excellent private studio teachers.

Admission and Entry.

MM Composition: submit the following with application:
- Portfolio of four compositions in various media.
- Recording of two or more of these compositions.
MM Conducting: submit the following with application:
- Programs of concerts presented and lists of pieces rehearsed as a conductor.
- High-quality recording and, if possible, a videotape recording of a representative performance of a group trained and conducted by the applicant.
- (A) Choral Emphasis: a personal or recorded performance that demonstrates the applicant’s ability to play four-part homophonic and polyphonic music at the keyboard.
- (B) Instrumental Emphasis: an audio or video recording showing proficiency on the applicant’s major instrument.

MM Music Education: submit the following with application:
- Outline of teaching history including schools, locations, dates, and courses taught.
- 800- to 1200-word proposal for a possible master’s project or thesis topic of interest to the applicant.
- Recording (preferably video) containing (1) a representative instrumental (major instrument) or vocal performance of the applicant and (2) a group performance conducted by the applicant.
- Video recording of the applicant teaching in a music setting.

MM Performance: submit the following with application:
- Recital programs and repertoire lists from undergraduate study.
- Personal performance audition at Brigham Young University (preferred) or a videotape or recording of the senior recital or equivalent performance (acceptable).

Requirements for Specialization—Composition.
- Prerequisite: baccalaureate degree in music composition or equivalent in previous training.
- Credit hours (32): minimum 26 course work hours plus 6 master’s composition hours (Music 688R).
- Required courses: Music 500, 503, 606, 670R (6 hours) 688R (6 hours); 3 hours from 601, 602, 603, 604, 605; 6 hours from 581, 583, 591, 596, 683.
- Electives: 3 hours.
- Recital: strongly recommended.
- Project.
- Examination: (A) final oral examination; (B) defense of project.

Requirements for Specialization—Conducting.
- Prerequisite: baccalaureate degree in music;
- Credit hours: minimum 32 course work hours.
- Required courses: Music 500, 660R (conducting, 4 hours), ensemble (2 hours), 697A,B.
- Band Emphasis: Music 510, 532, 595, 606, and 5 hours of electives in addition to the 6 hours of electives listed below.
- Choral Emphasis: Music 506, 507, 533R (6 hours), and 4 hours of electives in addition to the 6 hours of electives listed below.
- Orchestral Emphasis: Music 508, 509, 532, 595, and 6 hours of electives in addition to the 6 hours of electives listed below.
- Electives: 6 hours in nonperformance music graduate courses (as approved by graduate committee) from one or more of the following areas: music education, music history, or music theory.
- Examinations: (A) jury examination each semester of enrollment in 660R; (B) repertory examination; (C) final oral examination.
- Closure project: Music 697A,B.

Requirements for Specialization—Music Education.
- Prerequisite: public school music teacher certification; baccalaureate degree in music.
- Credit hours: minimum 32 course work hours including a professional improvement project (Music 698A,B).
- Required courses: Music 501, 595, 673, 674, 675; 6 hours from 532, 533R, 534R; 4 hours from 560R; 698A,B.
- Project.
- Examination: (A) comprehensive written examination; (B) final oral examination; (C) defense of project.

Requirements for Specialization—Performance.
- Prerequisite: baccalaureate degree in performance or equivalent; proficiency in German, French, and Italian diction for voice candidates.
- Credit hours: minimum 32 course work hours.
- Required courses:
  - Voice Emphasis: Music 500, 505A,B, ensemble (2 hours), 660R (6 hours), 665, 670R (2 hours), 697A,B (4 hours), and electives in addition to the electives listed below (4 hours).
  - Orchestral Instrument Emphasis: Music 500, 505A,B, large ensemble (2 hours), chamber ensemble (2 hours), 660R (6 hours), 665, 670R (2 hours), 697A,B (4 hours), and electives in addition to the electives listed below (2 hours). Scholarship students may have additional ensemble requirements. See your graduate advisor for details.
  - Keyboard Instrument Emphasis: Music 500, 505A,B, ensemble (2 hours), 591, 660R (6 hours), 665, 670R (2 hours), 697A,B (4 hours), and electives in addition to the electives listed below (2 hours). The ensemble requirement listed above includes 644R.
- Electives: 6 hours in nonperformance music graduate courses (as approved by graduate committee) from one or more of the following areas: music education, music history, or music theory.
- Examinations: (A) jury examination each semester of enrollment in 660R; (B) repertory examination; (C) final oral examination.

Music—Minor

The School of Music follows the general university requirements established for the graduate minor. The student must:
- Obtain the approval of the director of the School of Music.
- Select a graduate faculty member (approved by the director) to serve as a graduate committee member.
- Register for and complete 9 semester hours of approved graduate credit in the minor.
• Pass an oral or a written comprehensive examination in the minor (prepared by the minor committee member).

**Financial Assistance**

The School of Music offers four types of graduate awards: assistantships, internships, performance awards, and scholarships.

**Resources and Opportunities**

The Harris Fine Arts Center, which houses the School of Music, contains two concert halls and numerous practice rooms for music, dance, and theatre.

Graduate students have opportunities to perform individually and with groups in both the Madsen Recital Hall and the de Jong Concert Hall in the Harris Fine Arts Center.

For a more detailed description of the graduate program requirements, request a copy of the department’s graduate handbook.

**Course Descriptions**

500. Musical Research Techniques. (2)
Prerequisite(s): Graduate status.

501. Music Education Research Techniques. (2)
Prerequisite(s): Graduate status.

503. Aesthetics. (3)
Prerequisite(s): Music 304 or equivalent.

Fundamental questions of aesthetic theory from classical antiquity to the present, emphasizing musical aesthetics.

505B. Advanced Applied Literature. (2)
Prerequisite(s): Music 505A.

Intensification and deeper study of Music 505A materials.

505A. Applied Literature. (2)
Prerequisite(s): Minimum of one enrollment in Music 402-407 or equivalent.

Advanced survey and research of literature.

506. Choral Literature 1. (2)
Prerequisite(s): instructor’s consent.

Concentrated analytical study and application of choral literature through Beethoven.

507. Choral Literature 2. (2)
Prerequisite(s): instructor’s consent.

Concentrated analytical study and application of choral literature from post-Beethoven to the present.

508. Orchestra Literature 1. (2)
Prerequisite(s): instructor’s consent.

Concentrated analytical study and application of orchestral literature of the baroque and classical eras.

509. Orchestra Literature 2. (2)
Prerequisite(s): instructor’s consent.

Concentrated analytical study and application of orchestral literature of the romantic era and the 20th century.

510. Band Literature. (2)
Prerequisite(s): instructor’s consent.

Concentrated study of band literature through analysis and conducting.

532R. Score Preparation and Conducting: Instrumental. (2)
Prerequisite(s): instructor’s consent.

533R. Choral Conducting and Development. (2)

Principles and practices of score preparation, conducting, and choral development as elements of choral artistry.

534R. Score Preparation and Direction: Jazz. (2)

560R. Performance Instruction. (1-2)
Prerequisite(s): Graduate music student status.

Performance instruction for students not specializing in performance, and for performance students wishing to study secondary instruments.

Fee.

570. Music for Elementary School Teachers. (2)
Prerequisite(s): Music 371, 471, or elementary music teaching experience.

Experiences in teaching various music activities in the elementary school.

571. Elementary Education Music Pedagogy. (2)
Prerequisite(s): Music 371 and equivalent of elementary education teaching minor in music.

Orff, Dalcroze, and Kodaly materials and techniques.

575R. Summer Music Workshops and Clinics. (0.5-4)

576. Fundamentals and Techniques of the Marching Band. (2)
Prerequisite(s): Music 294, 296.

Planning, charting, and scoring for marching bands.

For music education majors only.

581. Twentieth-Century Orchestration. (3)
Prerequisite(s): Music 481.

New techniques for standard and new instruments; analysis and listening.

583. Sixteenth-Century Counterpoint. (3)
Prerequisite(s): Music 483.

Strict modal counterpoint in sixteenth-century style (Palestrina); includes species, text setting, and motet.

587R. Composition. (3)

591. Advanced Topics in Keyboard Harmony. (2)
Prerequisite(s): instructor’s consent.

Topics vary.

595. Score Analysis. (2)

Analysis of representative choral and instrumental works from the Renaissance through contemporary styles.

596. Schenker Analysis. (3)
Prerequisite(s): Music 303, 395; or equivalent.

Schenker’s system of tonal analysis.
599R. Academic Internship. (1-6)
Prerequisite(s): instructor’s consent.
Internship in creative, performing, producing, or teaching applications of major course work.

600R. Topics in Music. (1-3)
Prerequisite(s): Music 301, 302, 303, 304, or equivalent.

601. Music in the Middle Ages. (3)
Prerequisite(s): Music 301, 302, 303, 304, or equivalent.

602. Music in the Renaissance. (3)
Prerequisite(s): Music 301, 302, 303, 304, or equivalent.

603. Music in the Baroque Era. (3)
Prerequisite(s): Music 301, 302, 303, 304, or equivalent.

604. Music in the Classic Period. (3)
Prerequisite(s): Music 301, 302, 303, 304, or equivalent.

605. Music in the Romantic Period. (3)
Prerequisite(s): Music 301, 302, 303, 304, or equivalent.

606. Music of the Contemporary Period. (3)
Prerequisite(s): Music 301, 302, 303, 304, or equivalent.

614R. Concert Choir. (1)

615R. University Singers. (1)

616R. Opera Workshop. (1)
Prerequisite(s): Audition; instructor’s consent.
Training and experience in operatic choral music and stage movement.

617R. Opera Ensemble. (1-3)
Prerequisite(s): Audition; instructor’s consent.
Training and experience in operatic excerpts, chamber opera, and full productions for operatic soloists.

626R. Wind Symphony. (1)

634R. Synthesis. (1)

638R. Philharmonic Orchestra. (1)

639R. Chamber Orchestra. (1)

641R. Brass Chamber Music. (1)

642R. Early Music Ensemble. (1)

643R. Guitar Ensemble. (1)

644R. Keyboard Ensemble. (1)

645R. Percussion Ensemble. (1)

646R. String Chamber Music. (1)

648R. Woodwind Chamber Music. (1)

649R. Solo Recital. (2)
Prerequisite(s): Concurrent registration in Music 660R.
Available only to students who began their programs prior to fall 2000.

660R. Graduate Instrument Instruction. (1-2)
Prerequisite(s): completion of undergraduate performance proficiency requirements and audition; primary instrument only.
For performance specialization. Fee.

665. Pedagogy. (2)
Prerequisite(s): Completion of appropriate undergraduate pedagogy courses or equivalent.
Advanced pedagogical studies.

670R. Supervised Teaching. (2)
Prerequisite(s): Graduate music major status.
Supervised private and group instruction.

671. Influence of Music on Behavior. (2)
Variables that influence musical behavior and effects of music on nonmusical behavior.

672. Psychology of Music. (2)
Psychoacoustical properties of musical phenomena and the neurological aspects of music perception and performance.

673. Historical and Social Foundations of Music Education. (2)
Leaders, events, and trends in history of music education, emphasizing sociological implications.

674. Philosophical and Aesthetic Foundations of Music Education. (2)
Questions related to teaching music in the public schools.

675. Theories of Music Learning and Motivation. (2)
Applications of psychology to teaching and learning music. Research paper required.

683. Twentieth-Century Counterpoint. (3)
Prerequisite(s): Music 583.
Counterpoint from the works of Schoenberg, Stravinsky, Crumb, Lutoslawski, and others.

687R. Composition for Master’s Degree. (1-6)
Prerequisite(s): Graduate music faculty’s consent, based on evidence of ability in composition manifested in preliminary work.

694R. Independent Readings. (1-3)
Prerequisite(s): Graduate coordinator’s consent

697A. Researching the Recital. (2)
Preparation of a paper related to music of graduate recital. Alternate topic possible with graduate committee’s consent. Supervised by the student’s committee chair or other appropriate faculty member.

697B. Recital. (2)

698A. Master’s Project—Professional Improvement Project. (2)
Identifying and delineating a project. Study list constructed and advisor assigned.

698B. Master’s Project—Professional Improvement Project. (2)
Presentation of project and written report.

699R. Master’s Thesis. (1-9)
Prerequisite(s): department graduate faculty’s consent.

Faculty

Belknap, Monte, Associate Professor. MM, University of Cincinnati, 1994. Violin Performance.

Bevan, Julie B., Associate Professor. MM, University of Southern California, 1975. Cello Performance.

Bigelow, A. Claudine, Assistant Professor. DMA, University of Maryland, 2002. String Performance and Pedagogy.

Broomhead, Paul, Associate Professor. PhD, University of Washington, 1999. Music Education.


Brown, David C., Associate Professor. MM, University of Toledo, 1997. Trumpet Performance and Pedagogy.

Bush, Douglas E., Professor. PhD, University of Texas, 1982. Musicology; Organ.

Call, R. Steven, Associate Professor. PhD, University of Utah, 2000. Music Education.

Clayton, April, Associate Professor. DMA, The Juilliard School of Music, 2001. Flute Performance.

Cook, R. Donald, Associate Professor. DMA, University of Kansas, 1987. Organ Performance and Pedagogy.

Dabczynski, Andrew, Professor. PhD, University of Michigan, 1994. Music Education; Strings.


Grimshaw, Jeremy, Assistant Professor. PhD, Eastman School of Music, 2005. Musicology.

Hall, Rosalind, Associate Professor. MM, Brigham Young University, 1992. Choral Conducting.


Hicks, Michael D., Professor. DMA, University of Illinois, 1984. Theory and Composition.

Hinckley, Jaren S., Assistant Professor. DMA, Florida State University, 2002. Clarinet Performance.


Jaccard, Jerry L., Associate Professor. EdD, University of Massachusetts, 1995. Music Education.


Kenney, Susan Hobson, Associate Professor. MA, Brigham Young University, 1978. Elementary Music Education.


Peterson, Donald L., Associate Professor. DMA, Arizona State University, 1986. Music Education.

**NEUROSCIENCE CENTER**

**Director:** Dawson W. Hedges  
1055 SWKT  
Provo, UT 84602  
(801) 422-1218

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**THE PROGRAM OF STUDIES**

This center represents three academic colleges (Life Sciences, Physical and Mathematical Sciences, and Family, Home, and Social Sciences) and three departments (Physiology and Developmental Biology, Chemistry and Biochemistry, and Psychology). Neuroscience is defined as the study of the development and function of the central nervous system and its connection to influencing/regulating behavior. The study of neuroscience at the graduate level requires the tools provided by training in calculus, general biology, genetics, physiology, molecular biology, chemistry, physics, psychology, research design, and analysis of molecular mechanisms to biochemical pathways that influence behavior.

For degree programs related to neuroscience, see the Department of Physiology and Developmental Biology.

**COURSE DESCRIPTIONS**

601. Graduate Neuroscience. (3) Prerequisite(s): Neuro 460, 480, 481; or equivalents.  
Student presentation of current primary literature.  
Team taught.

649R. Laboratory Research. (1-6) Prerequisite(s): Instructor’s consent.  
Laboratory research for neuroscience graduate students.

694R. Research Presentation. (0.5-1) Oral presentation of graduate research projects (introduction, methods, hypothesis, results, and conclusion).

696R. Neuroscience Graduate Seminar. (0.5-1) Seminar series organized by the Neuroscience Center and the Department of Physiology and Developmental Biology. Speakers are enlisted from both inside and outside the university.

699R. Master’s Thesis. (1-6)

799R. Doctoral Dissertation. (1-18)

**FACULTY**

**Allen, Mark D., Assistant Professor.** PhD, Johns Hopkins University, 2000. Psycholinguistics; Neurobiology of Language.  

**Bigler, Erin D., Professor.** PhD, Brigham Young University, 1974. Neuropsychology; Neuroanatomy; Neuroimaging.

**Bloch, George Jr., Professor.** PhD, Stanford University, 1968. Physiological Psychology; Neuroendocrinology; Chronic Stress.

**Busath David D., Professor.** MD, University of Utah, 1978. Electrophysiology; Molecular Modeling; Molecular Biophysics.

**Brown, Michael D., Assistant Teaching Professor.** PhD, Colorado State University, 1999. Regulation of Axon and Dendrite Extension; Pathfinding During Nervous System Development.

**Edwards, Jeffrey E., Assistant Professor.** PhD, University of Utah, 2003. Learning and Memory; Synaptic Plasticity.


**Flom, Ross A., Associate Professor.** PhD, University of Minnesota, 1999. Attention and Cognition in Infants.

**Hedges, Dawson W., Associate Professor.** MD, University of Utah, 1988. Psychiatry; Neuroscience; Neuroimaging and Neuroendocrinology.

**Higley, James D., Professor.** PhD, University of Wisconsin-Madison, 1985. Child Development; Primate Behavior.

**Hopkins, Ramona O., Professor.** PhD, University of Utah, 1996. Cognitive Neuroscience and Neurobiological Approaches to Cognition; Brain Imaging; Brain Behavior Relationships; Emotion; Health-Related Quality of Life; Cognitive Development; Family Stress Due to Illness.

**Judd, Allan M., Professor.** PhD, West Virginia University, 1982. Physiology; Neuroendocrinology.

**Lephardt, Edwin D., Professor.** PhD, University of Texas Southwestern Medical Center, Dallas, 1989. Neuroendocrinology.

**McPherson, David, Professor.** PhD, University of Washington, 1972. Audiology; Hearing Science; Electrophysiology.

**Porter, Chris, Associate Professor.** PhD, Purdue University West-Lafayette, 1996. Infancy; Toddlerhood.

**Porter, James P., Professor.** PhD, University of California, San Francisco, 1982. Neuroendocrinology; Hypertension.

**South, Mike D., Assistant Professor.** PhD, University of Utah, 2005. Child Clinical Psychology.

**Stark, Michael R., Assistant Professor.** PhD, University of California, Irvine, 1998. Developmental Biology.

**Steffensen, Scott, Associate Professor.** PhD, University of Utah, 1987. Neuropharmacology; Neuroscience Center.

**Sudweeks, Sterling N., Associate Professor.** PhD, University of Utah, 1997. Pharmacology of the Nervous System; Ion Channels.

**Woodbury, Dixon J., Professor.** PhD, University of California, Irvine, 1986. Molecular Mechanisms of Exocytosis; Neuroscience of Transmitter Release; Electrophysiology of Ion Channels.
The Program of Studies

The graduate program, administered by the College of Nursing, prepares advanced practice nurses to: (1) critically evaluate, synthesize, and integrate theory and research from nursing and related fields in practice; (2) demonstrate leadership and competence in advanced practice roles; (3) participate as informed advanced practice nurses regarding health care policy and resource accountability, in the context of social, political, ethical, and legal considerations of health care; (4) provide competent evidence-based, advanced-practice nursing care to diverse individuals, families, and groups and manage health and illness across the continuum of care and across the lifespan; and (5) provide care in a compassionate manner that respects, protects, and enhances spiritual integrity, human dignity, and cultural diversity, and demonstrates the Healer’s art.

The College of Nursing is a member of the Council of Baccalaureate and Higher Degree Programs of the National League for Nursing, the American Association of Colleges of Nursing, and the Western Council on Higher Education in Nursing. The program is accredited by the Commission on Collegiate Nursing Education (CCNE) and is also approved by the Utah State Board of Nursing.

The College of Nursing offers one degree in nursing—the master of science—in which two specialty areas are available: Family Nurse Practitioner and Adult Medical-Surgical Clinical Nurse Specialist.

Note: The college is currently not accepting students into the Adult Medical-Surgical Clinical Nurse Specialist Program. Contact the College of Nursing for further information regarding the program.

Approximately forty students are enrolled in the College of Nursing’s graduate program. The programs can be completed in approximately two to three years, although five years are allowed.

Nursing—MS

The master of science degree program emphasizes clinical expertise and includes nursing theories and concepts as well as extensive clinical experience. Research is an important component of the program, and students are required to write a thesis, develop an innovative clinical project, or complete a scholarly evidence-based paper of a relevant clinical problem.

Admission and Entry.

- Semesters of entry and application deadlines: spring term only, December 1 (U.S. and international).
- Recommendations: three letters of recommendation from former teachers or employers.
- Personal statement: brief (three pages or fewer) prepared statement of personal philosophy and goals for graduate education.
- GPA: minimum 3.0 GPA for last 60 hours.
- Interview.
- Graduate Record Examination general test.
- Impromptu writing experience.
- Résumé.
- Prerequisite: baccalaureate degree in nursing.
- License: current RN licensure in Utah in good standing.
- Completion of basic statistics course.
- Completion of an undergraduate pathophysiology course.
- Transportation: candidates may be required to travel to gain experience in a variety of hospitals and clinics and to visit agencies and client homes; therefore, access to a car is necessary.

- Student malpractice insurance: the university incurs the cost for this insurance.

Requirements for Degree.

- Credit hours:
  - Adult Medical-Surgical Clinical Nurse Specialist Specialization (50): minimum 44 course work hours plus 6 thesis or project hours (Nurs 698R or 699R).
  - Family Nurse Practitioner Specialization (53): minimum 47 course work hours plus 6 thesis (Nurs 699R) or project (Nurs 698R) hours; or a scholarly evidence-based paper (Nurs 623, 631, 633).

- Required courses:
  - Adult Medical-Surgical Clinical Nurse Specialist Specialization: Nurs 555, 600, 601, 605, 619, 621, 627, 629, 651, 653, 655, 657, 659R; 698R or 699R.
  - Family Nurse Practitioner Specialization: Nurs 555, 600, 601, 605, 619, 621, 622, 627, 629, 630, 632, 635R; 698R or 699R or 623, 631, 633.

- Electives: determined in consultation with graduate committee.
- Thesis/Project or a scholarly evidence-based paper.
- Examination: oral defense of thesis or project.

Financial Assistance

The College of Nursing actively seeks financial resources to assist students. State and governmental funds are available, and RNs can usually find local part-time work. The university also has limited funds available. Students who need financial aid should contact the College of Nursing graduate coordinator. University awards are in the form of internships and assistantships.

Assistantships. Students must be registered and able to meet the skill and credit-hour requirements for the available teaching and research assistantships. For more information, students should meet with the college graduate coordinator.

Scholarships. Scholarships, awarded on the basis of GPA and need, are available to degree-seeking master’s students. Recipients must take at
least 2 credit hours per semester to maintain the scholarship. They must also maintain at least a 3.0 GPA. See the college graduate coordinator or the graduate secretary for more information.

**RESOURCES AND OPPORTUNITIES**

**Research Center.** The college research center, available to faculty and graduate students, is equipped with computer stations and software supporting statistical quantitative data analyses and qualitative data management. The center has graphics capability and assists in the preparation of research reports, articles, and presentations.

**Facilities.** A graduate study room is available on the fourth floor of the Spencer W. Kimball Tower. Four fully equipped physical assessment stations are found in the Nursing Learning Center. Clinical agencies in urban and rural Utah are settings for advanced practice residencies. Many of these institutions maintain continuous clinical research programs and innovative management strategies appropriate for graduate students. Nurse practitioner clinics and rural practitioner sites also offer a challenging experience in becoming an independent practitioner.

*For a more detailed description of the graduate program requirements, send for a copy of the department’s bulletin.*

**COURSE DESCRIPTIONS**

**555. Pharmacology in Advanced Practice.** (3) Principles of pharmacology and drug therapy for advanced practice nurses.

**590R. Independent Study.** (0.5-4) Prerequisite(s): instructor's consent. Individualized study.

**600. Nursing Science 1.** (2) Applying and synthesizing knowledge, theory, and research to provide quality health care, initiate change, and improve nursing practice.

**601. Nursing Science 2.** (2) Prerequisite(s): Nurs 600.

- Applying and synthesizing knowledge, theory, and research to provide quality health care, initiate change, and improve nursing practice.

**606. Advanced-Practice Nursing Roles, Issues, and Ethics.** (3) Professional roles, issues, and ethics for advanced-practice nurses.

**608. Health Care Policy and Finance.** (2) Knowledge and skills influencing health care policy; utilizing fiscal accountability to provide quality cost-effective care.

**619. Advanced Pathophysiology and Evidence-Based Practice.** (2) Cellular physiology; inflammatory and immune response applied to complex disease states; evidence-based practice.

**621. Advanced Health Assessment.** (3) Development of physical assessment techniques.

**622. Management of Common Disorders.** (6) Prerequisite(s): Nurs 551.

- Health promotion and prevention of common psychosocial and physiological disorders; diagnosing and managing common alterations across the life span.

**623. Evidence-Based Writing 1: Selecting and Synthesizing.** (1) Mentored experience in selecting and synthesizing evidence.

**627. Management of Family Health.** (3) Theoretical foundations and strategies to manage family health.

**629. Advanced Pathophysiology and Diagnostic Reasoning.** (2) Prerequisite(s): Nurs 619.

- Pathology underlying complex disease states; physiologic basis for therapy and management.

**630. Management of Chronic Disorders.** (6) Prerequisite(s): Nurs 622.

- Health promotion and prevention of chronic psychosocial and physiological disorders; diagnosing and managing chronic alterations across the life span.

**631. Evidence-Based Writing 2: Critically Appraising Evidence.** (1) Prerequisite(s): Nurs 623.

- Mentored experience in critically appraising the evidence.

**632. Management of Acute Disorders.** (5) Prerequisite(s): Nurs 630.

- Health promotion and prevention of acute psychosocial and physiological disorders; diagnosing and managing acute alterations across the life span.

**633. Evidence-Based Writing 3: Dissemination of Evidence-Based Findings.** (1) Prerequisite(s): Nurs 631.

- Mentored experience in dissemination of evidence-based findings.

**635R. Family Nurse Practitioner Internship.** (1-8) Prerequisite(s): Nurs 632.

- Internship as a family nurse practitioner.

**651. Introduction to Clinical Nurse Specialist Practice.** (5) Prerequisite(s): Nurs 600, 601, 605, 619, 621.

- Introduction to role of advanced-practice nurse and models of advanced-practice nursing.

**653. Symptom Assessment and Management.** (5) Prerequisite(s): Nurs 651.

- Assessing patient problems, implementing nursing interventions, and evaluating outcomes.

**655. Program Development and Evaluation.** (5) Prerequisite(s): Nurs 653.

- Skills and tools needed to perform a needs assessment, develop programs, and evaluate their overall effectiveness of local, national, and international levels.
657. Outcomes Management/ Clinical Reasoning. (6)
Prerequisite(s): Nurs 655.
Utilizing clinical reasoning and critical appraisal of the literature to establish outcomes and to evaluate clinical practice, clinical programs, and technology.

659R. Clinical Nurse Specialist Residency. (0.5-4)
Prerequisite(s): Nurs 657.
Intensive clinical experience as a clinical nurse specialist.

698R. Project. (0.5-6)
Prerequisite(s): Committee’s consent.
Master's project.

699R. Master’s Thesis. (0.5-6)
Prerequisite(s): Committee’s consent.

FACULTY

Beckstrand, Renea, Associate Professor. PhD, University of Utah, 2001. Comprehensive Care of the Adult Client with Acute Health Problems.

Berry, Judith Gould, Associate Professor. DNSc, Rush University, 2006. Clinical Preventive Services in Practice and Provider-Patient Communications.


Callister, Lynn, Professor. PhD, University of Utah, 1993. Cultural Meanings of Childbirth; Women’s Health.


Heise, Barbara, Assistant Professor. PhD, University of Virginia, 2006. Adult and Gerontological Mental Health; Alcohol and Drug Abuse.

Mandleco, Barbara L., Professor. PhD, Brigham Young University, 1991. Growth and Development; Resilience in Children.

Maughan, Erin, Assistant Professor. PhD, University of Utah, 2006. School Health.

Ravert, Patty, Associate Professor. PhD, University of Utah, 2004. Education Interventions; Use of Human Simulations.

Rogers, Sandra, Associate Professor. DNSc, University of California, San Francisco, 1989. Primary Health Care; International Health.

Williams, Mary, Associate Professor. PhD, University of Arizona, 1991. Transplant Anxiety; Management; Qualitative Methodology.

NUTRITION, DIETETICS, AND FOOD SCIENCE

Chair: Oscar A. Pike
Graduate Coordinator: Merrill J. Christensen
S-235 ESC
Provo, UT 84602-4602
(801) 422-5255
Fax: (801) 422-0258
E-mail: merrill_christensen@byu.edu

THE PROGRAM OF STUDIES

Food science is the multidisciplinary study of food, utilizing biology, chemistry, nutrition, engineering, and other sciences. Nutritional science examines the effects of food consumption on the metabolism, health, performance, and disease resistance of the host. Programs in both disciplines offer rigorous classroom instruction combined with challenging, original research. Small faculty-to-student ratios permit intense, meaningful mentoring by faculty advisors.

The Department of Nutrition, Dietetics, and Food Science offers two graduate degrees: Food Science—MS and Nutritional Science—MS. Usual completion time is two years.

General Admission and Entry Requirements

• All applicants must meet the general admission and entry requirements of BYU Graduate Studies.
• Graduate Record Examination (GRE) and TOEFL scores (for applicants whose native language is not English, or who did not receive their bachelor’s degree in an English-speaking country) must be sent to Graduate Studies prior to the application deadlines.

Application deadlines: February 1 (for admission the following fall semester); June 30 (for admission the following winter semester).

Food Science—MS

The MS program in food science prepares students to work at an
advanced level in the food industry or to pursue a doctoral degree through in-depth study of the chemistry of food component functionality, the microbiology of product manufacture and preservation, and the physical principles involved in processes. Students become proficient at designing and conducting research and development projects and communicating the results in a manner consistent with the best professionalism in the discipline.

Admission and Entry.
- General admission and entry requirements described above.
- Undergraduate degree in food science or closely related field.

Requirements for Degree.
- Credit hours (30): minimum 24 course work hours plus 6 thesis hours (NDFS 699R).
- Required courses: NDFS 652, 654, 656, 691R, 699R; Stat 511.
- Minor (optional): selected with approval of faculty advisor.
- Examinations: (1) oral examination on course work; and (2) defense of thesis.
- Thesis: standard university format or journal publication format.

Nutritional Science—MS
The MS program in nutritional science emphasizes applied nutrition (international nutrition, public health nutrition, community nutrition, nutrition education) and experimental nutrition (nutrient metabolism, nutritional biochemistry, nutritional molecular biology). Students are prepared for advanced training in graduate or health professional schools, and for employment in the biotechnology industry, biomedical research, the food industry, public health departments, the fitness industry, government feeding and assistance programs, and international relief agencies. Students are expected to conduct original research with a view to presenting their results at regional, national, and international professional meetings and publishing their findings in peer-reviewed professional journals.

Admission and Entry.
- General admission and entry requirements described above.
- Undergraduate degree in nutritional science, dietetics, biochemistry, or other closely related field.

Requirements for Degree.
- Credit hours (30): minimum 24 course work hours plus 6 thesis hours (NDFS 699R).
- Required courses: NDFS 601, 602, 691R, 699R; Stat 511.
- Minor (optional): selected with approval of faculty advisor.
- Examinations: (1) oral examination on course work; and (2) defense of thesis.
- Thesis: standard university format or journal publication format.

FINANCIAL ASSISTANCE
Graduate students may be supported as department teaching assistants or research assistants. Second-year graduate students have priority for research assistantships. Students may also be supported by external research funds (grants, contracts) awarded to their advisors. Graduate students are encouraged to apply for scholarships, grants, fellowships, assistantships, and other awards made by the department, college, and university and by external funding agencies.

RESOURCES AND OPPORTUNITIES
Nutritional sciences research laboratories in the Eyring Science Center at BYU total over 4,200 square feet. Facilities for housing and maintaining small animals are included. Studies in cell culture, in animal models, and in humans are conducted using state-of-the-art instrumentation to examine molecular roles of nutrients, study nutritional physiology, and perform nutritional assessment. Conference rooms, reading rooms, project rooms, and computer rooms are used for the conduct of non-laboratory research in eating behaviors, nutrition education, dietetics management, and dietetics education.

Food science research laboratories total over 10,000 square feet. Additional laboratories are used for teaching purposes. Facilities include a pilot plant, a sensory laboratory, a laboratory for quality assurance testing and new food product development, and a food microbiology laboratory.

Pilot Plant. Researchers in the Pilot Plant conduct research dealing with food products, using pilot-scale equipment.

Sensory Laboratory. The sensory laboratory is a modern taste panel facility used to train students in sensory testing. Panelists register impressions of samples on computerized questionnaires in an isolated booth equipped with aroma and lighting control. Computerized analysis rapidly transforms data into easily interpreted results.

Quality Assurance Laboratory. The quality assurance laboratory performs quality assurance tests for The Church of Jesus Christ of Latter-day Saints Welfare Services. This research grant provides on-the-job training, practical experience, and the opportunity to receive compensation for the time spent in learning.

Dietetic Internship. The Brigham Young University Dietetic Internship is currently granted accreditation by the Commission on Accreditation for Dietetics Education of the American Dietetic Association, 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995, (312) 899-4876. The ten-month dietetic internship (DI) meets the competency statements established by the American Dietetic Association for entry-level dietitians. Interns may apply to begin the nutrition MS program when they begin the DI, or complete only the internship.

See the department Web site for graduate faculty research interests and ongoing research projects.
COURSE DESCRIPTIONS

520R. Supervised Practice Experience. (1-4)  
Prerequisite(s): Acceptance into dietetic internship.  
Supervised practice experience in clinical, management, and community dietetics settings.

601. Advanced Human Nutrition 1. (3)  
Prerequisite(s): NDFS 435 or instructor’s consent.  
Nutritional status and scientific basis for dietary recommendations for carbohydrates, lipids, protein, and energy.

602. Advanced Human Nutrition 2. (3)  
Prerequisite(s): NDFS 435 or instructor’s consent.  
Nutritional status and scientific basis for dietary recommendations for vitamins, minerals, and water.

631R. Selected Topics in Food Science and Nutrition. (0)  
Prerequisite(s): NDFS 601, 602; or instructor’s consent.

632. Diet and Cancer. (2)  
Prerequisite(s): NDFS 601, 602.  
Critical examination of scientific evidence regarding the role of dietary macronutrients, vitamins, minerals, and phytochemicals in the initiation, promotion, and progression of cancer.

633. Maternal/Child Nutrition and Health. (2)  
Prerequisite(s): NDFS 601, 602.  
Critical examination of nutrient requirements during pregnancy, lactation, infancy, and childhood; role of nutrition in complications of pregnancy, pregnancy outcome, and infant and child growth and development.

634. Nutrition Education. (2)  
Prerequisite(s): NDFS 601, 602.  
Theories that guide nutrition education; nutrition education programs for various target populations; designing and implementing a nutrition education intervention.

635. Metabolic Aspects of Obesity. (2)  
Prerequisite(s): NDFS 601, 602.  
Molecular, biochemical, genetic, and physiologic aspects and determinants of human obesity; role of diet, activity, and behavior modification in prevention and treatment.

637. Advanced Management in Dietetics. (2)  
Prerequisite(s): NDFS 374, 375, 445, 458; or equivalents.  
Theory and application of management principles in dietetics.

638. Advanced Clinical Nutrition. (2)  
Prerequisite(s): NDFS 300, 356, 466; or equivalents.  
Theory, techniques, and practices in medical nutrition therapy.

652. Carbohydrates and Their Reactions in Foods. (3)  
Prerequisite(s): NDFS 450 or equivalent.  
Sugars, higher saccharides, starches, pectins, gums, hemicelluloses, celluloses, and their derivatives and their functions and reactions in foods.

654. Proteins and their Reactions in Foods. (3)  
Prerequisite(s): NDFS 450 or equivalent.  
Plant and animal proteins and their functions and changes during food processing; food enzyme properties.

656. Food Lipids and Their Reactions in Foods. (3)  
Prerequisite(s): NDFS 450 or equivalent.  
Lipids and their reactions in foods with other components of the food system and/or the surrounding environment; lipid-processing techniques.

691R. Graduate Seminar. (1-2)  
697R. Research. (1-3)  
699R. Master’s Thesis. (1-9)

FACULTY


DAVIDSON, ROBERT T., Assistant Professor. PhD, University of Wisconsin, Madison, 1998. Fat-Soluble Vitamins; Computer Simulation.

DUNN, MICHAEL L., Associate Professor. PhD, Cornell University, 1996. Product Development; Food Preservation and Storage; Food Industry Management.

FRANZ, KAY B., Professor. PhD, University of California, Berkeley, 1978. Human Nutrition; Mineral Absorption; Metabolism.


NYLAND, NORA K., Associate Professor. PhD, Kansas State University, 1989. Dietetics Education; Management in Dietetics.


PIKE, OSCAR A., Professor. PhD, Purdue University, 1986. Food Preservation and Storage; Food Analysis.
ORGANIZATIONAL LEADERSHIP AND STRATEGY

(See Business Administration section of this catalog.)

PHILOSOPHY

Chair: Daniel Graham
4086 JFSB
Provo, UT 84602-6714
(801) 422-2721

THE PROGRAM OF STUDIES

The study of philosophy cultivates critical and analytical thinking and is, therefore, an excellent complement to any graduate program. Specific requirements of the minor can be adapted to the needs and interest of the student.

The Department of Philosophy offers a graduate minor but no graduate major.

Philosophy—Minor

Philosophy students are taught to study significant texts and analyze issues in diverse disciplines. In doing so, they gain basic habits of mind needed for mature and responsible judgment.

Requirements for the Minor.

• Master's level: an approved 9 hours.
• Doctoral level: an approved 15 hours.

Students should direct inquiries about courses and graduate committee members to the department chair.

COURSE DESCRIPTION

501R. Graduate Seminar. (0.5-5)
Prerequisite(s): instructor's consent.
Selected topic, figure, or movement in philosophy, as announced in current class schedule.

FACULTY

For faculty listings, refer to the BYU Undergraduate Catalog.

PHYSICAL EDUCATION

See Exercise Sciences section of this catalog.

PHYSICS AND ASTRONOMY

Chair: Ross L. Spencer
Graduate Coordinator:
J. Ward Moody

N-281 ESC
Provo, UT 84602-4604
(801) 422-5387
(801) 422-2341
e-mail: gradphyscat@physics.byu.edu

THE PROGRAM OF STUDIES

The Department of Physics and Astronomy offers graduate training in a variety of subjects including acoustics, astronomy, atomic and molecular physics, condensed matter, optics, plasma, and theory. The department provides opportunities and support for its students that they might experience the excitement of discovering new knowledge and contributing to the on-going development of these age-old disciplines.

Three degrees are offered through the Department of Physics and Astronomy: Physics—MS, Physics—PhD, and Physics and Astronomy—PhD.

The average number of MS and PhD students in the department is sixteen and fourteen, respectively. The expected time to complete a degree is two years for the MS and five years for the PhD.

Physics—MS

The master of science degree is sought by those who intend to continue on for the PhD, but it also serves as a terminal degree for those who intend to work in industrial or governmental research or teaching.

Admission and Entry.

• Semesters of entry and application deadlines: fall, January 15 (U.S. and international).
• Entrance examination: GRE advanced physics subject test (general GRE recommended).
• Prerequisite: baccalaureate degree in physics or equivalent. A GPA of 3.0 or greater is required for the last 60 hours of upper-level course
work. Appropriate course work will be suggested by graduate advisor for removing deficiencies in undergraduate study.

Requirements for Degree.

- Credit hours (30): minimum 24 approved course work hours (which may include up to 6 hours of Phscs 697R but may not include Phscs 691R or 697R), plus 6 thesis hours (Phscs 699R).
- Required course: Phscs 691R each semester of residence; Phscs 697R first two semesters of residence.
- Prospectus: a proposed subject of research must be defended in public and submitted to the Department for approval.
- Thesis.
- Examinations: final oral examination and defense of thesis.

Before admission to candidacy, a student must be accepted as a research student by a member of the faculty of the Department of Physics and Astronomy and submit a proposed study list. The study list is normally completed by the beginning of the second semester of graduate study.

Students completing a qualifying master's degree at BYU in the Department of Physics and Astronomy can smoothly transition into the PhD program.

Physics, Physics and Astronomy—PhD

The PhD program prepares students for professional careers in physics and astronomy. These careers include faculty positions at universities and work in research laboratories.

Admission and Entry.

- Semesters of entry and application deadlines: fall, January 15 (U.S. and international).
- Entrance examination: GRE advanced physics subject test (general GRE recommended).
- Prerequisite requirements: applicants should have completed a baccalaureate degree in physics or astronomy or have equivalent preparation.

Requirements for Degree.

- Credit hours (54): minimum 36 hours in approved course work (B– grade or better in each class) exclusive of graduate seminars (see Phscs 691R, 696R); plus dissertation (18 hours minimum, Phscs 699R).
- Required courses: Phscs 691R each semester of residence; Phscs 696R first two semesters of residence; Phscs 601, 602, and 795R (3 hours). Physics and Astronomy degree suggested courses:
  - Additional hours from 500-, 600-, and 700-level courses, subject to departmental approval, to make a total of at least 36 hours (may include up to 3 hours of Phscs 697R).
- Study list: before admission to candidacy a student must be accepted as a research student by a member of the department graduate faculty and submit a proposed study list, which must be approved by the department. The study list should be completed during the first year of graduate study.
- Qualifying examination: written examination to demonstrate a graduate-level understanding of the physical principles on which the graduate courses build, scheduled near the beginning of fall land winter semesters.
- Candidacy examination: after two years each student presents a written and oral report of research accomplished at BYU to an examining committee. Passing the qualifying examination, having a GPA of 3.0 over at least 5 courses required by the student's committee with no grade lower than a B-, and passing the candidacy examination admits the student to PhD candidacy.
- Prospectus: a proposed plan of research must be submitted to the department for approval and then defended in public.
- Dissertation: 18 hours of Phscs 699R
- Final oral examination and defense of dissertation.

Financial Assistance

Qualified graduate students receive financial aid that may take the form of one or more of the following: teaching assistantships, research assistantships, scholarships (including the John Einar Anderson Scholarship and Copley Fellowship), internships, university-sponsored fellowships, or tuition awards. The amount of financial aid given depends on individual merit.

Resources and Opportunities

Within the department there are currently six recognized research specialties: Acoustics; Astronomy; Atomic, Molecular, and Optical Physics; Condensed Matter Physics; Plasma Physics; Theoretical and Mathematical Physics.

Acoustics. The acoustics research program at BYU is strongly cross-disciplinary in character and focuses on the following areas: active noise and vibration control, sound-structure interaction, audio acoustics, and architectural acoustics. The research in acoustics is both experimental and computational in nature and includes simulation and measurement of physical systems, as well as signal processing. Computer facilities are readily available with a number of powerful software packages. In addition, the laboratory is equipped with state-of-the-art acoustic measurement equipment, an anechoic chamber, and two reverberation chambers that can be used for experimental verification studies.

Astronomy. Most research in astrophysics and astronomy is observa-
and neutron-scattering studies of materials; group theoretical methods applied to phase transitions in crystals; and motion and structure of defects in crystals.

**Plasma Physics.** Plasma physics research, both experimental and theoretical, centers on the relatively new area of nonneutral plasmas. New experimental techniques are being developed to measure the distribution function of these plasmas in both configuration and velocity space. The response of the plasma to both static and time-dependent perturbations is being studied. The theoretical work being done attempts to extend the mathematical description of these plasmas beyond simple approximate geometries and fluid models by using numerical simulation.

**Theoretical and Mathematical Physics.** Research in this area studies the foundations, techniques, and some applications of relativity and quantum theory: numerical and analytical approaches to general relativity with particular emphasis on strong gravitational fields; critical phenomena in nonlinear field theories; algebraic methods applied to nonrelativistic and relativistic quantum problems; interaction between radiation and matter in electron theory and quantum electrodynamics; molecular dynamics of defects and impurities in clusters and solids; inverse problems in statistical physics; methods of Bayesian statistics for accurate physical interpretation of quantum measurements; quantum information theory.

For a more detailed description of the graduate program requirements, visit the department Web site at www.physics.byu.edu.

**COURSE DESCRIPTIONS**

### 513R. Special Topics in Contemporary Physics. (0.5-3)
Prerequisite(s): Instructor’s consent.

Topics generally related to recent developments in physics.

### 529. Advanced Observational Astronomy. (3)
Prerequisite(s): Phscs 427, 428.

Advanced techniques of observational astronomy, emphasizing knowledge and skills necessary to carry out observational scientific investigation in astronomy.

### 545. Introduction to Plasma Physics. (3)
Prerequisite(s): Phscs 321, 431, 441.

Introduction to plasma physics, including single-particle motion and both fluid and kinetic models of plasma behavior.

### 561. (Phscs-Me En) Fundamentals of Acoustics. (3)
Prerequisite(s): Phscs 123 or equivalent; Math 303 or 334 or equivalent.


### 571. Laser Physics. (3)
Prerequisite(s): Phscs 471 or basic understanding of electromagnetic waves and optics.

Laser amplification, cavity design, and control and characterization of temporal and spatial modes. Applications in nonlinear optics and atomic physics.

### 581. Solid-State Physics. (3)
Prerequisite(s): Phscs 222 or equivalent.

Introduction to the physics of solids. Crystal structure and symmetry, X-ray diffraction, lattice vibrations, metals and semiconductors, superconductivity, thermal properties, magnetic properties, and dielectric and optical properties.

### 583. Physics of Nanostructures, Surfaces, and Interfaces. (3)
Prerequisite(s): Phscs 222 or equivalent.

Properties of nanostructures, surfaces, and interfaces; experimental methods. Applications to emerging problems and opportunities in science and technology. Emphasis on concepts.
585. Thin-Film Physics. (3)  
Prerequisite(s): Phscs 221 or equivalent.  
Device physics, with an in-depth study of the MOS transistor and other nanoscale computing devices.

599R. Academic Internship. (0.5-9)  
Prerequisite(s): Department cooperative education coordinator’s consent.  
Cooperative education internships off campus.

601. Mathematical Physics. (3)  
Prerequisite(s): Phscs 318, Math 334; or equivalents.  
Topics in modern theoretical physics, including applications of matrix and tensor analysis and linear differential and integral operators.

602. Mathematical Physics. (3)  
Prerequisite(s): Phscs 318, Math 334; or equivalents.  
Topics in modern theoretical physics, including applications of matrix and tensor analysis and linear differential and integral operators.

611. Stellar Astrophysics 1. (3)  
Prerequisite(s): Instructor’s consent.  
The theory of stellar atmospheres and the internal structure of stars.

612. Stellar Astrophysics 2. (3)  
Prerequisite(s): Instructor’s consent.  
Theory of stellar atmospheres and the internal structure of stars.

617. Advanced Topics in Theoretical Physics. (3)  
Prerequisite(s): Phscs 618.  
Advanced group theory. Space groups and Lie groups with applications in solid-state physics (energy band representations, phase transitions, etc.), nuclear physics, and quantum field theory (particle classification schemes, etc.).

625. Theory of Relativity. (3)  
Prerequisite(s): Phscs 451 or equivalent; 621.  
Review of special relativity and general relativity, with applications to modern astrophysics.

626. Relativistic Astrophysics. (3)  
Prerequisite(s): Phscs 625.  
Applications of general relativity to modern astrophysics, including gravitational collapse, black holes, cosmological models, gravitational waves, etc.

627. Galactic Astrophysics 1. (3)  
Prerequisite(s): Instructor’s consent.  
Astrophysics of the interstellar medium and galactic structure.

628. Galactic Astrophysics 2. (3)  
Prerequisite(s): Instructor’s consent.  
Astrophysics of the interstellar medium and galactic structure.

641. Mathematical Theory of Electricity and Magnetism. (3)  
Prerequisite(s): Phscs 442.  
Advanced electrostatics and magnetostatics, Maxwell’s equations and electromagnetic waves, relativistic electrodynamics, radiation theory, and interaction of matter with electromagnetic fields.

642. Mathematical Theory of Electricity and Magnetism. (3)  
Prerequisite(s): Phscs 442.  
Advanced electrostatics and magnetostatics, Maxwell’s equations and electromagnetic waves, relativistic electrodynamics, radiation theory, and interaction of matter with electromagnetic fields.

645. Magnetohydrodynamic Theory of Plasmas. (3)  
Prerequisite(s): Phscs 545.  
Plasma equilibrium and dynamics using magnetohydrodynamic theory with application to fusion and astrophysical plasmas.

651. Quantum Mechanics. (3)  
Prerequisite(s): Phscs 451 or equivalent; 518.  
Nonrelativistic quantum mechanics, with applications.

652. Quantum Mechanics. (3)  
Prerequisite(s): Phscs 451 or equivalent; 518.  
Nonrelativistic quantum mechanics, with applications.

660. (Phscs-Me En 562) Analysis of Acoustic Systems. (3)  
Prerequisite(s): Phscs 561 or instructor’s consent.  

661. Acoustics of Music, Speech, Architecture, and Audio. (3)  
Prerequisite(s): Phscs 561 or instructor’s consent.  

662. Interactions of Sound Fields and Vibrating Structures. (3)  
Prerequisite(s): Phscs 561 or instructor’s consent.  
Sound-structure interactions. Sound transmission through panels and sound-isolation techniques. Advanced passive and active techniques in sound and vibration control.

670. Atomic Physics. (3)  
Prerequisite(s): Phscs 451 or equivalent.  
Classical and quantum descriptions of the interaction of light with atoms. Atomic spectroscopy. Applications to lasers and astrophysics.

671. X-Ray Physics. (3)  
Prerequisite(s): Phscs 452 or equivalent; 518, 581.  
Physical characteristics of X-ray generation, optics, and experimental applications. Methods of X-ray imaging emphasized.
691R. Colloquium. (0.5)
Required of all graduate students every semester in residence.

696R. Introduction to Research. (0.5)
One or two research areas to be selected, with 20 hours of participation required each semester.

697R. Research. (0.5-6)

699R. Graduate Thesis/Dissertation. (1-9)

711R. Advanced Topics in Physics. (0.5-3)
Prerequisite(s): instructor’s consent.
Recent and upcoming topics include chaos, thin films, phase transformations, amorphous solids, quantum optics, astronomy using nontraditional frequencies, and particle physics.

721. Dynamics. (3)
Prerequisite(s): Phscs 321 or equivalent; 517, 518.
Advanced treatment of classical mechanics, including Lagrange’s and Hamilton’s equations, rigid body motion, and canonical transformations.

727. Extragalactic Astrophysics and Cosmology 1. (3)
Prerequisite(s): Instructor’s consent.
Astrophysics of galaxies, active galactic nuclei, and cosmology.

728. Extragalactic Astrophysics and Cosmology 2. (3)
Prerequisite(s): Instructor’s consent.
Astrophysics of galaxies, active galactic nuclei, and cosmology.

731. Statistical Mechanics. (3)
Prerequisite(s): Phscs 517, 581, 651.
Advanced thermodynamics, classical statistical mechanics, quantum statistics, and transport theory.

745. Kinetic Theory of Plasmas. (3)
Prerequisite(s): Phscs 431 or equivalent; 545, 642, 721.
Plasma equilibrium and dynamics using a kinetic description, including collisionless damping and collisional transport.

751. Advanced Quantum Theory. (3)
Prerequisite(s): Phscs 652.
Topics in relativistic quantum mechanics, including quantum field theory.

752. Advanced Quantum Theory. (3)
Prerequisite(s): Phscs 652.
Topics in relativistic quantum mechanics, including quantum field theory.

781. Modern Theory of Solids. (3)
Prerequisite(s): Phscs 581, 651.
Quantum theory of solids, emphasizing the unifying principles of symmetry, energy-band theory, dynamics of electrons and of periodic lattices, and cooperative phenomena.

782. Modern Theory of Solids. (3)
Prerequisite(s): Phscs 581, 651.
Quantum theory of solids, emphasizing the unifying principles of symmetry, energy-band theory, dynamics of electrons and of periodic lattices, and cooperative phenomena.

795R. Readings in the Research Literature. (1-3)
Prerequisite(s): Departmental approval.
Focused readings and student presentations based on these readings.

Faculty


Bergeson, Scott D., Associate Professor. PhD, University of Wisconsin, 1995. Experimental Atomic Physics.


Campbell, Branton J., Assistant Professor. PhD, University of California, Santa Barbara, 1999. Experimental Condensed Matter Physics.

Clark, Robert Beck, Professor. PhD, Yale University, 1968. Physics Education; Theoretical Physics.


Durfee, Dallin S., Associate Professor. PhD, Massachusetts Institute of Technology, 1999. Experimental Atomic Physics.

Gee, Kent, Assistant Professor. PhD, Pennsylvania State University, 2005. Acoustics.

Hart, Grant W., Associate Professor. PhD, University of Maryland, 1983. Plasma Physics.


Hintz, Eric G., Associate Professor. PhD, Brigham Young University, 1995. Observational Astrophysics.

Hirschmann, Eric W., Associate Professor. PhD, University of California, Santa Barbara, 1996. Theoretical and Computational Physics.

Leishman, Timothy W., Associate Professor. PhD, Pennsylvania State University, 2000. Acoustics.


Neilson, David W., Assistant Professor. PhD, University of Texas, Austin, 1999. Gravitational Physics.

Peatross, Justin B., Associate Professor. PhD, Pennsylvania State University, 2005. Acoustics.


Rees, Lawrence B., Professor. PhD, University of Maryland, 1983. Nuclear Physics.


Stephens, Denise, Assistant Professor. PhD, New Mexico State University, 2001. Observational Astrophysics.
PHYSIOLOGY AND DEVELOPMENTAL BIOLOGY

Van Huele, Jean-François, Associate Professor. PhD, Brussels Free University, Belgium, 1987. Theoretical Physics.
Ware, Michael J., Assistant Professor. PhD, Brigham Young University, 2001. Quantum Physics.

PHYSIOLOGY AND DEVELOPMENTAL BIOLOGY

Chair: James P. Porter
Graduate Coordinator:
Dixon J. Woodbury

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Provo, UT 84602-5254
(801) 422-3706
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THE PROGRAM OF STUDIES

Physiology is the study of the functions of the body systems. Developmental biology is the study of how specific genes govern differentiation of cells, tissues, and organs with unique structure and functions. Neuroscience is the study of the development and function of the central nervous system and its connection to influencing/regulating behavior.

Graduate programs within the department offer research training and classroom instruction in a wide range of areas pertaining to these disciplines. A biophysics research group is also part of the department. Areas of research include neuroendocrinology and reproduction, endocrine and immune interactions, development of the central nervous system, hereditary connective tissue disorders, mouse and chick models of development, exercise physiology and glucose metabolism, membrane transport and channel structure, synaptic vesicle recycling, and blood pressure control by the autonomic nervous system.

The Department of Physiology and Developmental Biology offers four graduate degrees: Physiology and Developmental Biology—MS, Neuroscience—MS, Physiology and Developmental Biology—PhD, and Neuroscience—PhD.

The department has approximately twenty graduate students enrolled each year. Students working toward a master’s degree generally complete all requirements within two years. PhD students generally complete all requirements in four to five years.

Admission and Entry.
All graduate programs have the same general admission and entry requirements.
• Semesters of entry and application deadlines: fall, February 1 (priority deadline), May 1 (final deadline); winter: September 10; spring: February 1; summer: February 1.
• Entrance examination: master’s—choice of GRE, MCAT, or DAT. PhD—GRE. Foreign students whose native language is not English must submit TOEFL or IELTS scores.

Applicants are encouraged to communicate with the Department of Physiology and Developmental Biology for further information (Web site: http://pdbio.byu.edu).

Physiology and Developmental Biology—MS

This MS degree program provides students with a sound understanding of current concepts in physiology and/or developmental biology. The thesis research project teaches the fundamentals of scientific inquiry and trains the students in state-of-the-art research techniques. Submission of the thesis to a peer-reviewed journal is encouraged but not required.

Admission and Entry
See preceding admission and entry requirements.

Applicants must take all but one of the prerequisite courses: college physics (e.g., Phscs 121, 123, 150), cell/molecular biology (e.g., PDBio 360), biochemistry (e.g., Chem 481); one of the following: physiology with lab (e.g., PDBio 362, 363), developmental biology (e.g., PDBio 482).

Requirements for Degree
• Credit hours (30): minimum 24 approved course work hours plus 6 thesis hours (PDBio 699R).
• Required courses (11 hours): Bio 503 (1 hour); PDBio 582 or 601 (3 hours), 694R (2 hours), 696R (2 hours); Stat 510 or equivalent (3 hours).
• A seminar must be presented each year.
• Thesis: standard university thesis format or journal publication format.
• Examinations: (A) course work oral examination; (B) oral defense of thesis.

Physiology and Developmental Biology—PhD

This PhD degree program is a comprehensive academic endeavor in physiology and developmental biology. Although the research project of each PhD student will focus in an area of either physiology or developmental biology, all students will be expected to have an understanding of key concepts in both disciplines. The research project will include independent inquiry and in-depth application of the scientific method. Eventual publication of the research in peer-reviewed journals is expected but not required.

Admission and Entry

See preceding admission and entry requirements. Applicants must take all but one of the prerequisite courses: college physics (e.g., Phscs 121, 123, 150), cell/molecular biology (e.g., PDBio 360), biochemistry (e.g., Chem 481); one of the following: physiology with lab (e.g., PDBio 362, 363), developmental biology (e.g., PDBio 482).

Requirements for Degree

• Credit hours: 54 hours, including 18 hours of dissertation (PDBio 799R).
• Students who have earned a master’s degree must complete at least 36 semester hours of additional graduate work at BYU beyond the master’s degree.

Required courses: Bio 503 (1 hour); PDBio 582 and 601 (3 hours each), 694R (2 hours), 696R (2 hours); Stat 510 or equivalent (3 hours).

• Research credit (PDBio 649R and 799R) may not exceed 27 hours.
• A seminar must be presented each year.

A seminar must be presented each year.

A professional development requirement must be met.

• Dissertation: standard university dissertation format or journal publication format.
• Examinations: (A) comprehensive written and oral examination; (B) defense of dissertation.

Neuroscience—MS

A sound understanding of current concepts in neuroscience is the purpose of this MS degree program. The thesis research project teaches the fundamentals of scientific inquiry and trains students in state-of-the-art research techniques. Submission of the thesis to a peer-reviewed journal is encouraged but not required.

Admission and Entry

See preceding admission and entry requirements. In addition, applicants should have a strong background in neuroscience. All but one of the following courses (or their equivalent) must be completed during undergraduate preparation or as part of the MS program: two advanced courses covering molecular/cellular/behavioral aspects of neuroscience (e.g., Neuro 460, 480), biochemistry (e.g., Chem 481); physiology with lab (e.g., PDBio 362, 363).

Requirements for Degree

• Credit hours (30): minimum 24 approved course work hours plus 6 thesis hours (Neuro 699R).
• Required courses: Bio 503 (1 hour); Neuro 601 (3 hours), 649R (2 hours), 694R (2 hours), 696R (2 hours); Stat 510 or equivalent (3 hours).
• A seminar must be presented each year.

A seminar must be presented each year.

• Thesis: standard university thesis format or journal publication format.
• Examinations: (A) course work oral examination; (B) oral defense of thesis.

Neuroscience—PhD

Course work and research that emphasize the integration of molecular biology, developmental biology, biophysics, neuroanatomy, neurophysiology, neuroendocrinology, neuroimmunology, cognition, and behavioral neuroscience is offered through this PhD degree program. Students are required to develop a strong background in the principles of neuroscience and develop the intellectual background and technical expertise necessary for successful research projects in their area of specialization. Eventual publication of the research in peer-reviewed journals is expected but not required.

Admission and Entry

See preceding admission and entry requirements. In addition, applicants should have a strong background in neuroscience. All but one of the following courses (or their equivalent) must be completed during undergraduate preparation or as part of the MS program: two advanced courses covering molecular/cellular/behavioral aspects of neuroscience (e.g., Neuro 460, 480), biochemistry (e.g., Chem 481); physiology with lab (e.g., PDBio 362, 363).

Requirements for Degree

• Credit hours: 54 hours, including 18 hours of dissertation (Neuro 799R).
• Students who have earned a master’s degree must complete at least 36 semester hours of additional graduate work at BYU beyond the master’s degree.

• Required courses: Bio 503 (1 hour); Neuro 601 (3 hours), 694R (2 hours), 696R (2 hours); Stat 510 or equivalent (3 hours). One semester (2 credits) of Neuro 649R must be performed in a laboratory different than the laboratory of the student’s graduate committee chair.
• A seminar must be presented each year.

A seminar must be presented each year.

• A professional development requirement must be met.

• Dissertation: standard university dissertation format or journal publication format.
• Examinations: (A) comprehensive written and oral examination; (B) defense of dissertation.

FINANCIAL ASSISTANCE

The Department of Physiology and Developmental Biology offers the following financial aid: teaching
assistantships, research assistantships, and tuition awards. Specific endowment fund awards are also available.

**RESOURCES AND OPPORTUNITIES**

Program resources include the laboratories and equipment of department faculty within the John A. Widtsoe Building and the Eyring Science Center. An electron microscope laboratory, with both transmission and scanning microscopes, is also located on campus. A DNA sequencing center is available in the Widtsoe Building.

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For a more detailed description of the graduate program requirements, send for a copy of the department’s bulletin.

**COURSE DESCRIPTIONS**

550R. Advanced Topics in Physiology and Developmental Biology. (0.5-4)
Prerequisite(s): Instructor’s consent.
Close interaction between small groups of students and instructor on topics in physiology, developmental biology, or biophysics.

561. Physiology of Drug Mechanisms. (3)
Prerequisite(s): PDBio 352 or instructor’s consent.
Overview of physiological and pharmacological mechanisms and principles of human therapeutics as applied to clinically significant pathophysiology.

562. Reproductive Physiology. (3)
Prerequisite(s): PDBio 362 or equivalent.
Mammalian reproductive physiology.

565. Endocrinology. (3)
Prerequisite(s): PDBio 362 or instructor’s consent.
Mammalian hormones.

568. Cellular Electrophysiology and Biophysics. (3)
Prerequisite(s): PDBio 362, Phscs 140, 220; or instructor’s consent.
Using electrophysiology and biophysics as an approach to study of physiology. Extensive look at ion channels and cell signaling.

582. Developmental Genetics. (3)
Prerequisite(s): PDBio 482 or equivalent.
Gene function and regulation during cell specification and differentiation, pattern formation, and organogenesis in developing embryo.

601. Cellular and Molecular Physiology. (3)
Prerequisite(s): PDBio 362, 363; or equivalents.
Primary literature used to explore modern concepts of physiology at the cellular and molecular level. Topics include muscle function, transport mechanisms, cell signaling, and ion channels.

649R. Laboratory Research. (1-6)
Prerequisite(s): Instructor’s consent.
Laboratory research for graduate students.

650R. Selected Topics in Physiology, Developmental Biology, and Neuroscience. (1-3)
Prerequisite(s): Instructor’s consent.
Topics vary.

664. Cardiovascular and Respiratory Physiology. (2)
Prerequisite(s): PDBio 362 or equivalent.
Advanced course based on current research literature.

694R. Research Presentation. (0.5-1)
Oral presentation of graduate research project (introduction, methods, hypothesis, results, conclusions).

695R. Practicum in Biology Teaching. (0.5-3)
Curricula, principles, concepts, and experiences in teaching biology effectively.

696R. Graduate Seminar. (0.5-1)
Seminar series organized and run by the Department of Physiology and Developmental Biology. Speakers are enlisted from both inside and outside the university.

699R. Master’s Thesis. (1-6)

799R. Doctoral Dissertation. (1-18)

**FACULTY**

**BARROW, JEFFERY R., Assistant Professor. PhD, University of Utah, 1999. Molecular Mechanisms of Development of Limbs and Craniofacial Structures; Tumorigenesis.**

**BELL, JOHN D., Professor. PhD, University of California, San Diego, 1987. Pharmacology; Membrane Physiology.**

**BROWN, MICHAEL D., Assistant Teaching Professor. PhD, Colorado State University, 1999. Regulation of Axon and Dendrite Extension and Pathfinding During Nervous System Development.**

**BUSATH, DAVID D., Professor. MD, University of Utah, 1978. Electrophysiology; Molecular Modeling; Molecular Biophysics.**

**EDWARDS, JEFFREY G., Assistant Professor. PhD, University of Utah, 2003. Synapse Activity and Structure.**

**HANSEN, MARC D., Assistant Professor. PhD, Stanford University, 2002. Molecular Basis of Cell-Cell Adhesion in Development and Metastasis.**

**JUDD, ALLAN M., Professor. PhD, West Virginia University, 1981. Physiology; Neuroendocrinology.**

**KOYMAN, DAVID L., Associate Professor. PhD, Ohio University, 1993. Mechanisms of Gene Expression.**

**LEPHART, EDWIN D., Professor. PhD, University of Texas Southwest Medical Center, 1989. Neuroendocrinology.**

**PORTER, JAMES P., Professor. PhD, University of California, San Francisco, 1982. Neuroendocrinology; Hypertension.**

**REYNOLDS, PAUL R., Assistant Professor. PhD, University of Cincinnati and Cincinnati Children’s Hospital Medical Center, 2004. Developmental Role of Autocrine/Paracrine Signaling in the Lung During Branching Morphogenesis.**
Rhees, Reuben Ward, Professor.
PhD, Colorado State University, 1971. Neuroendocrinology; Physiology.

Seegmiller, Robert E., Professor.
PhD, McGill University, Canada, 1970. Developmental Biology; Teratology.

Silcox, Roy W., Associate Professor.
PhD, North Carolina State University, 1986. Reproductive Physiology; Management; Superovulation; Embryonic Development.


Winder, William W., Professor. PhD, Brigham Young University, 1971. Exercise Physiology and Endocrinology.


Woolley, Bruce H., Professor. PharmD, University of Southern California. Pharmacology.

Affiliated Faculty

Hedges, Dawson W., Associate Professor. MD, University of Utah, 1988. Psychiatry; Neuroscience, Neuroimaging, and Neuroendocrinology.

Hopkins, Ramona O., Associate Professor. PhD, University of Utah, 1996. Cognitive Neuroscience and Neuro-Biological Approaches to Cognition; Brain Imaging; Brain Behavior Relationships; Emotion; Health-Related Quality of Life; Cognitive Development; Family Stress Due to Illness.

Steffensen, Scott, Associate Professor. PhD, University of Utah, 1987. Neuropharmacology; Neuroscience Center.

PLANT AND WILDLIFE SCIENCES

Chair: Val J. Anderson
Graduate Coordinator:
Loreen Allphin Woolstenhulme
275 WIDB
Provo, UT 84602-5183
(801) 422-5603
Fax: (801) 422-0008
E-mail: loreen_woolstenhulme@byu.edu

The Program of Studies

The Department of Plant and Wildlife Sciences offers graduate training and education in a variety of areas: plant sciences, biotechnology, genetics, environmental science, ecology, soil science, and wildlife and wildlands conservation. Those admitted to this program will have completed BS degrees with strong backgrounds in the basic mathematical, physical, and biological sciences before selecting graduate course work in biology, soil science, and basic and applied sciences. Students completing program requirements will be prepared to accept employment in agriculture, biotechnology, conservation, ecology, environmental science, wildland and wildlife management, or consulting or to continue to graduate PhD and postgraduate studies.

Four degrees are offered through the Department of Plant and Wildlife Sciences: Agronomy—MS; Genetics and Biotechnology—MS; Wildlife and Wildlands Conservation—MS; and Wildlife and Wildlands Conservation—PhD.

These graduate programs are supported by faculty members within the department. Their research and teaching interests include wildland ecology, wildlife biology, plant ecology, genetics and biotechnology, plant growth under environmental stress, urban landscape environments, bioremediation of contaminated soils and water, and both modern and ancient agricultural environments. All MS and PhD degrees are earned in thesis-only programs. Students are expected to present their theses in the form of one or more manuscripts ready for submission to refereed journals.

Agronomy—MS

Pursuit of the MS degree in agronomy provides students with research and education opportunities in environmental protection and remediation and in plant growth and physiology. Students will select graduate course work in soil science, biology, and environmentally related courses taught in departments across the campus. Those completing program requirements will be well prepared for employment in environmental and agricultural consulting, teaching at the junior college level, and continued graduate studies for the PhD. Their research and teaching interests include: plant growth under environmental stress, invasive species, plant physiology, urban landscape environments, bioremediation of contaminated soils and water, and both modern and ancient agricultural environments.

Admission and Entry

• Semesters or terms of entry and application deadline: fall, winter, spring, February 1 (U.S. and international).
• Entrance examination: GRE general test.
• Prerequisite: baccalaureate degree in biology, plant science, environmental science, horticulture, or related field.

Requirements for Degree

• Credit hours: (30): minimum 24 course work hours plus 6 thesis hours (PWS 699R).
• Thesis: completion of the thesis in scientific journal format and prepared for journal submission.
• Required courses: Two semester of PWS 694R (seminar) and one semester of graduate statistics (Stat 511).
• Undergraduate hours: no more than 9 semester hours may be applied toward master’s degree.
• Biannual progress reviews by advisory committee and graduate committee.

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Examinations: final oral examination and defense of thesis.

Minor: not required; students who do desire a minor may choose from botany, chemistry, computer science, food science, geology, geography, mathematics, microbiology, physics, statistics, range science, or zoology.

**Genetics and Biotechnology—MS**

Genetics is the study of inheritance. Biotechnology is the application of modern DNA marker, isolation, and transfer technologies toward improving plant and animal agricultural productivity, environmental remediation, and the treatment of disease. These branches of biology have risen to prominence during the course of the past fifteen years and are widely recognized for their potential impact upon society in the twenty-first century. Employment opportunities in industry and academia are especially plentiful for graduates with advanced degrees in genetics and biotechnology.

**Admission and Entry**

- Semesters or terms of entry and application deadline: fall, winter, and spring, February 1 (U.S. and international).
- Entrance examination: GRE general test.
- Prerequisite: baccalaureate degree in biology, plant science, environmental science, horticulture, or related field.

**Requirements for Degree**

- Credit hours: (30): minimum 24 course work hours plus 6 thesis hours (PWS 699R).
- Thesis: completion of the thesis in scientific journal format and prepared for journal submission.
- Required courses: PWS 586, 673R and 670, plus two semesters of 694R.
- Undergraduate hours: no more than 9 semester hours may be applied toward master's degree.
- Biannual progress reviews by advisory committee and graduate committee.

**Wildlife and Wildlands Conservation—MS**

This program emphasizes the scientific method in developing critical thinking and analytical skills applied to conservation and management problems related to wildlife ecology, wildlands, restoration science and/or rangeland ecology. Depending on the emphasis, advanced training in topic specialties may be complemented by courses in statistics, geographical information systems (GIS), soil sciences, model testing, systematics, or advanced ecology. All emphases require original research topics with the results presented in thesis format. This research is expected to be of a publication quality and thesis style best reflecting that of a professional journal, thus facilitating timely submissions for publication. We also encourage formal presentations at professional meetings.

**Admission and Entry**

- Semesters or terms of entry and application deadline: fall, winter, spring: February 1 (U.S. and international).
- Entrance examination: GRE general test.
- Prerequisite: baccalaureate degree in biology, plant ecology, conservation, range ecology, wildlife biology, or related fields.

**Requirements for Degree**

- Credit hours: (30): minimum 24 course work hours plus 6 thesis hours (PWS 699R); 20 hours must be in the 500-level series and above.
- Required courses: PWS 694R (seminar—two semesters). Additional courses as determined by student's advisory committee and approved by department graduate coordinator.

- Biannual progress reviews by advisory committee and graduate committee.
- Presentation of research prospectus to advisory committee.
- Thesis: completion of the thesis in scientific journal format and prepared for journal submission.
- Examination: final oral examination and defense of thesis.

**Wildlife and Wildlands Conservation—PhD**

This program emphasizes the scientific method in developing critical thinking and analytical skills applied to conservation and management problems related to wildlife ecology, wildlands, restoration science and/or rangeland ecology. Depending on the emphasis, advanced training in topic specialties may be complemented by courses in statistics, geographical information systems (GIS), soil sciences, model testing, systematics, or advanced ecology. All emphases require original research topics with the results presented in dissertation format. This research is expected to be of a publication quality and dissertation style best reflecting that of a professional journal, thus facilitating timely submissions for publication. We also encourage formal presentations at professional meetings.

**Admission and Entry**

- Semesters or terms of entry and application deadline: fall, winter, spring: February 1 (U.S. and international).
- Entrance examination: GRE general test.
- Prerequisite: baccalaureate degree in biology, plant ecology, conservation, range ecology, wildlife biology, or related fields.

**Requirements for Degree**

- Credit hours: minimum 54 credit hours, including 18 hours of dissertation (PWS 799R).
- Required courses: PWS 694R (seminar—four semesters). Additional courses as determined by student's advisory committee and approved by department graduate coordinator.
• Students who have earned a master's degree must complete at least 36 credit hours of additional graduate work at BYU beyond the master's degree.
• Biannual progress reviews by advisory committee and graduate committee.
• Presentation of research prospectus to advisory committee.
• Dissertation: completion of the dissertation in scientific journal format and prepared for journal submission.
• Examination: (A) comprehensive oral examination: grant proposal and literature review; (B) oral defense of dissertation.

FINANCIAL ASSISTANCE
Teaching and research assistantships are offered on a competitive basis by the department. Tuition assistance is also available for both MS and PhD degrees.

RESOURCES AND OPPORTUNITIES

Ezra Taft Benson Agriculture and Food Institute. The major objective of the institute is to raise the quality of life among the people of the world through improved nutrition and enlightened agricultural practices. Emphasis is placed on teaching and training students who wish to work in foreign countries and on training people from those countries in agriculture and food science practices that can be used to improve life. Research to improve agricultural practices, family nutrition, and appropriate technology is encouraged.

M. L. Bean Life Science Museum. Extensive biological collections are housed in the M. L. Bean Life Science Museum and are available for supervised student research. Curators and their students often conduct fieldwork throughout the U.S., and in many other parts of the world.

Lytle Ranch Preserve. Graduate students are able to do year-round research on desert plants and animals at the Lytle Ranch. This large preserve is located in the moderate desert climate of southwestern Utah.

USDA Forest Service Shrub Science Laboratory. Housed on the BYU campus, this laboratory supports one of the finest research programs on native shrubs in the world. Here eleven PhD research scientists with adjunct faculty appointments work with BYU faculty members and graduate students. Laboratories, greenhouses, and gardens on campus and around the state support studies on desert shrubs.

Other Laboratory and Field Resources. On the Provo campus are an arboretum, a small animal vivarium, a tissue culture room, several environmental chambers, and excellent greenhouse facilities. Laboratory facilities include gas chromatographs–mass spectrometers, isotope ratio mass spectrometers, transmission and scanning electron microscopes, ultra centrifuges, visible ultraviolet and infrared spectrophotometers, gas chromatographs, high-performance liquid chromatographs, infrared gas analyzers, atomic absorption spectrophotometer, inductively coupled plasma spectrophotometer, ion chromatograph, near infrared spectrophotometer, and many other items.

Faculty and graduate students are currently engaged in a number of significant and interesting research projects, funded both internally and externally.

For a more detailed description of the graduate program requirements, send for a copy of the department’s graduate handbook.

COURSE DESCRIPTIONS

511. Soil Physics. (3)
Prerequisite(s): PWS 282, Chem 105, Math 112 or 119; or equivalents.
Physical relationships of water, heat, and gases in soils; physical and chemical properties of clays. Mathematical modeling of physical properties and transport processes.

514. Soil Microbiology. (2)
Prerequisite(s): Chem 106, 107; or equivalents.
Ecology and role of soil microorganisms in nutrient cycling, decomposition of organic matter and waste materials, and degradation of agricultural chemicals in soil.

515. Agrostology: Taxonomy and Ecology of Grasses. (3)
Prerequisite(s): Bio 430 or equivalent. Classification and ecology of grasses, emphasizing important forage species.

520. Saline and Sodic Soils. (3)
Prerequisite(s): PWS 305, Chem 105, 106, 107; or equivalents.
Physical and chemical properties of saline and sodic soils and irrigation waters—their diagnosis, reclamation, and management for sustainable crop production.

525. Plant Development. (3)
Prerequisite(s): PDBio 360 or equivalent; PWS 586.
Molecular and genetic interactions in plant development.

540R. Topics in Plant Physiology. (3)
Prerequisite(s): PWS 440 or equivalent; PWS 494R or concurrent enrollment.
Topics in advanced plant physiology.

546. World Bird Families. (3)
Prerequisite(s): PWS 446 or instructor’s consent.
Distribution, composition, and characteristics of world bird families, using museum specimens.

551. Quantitative Ecology. (3)
Prerequisite(s): Bio 350 or equivalent; Stat 221 or 511 or concurrent enrollment.
Quantitative methods for ecological sampling and data analysis.

552. Terrestrial Ecosystems. (3)
Theory and application of plant and animal distribution in terrestrial environments.
553. Restoration Ecology. (3)  
Prerequisite(s): PWS 282, 416; Bio 350; or equivalents.  
Nature of ecosystem disturbance and plant succession; developing science and practice of ecological restoration; case studies of applied restoration.

554. Wildlife Behavioral Ecology. (3)  
Prerequisite(s): Bio 100, 350; or equivalents.  
Integrating principles of ethology, sociobiology, and behavioral ecology using examples from wildlife resources; behavioral sampling methods.  
Field trips required.

559. Plant Molecular Breeding. (2)  
Prerequisite(s): PWS 265, 340, 485; or equivalents; PWS 494R or concurrent enrollment.  
Molecular genetic methods applied to improvement of economically important plants.

560. Soil and Plant Analysis. (3)  
Prerequisite(s): PWS 282 or equivalent.  
Laboratory chemical analysis of soils and plant materials in soil and plant research.

575. Plant Pathology. (3)  
Prerequisite(s): PWS 100 or Bio 131; PWS 331 or MMBio 240; or equivalents.  
Concepts associated with symptoms, development, control, and classification of plant diseases.

580. Plant Transformation. (2)  
Prerequisite(s): PDBio 360 or equivalent; PWS 586.  
Theory and methods of plant transformation.

586. Plant Cell Biology. (3)  
Prerequisite(s): PDBio 360, PWS 340, 440; or equivalents.  
Molecular aspects of the structural and functional characteristics of plant cells, emphasizing characteristics of plant cells setting them apart from animal cells.

598R. Advanced Topics in the Plant and Wildlife Sciences. (1-3)

605. Soil-Plant Relationships. (3)  
Prerequisite(s): PWS 282, 305, 306, 440 (or equivalents); organic or biochemistry course.  
Soil-plant nutrition including mechanisms of nutrient uptake, transfer, and assimilation; mechanisms of nutrient immobilization and toxicity in soils and plants.

629. Conservation of Mega and Meso Carnivores. (3)  
Life histories of representative carnivores with political, popular, and managerial problems surrounding their existing and proposed conservation.

633. Experimental Design. (3)  
Prerequisite(s): Stat 221 or 510 or equivalent.  
Planning, experimental design, analytical procedures, and data interpretation in biological research; incorporates use of Statistical Analysis System (SAS) software.

640. Developmental Plant Physiology. (3)  
Prerequisite(s): PWS 440 or equivalent.  
Developmental phenomena in higher plants, emphasizing seed physiology, plant growth regulation, and plant stress responses.

670. Analysis of Complex Genomes. (3)  
Prerequisite(s): PWS 340 or equivalent.  
Genetic analysis of quantitative traits in plants and animals.

673R. Cytogenetics. (3)  
Prerequisite(s): PWS 340, 485; or equivalents.  
Chromosome structure and function; classical and molecular cytological methods of chromosome and genome analysis.

694R. Seminar. (1)  
697R. Research. (1-9)  
698R. Master’s Project. (1-6)  
For project option only.

699R. Master’s Thesis. (1-9)  
799R. Doctoral Dissertation. (1-9)

Faculty

Allen, Phil S., Professor. PhD, University of Minnesota, 1990. Seed Biology; Ecological Restoration.


Black, Hal L, Professor. PhD, University of New Mexico, 1972. Ecology; Mammalogy.

Booth, Gary M., Professor. PhD, University of California, Riverside, 1969. Insect Physiology; Toxicology.

Coleman, Craig E., Associate Professor. PhD, Pennsylvania State University, 1992. Genetics and Biotechnology.


Jellen, Eric N., Associate Professor. PhD, University of Minnesota, 1992. Cytogenetics; Genetic Mapping; Plant Genetic Resource Conservation.

Jolley, Von D., Professor. PhD, Iowa State University of Science and Technology, 1976. Mineral Nutrition; Chemistry of Nutrition Uptake; Soil Testing for Developing Countries.


Maughan, P. Jeffrey, Associate Professor. PhD, Virginia Polytechnic Institute and State University, 1996. Plant Genetics.
PETTERSON, STEVEN L., ASSISTANT PROFESSOR. PHD, OREGON STATE UNIVERSITY, 2004. LANDSCAPE ECOLOGY.

ROBINSON, TODD E., ASSOCIATE PROFESSOR. PHD, CORNELL UNIVERSITY, 1998. GROWTH BIOLOGY; METABOLIC PROCESSES.

ROUNDY, BRUCE A., PROFESSOR. PHD, UTAH STATE UNIVERSITY, 1984. REVEGETATION, RESTORATION ECOLOGY.

SMITH, TOM S., ASSOCIATE PROFESSOR. PHD, PENNSYLVANIA STATE UNIVERSITY, 2004. PLANT PHYSIOLOGICAL ECOLOGY.

STEVEN, MIKEL R., ASSOCIATE PROFESSOR. PHD, UNIVERSITY OF ARKANSAS, 1993. PLANT BREEDING; MOLECULAR GENETICS.

TERRY, RICHARD E., PROFESSOR. PHD, PURDUE UNIVERSITY, 1976. SOIL MICROBIOLOGY; RECLAMATION AND RESTORATION OF ENVIRONMENTALLY DISTURBED SITES.

UDALL, JOSHUA A., ASSISTANT PROFESSOR. PHD, UNIVERSITY OF WISCONSIN, MADISON, 2003. PLANT GENETICS AND GENE EXPRESSION.

WHITE, CLAYTON M., PROFESSOR. PHD, UNIVERSITY OF UTAH, 1968. RAPTOR BIOLOGY; ORNITHOLOGY; AVIAN SYSTEMATICS AND EVOLUTION.

WOOLSTENHULME, LOREEN ALLPHIN, ASSOCIATE PROFESSOR. PHD, UNIVERSITY OF UTAH, 1996. PLANT ECOLOGY; PLANT REPRODUCTIVE BIOLOGY; CONSERVATION GENETICS.

PSYCHOLOGY

Chair: Ramona O. Hopkins

Associate Chair-Student Issues
Graduate Coordinator: Harold L. Miller, Jr.

Associate Chair-Faculty Issues: Michael J. Lambert

Director of Clinical Training: Sally H. Barlow

Executive Coordinator of Clinical Psychology: Elizabeth J. Norton

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Provo, UT 84602-5543
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THE PROGRAM OF STUDIES

The mission of the Psychology Department is to discover, disseminate, and apply principles of psychology within a scholarly framework that is compatible with the values and purposes of Brigham Young University and its sponsor.

Three degrees are offered through the Department of Psychology: Psychology—MS, Psychology—PhD, and Clinical Psychology—PhD.

Students are selected after careful consideration of GPA, GRE general test scores, letters of recommendation, and areas of academic interest. The MS program is designed to be completed in two years. The PhD program is designed to be completed in four years and the Clinical PhD program in five years (including a one-year internship).

Psychology—MS

The master’s degree in psychology provides advanced education in preparation for application to doctoral programs; community college, junior college, or high school teaching; and general strengthening of expertise in psychology. It is not intended as a terminal professional degree.

Admission and Entry.

- Semesters of entry and application deadlines: Fall, January 1 (U.S. and international).

Requirements for Degree.

- Credit hours (34): Minimum 28 hours of course work plus 6 thesis hours (699R).

- Required courses: B grade or better in Psych 501, 504, 506, 605, 606 (which should be taken during the first three semesters in residence), two electives, and three of the following: Psych 510, 520, 540, 550, 560, 565, 575, 583.

- Thesis committee selection: By the end of the first semester students must select their thesis committee and submit their study list.

- Electives: Determined in consultation with the thesis committee chair.

- Thesis: A thesis prospectus and oral defense of the prospectus are required.

- Thesis Examination: Oral defense of thesis examination on related course work.

- Recommended sequence for completing program requirements: First Year: Fall – Psych 501, 504, 605, 699R (1 cr), plus 1 course from required list; Winter – Psych 502, 606, 699R (1 cr), plus 2 courses from study list; Spring – Psych 693 (taught annually only during spring term), Psych 510 or 520 (offered in alternate years).

- Second Year: Fall – Psych 699 (2 cr), plus any remaining courses on study list, thesis prospectus defended and approved; Winter – Psych 699R (2 cr), complete and
defend master’s thesis, complete any remaining courses; Spring – Psych 510 or 520 (offered in alternate years). Students are expected to complete all requirements and graduate no later than August of their second year in the program.

**Psychology—PhD**

The doctoral program in psychology offers rigorous educational experience leading to the PhD degree. The first four semesters of the program are designed to provide broad acquaintance with the substantive areas of the discipline, training in research skills, and introduction to the particular areas of emphasis offered in the program. During the last two years students will pursue specialized course work and training in one of three emphasis areas: (1) Applied Social Psychology, (2) Behavioral Neurobiology, and (3) Theoretical and Philosophical Psychology. The required course of study for students in each emphasis area will be determined in consultation with the student’s dissertation committee.

Applicants should designate one or more potential faculty mentors in their application. By the end of the second year in the program, all students will have completed an MS degree, including a thesis. During the first semester after completion of the MS degree, students should select the chair and two other members with graduate faculty status as their dissertation committee. They should compose a study list and also begin course work and research in their selected emphasis area in consultation with the dissertation committee chair.

**Admission and Entry.**

• Semesters of entry and application deadlines: Fall, January 1 (U.S. and international).
• Application requirements: Minimum required GPA is 3.0 for the most recent 60 hours.
• Entrance examination: GRE general test.
• Prerequisite: Bachelor’s degree required (BS in psychology preferred but not required). MS degree required (psychology preferred but not required). Previous undergraduate course work should include general psychology, psychological statistics, research design and analysis, and three additional psychology courses.
• Students who are admitted without a master’s degree will be expected to complete the requirements for the MS degree within the first two years of the doctoral program.

**Requirements for Degree.**

• Credit hours (63): Minimum 45 hours of course work plus 18 dissertation hours (799R).
• Required core courses: B grade or better in Psych 501, 502, 504, 510, 540, 550, 560, 575, 583, 605, 606.
• Recommended sequence of program requirements:
  - First Year: Fall – Psych 501, 504, 605, 699R (1 cr), plus 1 other course; Winter – Psych 502, 606, 699R (1 cr), plus 2 classes from major list; Spring – Psych 693 (taught annually only during spring term), Psych 510 or 520 (offered in alternate years).
  - Second Year: Fall – Psych 699 (2 cr), plus any remaining courses, thesis prospectus defended and approved; Winter – Psych 699R (2 cr), complete and defend thesis, plus complete any remaining courses. Spring – Psych 510 or 520 (offered in alternate years).
• Students are expected to complete all requirements and graduate with the MS degree no later than August of their second year in the program.

• Third Year: Specialize in an emphasis area, take required course work selected in consultation with the dissertation committee chair, and complete a literature review in consultation with the dissertation committee. Submit and defend a dissertation prospectus and begin dissertation research in consultation with the dissertation committee chair.

• Fourth Year: Complete any remaining courses, complete dissertation research, and author and defend the dissertation. Students must complete 18 hours of dissertation credit (Psych 799R) as part of the dissertation requirement.
• Literature review: Students will complete a major literature review in consultation with the dissertation committee. The review should constitute a contribution to the discipline and demonstrate mastery of the published literature in the selected topic. The topic may or may not be related to the student’s dissertation. The review must be approved by the dissertation committee.
• Dissertation: By summer term in their fourth year, students should complete and defend a dissertation in their chosen emphasis area (including a manuscript suitable for submission for publication that is appended to the dissertation, unless exempted in individual cases by the dissertation committee and the emphasis area faculty chair). All students should graduate no later than August of their fourth year in the program.

**Clinical Psychology—PhD**

The clinical psychology training program at Brigham Young University leads to the PhD degree and is fully accredited by the Committee on Accreditation, formerly the American Psychological Association Accreditation. (Information on accreditation can be obtained from the Committee on Accreditation, 202-336-5979, or the Office of Program Consultation and Accreditation, American Psychological Association, 750 First Street, NE Washington, DC 20002-4242, or at www.apa.org/ed/accreditation/). This program is designed to be completed in five years, including a one-year, full-time internship at an approved agency. Candidates with varied backgrounds who have strong academic and clinical promise are encouraged to apply.

The philosophy of the clinical training program adheres to the scientist-practitioner model. Training focuses on academic and research competence as well as theory and practicum experiences necessary to develop strong clinical skills.
The program at Brigham Young University is eclectic in its theoretical approach, drawing from a wide range of theories and orientations in an attempt to give broad exposure to a diversity of traditional and innovative approaches. All students receive a basic core of training in adult clinical psychology. They may also elect to take a special emphasis in (1) Child, Adolescent, and Family Clinical Psychology, (2) Clinical Neuropsychology, or (3) Clinical Research.

Admission and Entry.
- Semesters of entry and application deadlines: Fall, January 1 (U.S. and international).
- Application requirements: Minimum required GPA is 3.0 for upper-division undergraduate hours.
- Entrance examination: GRE general test.
- Prerequisite: Bachelor’s degree required (BS in psychology preferred but not required). A master’s degree is not necessary as part of the clinical PhD program. Previous course work should include introductory and abnormal psychology; psychological statistics; research design and analysis; personality; learning or cognition; and tests and measurement.

Requirements for Degree.
- Credit hours (118 minimum; B grade or better).
- Research requirements: 8 hours of graduate data analysis (Psych 501, 502); 9 hours of research methodology (Psych 503, 504, 505); 18 hours of dissertation (Psych 799R).
- General core courses: 6 hours of biological bases of behavior (Psych 583 or 585; 687R); 6 hours of social-cultural bases of behavior (Psych 550, 645); 3 hours of cognitive-affective bases of behavior (Psych 560 or 575); 3 hours of human development (Psych 520); 3 hours of history and systems (Psych 510); 3 hours of personality (Psych 540).
- Clinical core courses: 3 hours of ethics and standards (Psych 609); 9 hours of assessment (Psych 622, 623, plus an elective); 12 hours of psychotherapy (Psych 651, 652, 653, 654. Note: 654 is strongly recommended but not required for neuropsychology students); 4 hours of psychopathology (Psych 611); 18 hours of dissertation (Psych 799R).
- Clinical practica: 19 hours of clinic practica (Psych 741R); 2 hours of clerkships (Psych 743R); 3 hours of case conferences (Psych 740R); 3 hours of externships optional but strongly recommended (Psych 700R); 6 hours of internship (Psych 745, 746, 747, and 748).
- Emphasis sequences: a sequence of elective courses may be taken in the following emphasis areas: Child, Adolescent, and Family Clinical Psychology; Clinical Neuropsychology; Clinical Research.
- Dissertation (including a manuscript in a form suitable for submission for publication appended to the dissertation) to be completed before the internship.
- Internship: One-year internship in a setting approved by the clinical director. Before entering the internship, students complete all other requirements.
- Examinations: (a) comprehensive examinations in first, second, and third years; (b) oral defense of prospectus and dissertation.

For additional information about the program, write or call the secretary or the director of clinical training, 284 TLRB, Provo, UT 84602-8610, telephone (801) 422-4050.

Financial Assistance
Departmental financial aid is available in various forms: teaching and research assistantships, student instructorships, and tuition stipends.

Resources and Opportunities
Comprehensive Clinic. This clinic is a unique interdisciplinary training and research facility housing audio-visual and computer resources and a staff of skilled technicians and secretaries to support graduate student and faculty research. The clinic currently functions as an APA-approved clinical psychology laboratory for the Psychology Department. In addition, the clinic provides the university and the broader community with mental health services, serving between 200 and 250 clients each week. The clinic contains eleven counseling rooms, four seminar rooms, and two large classrooms equipped with video cameras and portable playback units. Fourteen small session rooms are equipped for audio recording.

Externship Opportunities. In addition to practicum experiences in the Comprehensive Clinic, the clinical program arranges a number of reimbursed training placements in community agencies as well as two required unpaid clerkship experiences, including such sites as Utah State Hospital, Utah State Prison, facilities for children with developmental disabilities, private practices, medical centers, and government agencies. These clerkships and externships are available in more than 25 different settings. These opportunities provide an excellent foundation for the integration of classroom experiences with practical work applications.

Family, Home, and Social Sciences Computing Center. The center assists faculty and students with data processing and other computing needs on mainframe and personal computers. Technical support and consultation services for both statistics and graphics are available to students working on research projects, theses, and dissertations. Special computer facilities in the Psychology Department support research in psycholinguistics, neuropsychology, and experimental analysis of human and animal behavior.
PSYCHOLOGY

Psychobiology Research Laboratories. These laboratories are equipped with facilities for brain-behavior analysis. Full histology and electrophysiology laboratories, along with the necessary surgical facilities, are available.

Neuroimaging and Behavior Laboratory. Research and training in the area of neuroimaging and cognitive neuroscience are supported by a laboratory consisting of multiple computers, video, data storage, and printer workstations. These are supported by current software that allows for the capture, processing, isolation, and imaging output of specific areas of the brain from MRI and CT images as well as from metabolic imaging studies.

Multivariate Data Visualization Laboratory. Faculty and students interested in multivariate visualization of data and large-scale data analysis are supported by a mathematical psychology laboratory consisting of a network of NT workstations.

Laboratories for the Experimental Analysis of Behavior. Three laboratories for human and animal behavior analysis feature online control of experimental procedures and data recording.

The college also provides additional research and academic support through the Camilla Eyring Kimball Chair of Home and Family Life; the Lemuel H. Redd, Jr., Chair in Western History; the J. Fish and Lillian F. Smith Chair of Economics; and the Family History Services unit.

For a more detailed description of the graduate programs, see the Psychology Graduate Handbook and other information available at http://psychology.byu.edu.

Course Descriptions

501. Data Analysis in Psychological Research 1. (4)
Prerequisite(s): Psych 301 or Stat 222; or Stat 221, 223; or equivalents.
Using and interpreting major quantitative methods in psychology; some commonly used computer methods.

502. Data Analysis in Psychological Research 2. (4)
Prerequisite(s): Psych 501.
Introduction to multivariate data analysis methods, including multivariate analysis of variance, factor analysis, discriminant analysis, multivariate multiple regression, canonical correlation, structural equations modeling, cluster analysis, etc.

503. Research Measurement. (3)
Classical true score and item response theories; estimation procedures for instrument reliability and validity.

504. Research Design. (3)
Overview of designs used in psychotherapeutic literature, emphasizing critical analysis of empirical research.

505. Clinical Research. (3)
Prerequisite(s): Psych 503, 504.
Overview of research examining processes and outcomes of psychological treatments for psychological disorders.

510. History and Systems of Psychology. (3)
Survey of origins and development of modern psychology, including consideration of the schools and theoretical systems.
Contains content featured in the Graduate Record Examination (GRE).

511. Philosophy of Science for the Social Sciences. (3)
Prerequisite(s): instructor’s consent or admission to PhD program.
Issues in philosophy of science as they apply to social sciences, including methods, epistemology, and construction of knowledge.

512. Qualitative Research Methods. (3)
Theories and methods of qualitative research emphasizing philosophical assumptions, question formulation, data gathering, interpretation, and presentation of findings.

520. Advanced Developmental Psychology. (3)
Major research in developmental psychology, emphasizing theory, content, and methodology.

531. Organizational Psychology. (3)
Personal and interpersonal aspects of organizational life: goal setting, decision making, problem solving, communication, control, leadership, motivation, and change.

535. Behavior Modification Techniques. (3)
Practical application of behavior modification to academic discipline; emotional target behaviors of individuals and groups.

540. Personality Theory. (3)
Prerequisite(s): Psych 341 or equivalent.
Contemporary theories of personality developed within the framework of major psychological systems.

550. Theory and Research in Social Psychology. (3)
Current theories and research on interaction with others.

552. Applied Social Psychology. (3)
Prerequisite(s): Psych 350 or equivalent.
Overview of domains in which social psychological theory and research have been applied in field settings.

555. Group Dynamics. (3)
Prerequisite(s): Psych-Soc 350 or equivalent.
Theories and research on small-group processes and mass behavior.

560. Learning Theory. (3)
Prerequisite(s): Psych 361 or equivalent.
Critical review of current theories and persistent issues.
565. Motivational Psychology. (3)
  Theoretical, historical, and empirical overview; recent trends and issues; role of animal studies; methodological issues.

575. Cognitive Processes. (3)
Prerequisite(s): Psych 370, 375; or equivalents.
  Theory and research in perception, attention, language, problem solving, and other thinking processes.

583. Biological and Health Psychology. (3)
Prerequisite(s): Psych 381, 382, or equivalent.
  In-depth examination of biological bases of behavior from perspective of health and disease.

584. Cognitive Neuroscience. (3)
  Critical analysis of neurobiological bases of perception and cognition.

585. Human Neuropsychology. (3)
Prerequisite(s): Psych 381, 382, or instructor's consent.
  Critical study of brain-behavior relationships.

586. Hormones and Behavior. (3)
Prerequisite(s): Psych 381, 382.
  Neural and endocrine mechanisms underlying behavior.

587. Sensory and Perceptual Processes. (3)
Prerequisite(s): Psych 370, 381, 382; or equivalents.
  Critical examination of sensory mechanisms and perceptual organization.

592R. Supervised Teaching Experience. (0.5-3)
  For students receiving supervised teaching experience.

600R. 600R. Seminar in Research Methods. (3)
Prerequisite(s): Psych 501.
  Research strategies, methods, and design including measurement, scaling, questionnaire construction, reliability, validity, and experimental and statistical designs.

605. Professional Seminar in Psychology. (1)
Prerequisite(s): Acceptance into MS program.
  Introduction to major research areas in psychology.

606. Professional and Ethical Issues in Psychology. (1)
Prerequisite(s): Acceptance into PhD program.
  Ethical issues in professional and scientific psychology.

609. Professional and Ethical Issues in Clinical Psychology. (3)
Prerequisite(s): Acceptance into clinical psychology program.
  Ethical issues from a historical and contemporary framework.

610. Theory and Philosophy in Psychology. (3)
Prerequisite(s): instructor's consent or admission to PhD program.
  Philosophical issues underlying psychology, including the nature and importance of theory and theorizing.

611. Psychopathology. (4)
Prerequisite(s): Acceptance into clinical psychology program.
  Diagnosis and etiology of mental and emotional disorders in children and adults.

612. Developmental Psychopathology. (3)
Prerequisite(s): acceptance into clinical psychology program; Psych 611.
  Advanced study of etiology, diagnosis, prevalence, associated features, and theories of psychological and developmental disorders in children and adolescents.

622. Assessment 1: Intelligence. (3)
Prerequisite(s): Acceptance into clinical psychology program.
  Methods used in assessing intellectual status in children and adults.

623. Assessment 2: Personality. (3)
Prerequisite(s): Acceptance into clinical psychology program.
  Methods used in assessing the personality and behavioral characteristics of children and adults.

624. Assessment 3: Rorschach Technique. (3)
Prerequisite(s): Acceptance into clinical psychology program.
  Theory and skill training in administering, scoring, and interpreting the Rorschach Test.

625. Advanced Objective Assessment. (3)
Prerequisite(s): Acceptance into clinical or school psychology program.
  In-depth look at MMPI.

631. Professional Issues in Organizational Psychology. (3)
Prerequisite(s): Psych 531.
  Consultant involvement in executive and management decision making, focusing on social responsibility and ethics.

640R. Seminar in Personality. (3)
Prerequisite(s): Psych 540.
  Intensive analysis of selected current topics in personality research and theory.

641R. Values, Religion, and Mental Health. (0.5-3)
  Values and religious issues in personality, psychotherapy, prevention, and mental health education.

645. Cultural Diversity and Gender Issues. (3)
  Clinical issues in the context of cultural diversity and contemporary social trends.

648R. Seminar in Theoretical/Philosophical Psychology. (3)
Prerequisite(s): instructor's consent or acceptance into PhD program.
  Analysis of theoretical and philosophical issues in the discipline of psychology.

650R. Seminar in Social Psychology. (3)
Prerequisite(s): Psych 552 and instructor's consent.
  Advanced study of etiology, diagnosis, prevalence, associated features, and theories of psychological and developmental disorders in children and adolescents.
651. Psychotherapy 1: Relationship and Psychodynamic. (3)
Prerequisite(s): Acceptance into clinical psychology program.
Theory and techniques employed in psychotherapy that focus on relationship and psychodynamic approaches.

652. Psychotherapy 2: Cognitive-Behavioral. (3)
Prerequisite(s): Acceptance into clinical psychology program.
Theory, treatment principles, and techniques of cognitive-behavioral therapy.

653. Psychotherapy 3: Child and Adolescent. (3)
Prerequisite(s): Acceptance into clinical psychology program.
Theory and treatment techniques of child and adolescent therapy.

654. Psychotherapy 4: Group. (3)
Prerequisite(s): Acceptance into clinical psychology program.
Theory and techniques of small-group processes.

655. (Psych-Soc 630) Attitude Measurement and Change. (3)
Prerequisite(s): instructor’s consent.
Attitude development, change, and assessment, focusing on both individual and mass persuasion.

660R. Seminar in Learning. (3)
Prerequisite(s): instructor’s consent.
Critical review of contemporary literature in field of learning psychology.

667R. Seminar in the Experimental Analysis of Behavior. (3)
Prerequisite(s): instructor’s consent.
Intensive overview of current research and theory and attendant philosophy of behaviorism.

675. Personality Dynamics. (3)
Prerequisite(s): acceptance into clinical psychology program.
Theories and applications to clinical situations.

677R. Seminar in Cognitive Processes. (3)
Prerequisite(s): Psych 575.
Advanced topics in cognitive science and applied artificial intelligence.

678R. Seminar in Mathematical Psychology. (3)
Variable topics concerning the application of mathematical and statistical methods to psychology, with emphasis on jointly publishing a methods paper.

680. Clinical Neuropsychology. (3)
Prerequisite(s): Acceptance into clinical psychology program and Psych 585.
Comprehensive study of the human dysfunctional brain.

684. Advanced Behavioral Neurobiology. (3)
Prerequisite(s): Psych 381, 382.
Intense examination of contemporary developments in psychobiology and behavioral neurosciences.

685R. Seminar in Behavioral Neurobiology. (3)
Critical examination of topics of current interest taken from contemporary literature.

687R. Seminar in Psychopharmacology. (3)
Prerequisite(s): Psych 585 or equivalent.
Major classes of psychoactive drugs, emphasizing drug-behavioral interactions.

693. Teaching Psychology. (3)
Prerequisite(s): Enrollment in master’s or PhD program.
Prepares graduate students for independent teaching experiences.

694. Psychology Teaching Practicum. (1)
Prerequisite(s): Psych 693.
Lab portion of Psych 693 entailing actual teaching experience and its supervision.

695R. Independent Readings. (0.5-3)
Prerequisite(s): instructor’s consent.
Faculty-supervised readings as arranged by student.

697R. Independent Research. (0.5-4)
Prerequisite(s): instructor’s consent.
Faculty-supervised research as arranged by student.

699R. Master’s Thesis. (0.5-9)
Concluding research for master’s program, culminating in final oral examination.

700R. Externship in Clinical Psychology. (0.5)
Supervised reimbursed experience in community agencies.

710R. Readings in Clinical Psychology. (0.5-3)
Prerequisite(s): Acceptance into clinical psychology program.
Guided individual study in various topics.

711R. Topics in Clinical Psychology (0.5-3)
Prerequisite(s): Acceptance into clinical psychology program.
Theory and practice in specific topics.

712R. Topics in Neuropsychology. (3)
Prerequisite(s): Acceptance into clinical psychology program.
Current topics, including neuroanatomy and adult and child assessment. Other topics as determined by student interest.

740R. Case Conference. (0.5)
Prerequisite(s): Acceptance into clinical psychology program.
Case presentations; professional, ethical, and research issues pertinent to assessment and intervention.

741R. Integrative Practicum. (0.5-3)
Prerequisite(s): Acceptance into clinical psychology program.
Supervised assessment and intervention, integrating psychopathology diagnosis and treatment.

742R. Projects in Clinical Psychology. (3)
Prerequisite(s): Acceptance into clinical psychology program.
Advanced study or skill training in various areas.

743R. Clerkship in Clinical Psychology. (1)
Prerequisite(s): acceptance into clinical psychology program.
Supervised experience in community agencies.

745. Clinical Internship. (2)
Prerequisite(s): acceptance into clinical psychology program.
Full-time training at approved mental health agency.
746. Clinical Internship. (2)
Prerequisite(s): acceptance into clinical psychology program.
Full-time training at approved mental health agency.

747. Clinical Internship. (1)
Prerequisite(s): Acceptance into clinical psychology program.
Full-time training at approved mental health agency.

748. Clinical Internship. (1)
Prerequisite(s): Acceptance into clinical psychology program.
Full-time training at approved mental health agency.

799R. Doctoral Dissertation. (0.5-9)
Concluding research for doctoral program, culminating in final oral examination.

FACULTY

ALLEN, MARK D., Assistant Professor.

BALDWIN, SCOTT A., Assistant Professor. PhD, University of Memphis, 2006. Psychotherapy Outcome and Process Research; Couples Therapy; Research Design and Statistics; Program Evaluation.

BALLIF-SANVILL, BONNIE, Professor.
PhD, Brigham Young University, 1966. Peace and Violence in Women and Men Across Ages and Cultures Worldwide.


BIGLER, ERIN D., Professor. PhD, Brigham Young University, 1974. Neuropsychology; Neuroanatomy; Neuroimaging.

BLOCH, GEORGE J., Professor. PhD, Stanford University, 1968. Physiological Psychology; Neuroendocrinology; Chronic Stress.

BROWN, BRUCE L., Professor. PhD, McGill University, Canada, 1969. Statistical and Mathematical Methods and Measurement; Psycholinguistics; Theory and Philosophy.

BURLINGAME, GARY M., Professor. PhD, University of Utah, 1983. Group Therapy; Process and Outcome; Outcome Assessment; Measurement/Methodology.

CARPENTER, BRUCE N., Associate Professor. PhD, University of Wisconsin, Madison, 1980. Clinical Assessment; Psychopathology; Stress and Coping.

FLOM, ROSS, Associate Professor. PhD, University of Minnesota, 1999. Attention and Cognition in Infants.

GANTT, EDWIN E., Associate Professor. PhD, Duquesne University, 1998. Theoretical and Philosophical Foundations of Psychology and Science; Hermeneutic-Phenomenological Approaches to the Psychological Study of Empathy and Altruism; Qualitative Research Methods.

HARDY, SAM A., Assistant Professor. PhD, University of Nebraska-Lincoln, 2005. Adolescent and Young Adult Social and Personality Development; Moral Development; Moral Personality; Self and Identity; Religiosity; Theory and Philosophy.

HEDGES, DAWSON W., Associate Professor. MD, University of Utah, 1988. Psychiatry; Neuroscience; Neuroimaging and Neuroendocrinology.

HIGLEY, J. DEE, Professor. PhD, University of Wisconsin, 1985. Development; Psychopathology; Psychobiology; Primate Behavior.

HOLT-LUNSTAD, JULIANNE, Assistant Professor. PhD, University of Utah, 2001. Stress and Coping; Social Relationships; Personality; Health Psychology; Behavioral Medicine.

HOPKINS, RAMONA O., Associate Professor. PhD, University of Utah, 1996. Cognitive Neuroscience and Neurobiological Approaches to Cognition; Brain Imaging; Brain Behavior Relationships; Emotion; Health-Related Quality of Life; Cognitive Development; Family Stress Due to Illness.


MAUGHAN, MICHAEL L., Associate Professor. EdD, Utah State University, 1970. Psychotherapy, Adult Development; Biofeedback/Stress Management.

MILLER, HAROLD L., JR., Professor. PhD, Harvard University, 1975. Experimental Analysis of Learning and Motivation; Evolutionary Psychology; Teaching of Psychology.


RIDGE, ROBERT D., Associate Professor. PhD, University of Minnesota, 1993. Interpersonal Behavior; Social Influence; Applied Social Psychology.

SLIFE, BRENT, Professor. PhD, Purdue University, 1981. Theoretical/Philosophical; Theoretical Underpinnings of Personality and Psychotherapy; Relational and Theistic Approaches to Therapy.

SOUTH, MIKLE, Assistant Professor. PhD, University of Utah, 2005. Developmental Psychopathology; Brain Development and Brain Imaging of Autism Spectrum Disorder; Family Adjustment to Developmental Disabilities.

SMART, DAVID W., Professor. PhD, University of Utah, 1969. Counseling Outcome Assessment; Student Development; Multicultural Counseling.

SPACKMAN, MATTHEW P., Associate Professor. PhD, Georgetown University, 1998. Philosophical and Historical Approaches to Emotion, Social Functions of Emotions; Attribution of Responsibility for Emotions; Quantitative and Experimental Methods.

SPANGLER, DIANE L., Associate Professor. PhD, University of Oregon, 1994. Depression; Cognitive Theory and Therapy; Eating Disorders.

STEFFEN, PATRICK R., Associate Professor. PhD, University of Miami, 1998. Clinical Health Psychology; Stress and Development of Disease; Spiritual and Cultural Factors in Health.
GEORGE W. ROMNEY INSTITUTE OF PUBLIC MANAGEMENT

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THE PROGRAM OF STUDIES

Administered through the Romney Institute of Public Management, the master of public administration (MPA) program prepares men and women for leadership in the public and not-for-profit sectors.

Leadership in this context provides unique opportunities for service to others. The faculty and students of the MPA program are dedicated to the philosophy that students should develop excellence in both knowledge and management skills, based on a solid ethical foundation. The success of this philosophy is demonstrated by the wide variety of leadership positions now held by alumni throughout the world in state and local governments, federal agencies, research organizations, business firms, and diverse nonprofit organizations. Graduates are employed in a variety of careers, such as city managers, personnel directors, policy analysts, and finance directors.

Today the public sector is called on to assist in areas that were traditionally the sole domain of profit organizations. Never before has there been a greater need for professionally trained public managers, and never before has there been greater opportunity for dedicated and qualified public managers to provide leadership in shaping the course of human affairs through public institutions and programs.

The Romney Institute offers two programs leading to the MPA degree: full-time and executive. Both are accredited by the National Association of Schools of Public Affairs and Administration (NASPAA). The full-time program requires two years; approximately sixty students are admitted each year. The executive program is taught one night a week for three years. Approximately fifty students are admitted each year.

Public Administration—MPA

The full-time MPA program is designed to provide an understanding of the essential body of knowledge and to develop the basic skills needed for professional management. Such essentials include quantitative analysis, managerial economics, organizational behavior, strategy, human resource management, accounting, budget and finance, ethics, and communication. These skills are taught through practical class and field experiences, case studies, formal and computer simulations, and special workshops and seminars. Second-year courses are designed around an individual’s desired area of emphasis. Such areas include: Local Government Management, Human Resource Management, Financial and Management Analysis, and Nonprofit Management. Emphasis in each of these concentrations is given to the conceptualization of the larger political and social issues as they relate to the administration of government and nonprofit programs.

Admission and Entry.
• Semesters of entry and application deadlines: fall, February 1 (full-time program).
• Application requirements: minimum 3.0 GPA on a 4.0 scale for last 60 hours and a general career interest in public management as reflected in a statement of intent.
• Entrance examination: GMAT or GRE. LSAT score accepted when application is also made to J. Reuben Clark Law School.

Requirements for Degree.
• Credit hours: 57.
Financial Resource Management: P Mgt 603; 621; 622 or 623.
Decision Making and Analysis: P Mgt 612, 630, 632, 638.
Communication: P Mgt 662.
• Emphasis courses: 9 credit hours. One of the following areas of emphasis must be chosen by the beginning of the second semester: Local Government Management, Human Resource Management, Financial and Management Analysis, or Nonprofit Management.
• Electives: 6 credit hours. Courses determined in consultation with advisor.

Executive Program—MPA
Persons with significant public management experience who desire to pursue the master’s degree program while continuing to work full-time are encouraged to apply. All courses in the program are offered in the evening.

The executive MPA program consists of successful completion of 45 semester hours of approved course work. Classes are scheduled in such a way that students take six hours per semester (three hours per term).

Admission and Entry.
• Semesters of entry and application deadlines: May 1.
• Application requirements: see full-time MPA program. (Note: entrance exam not required.)
• Prerequisite: applicants are required to have a minimum four years of full-time professional, administrative, or supervisory experience in the public sector, or the equivalent. Applicants should presently hold, or assume in the near future, a midlevel or higher administrative responsibility.

Requirements for Degree.
• Credit hours: 45.
• Required courses:
  Public Administration Environment: P Mgt 682, 683, 684.
  Management and Human Resources: P Mgt 640, 641, 643.
  Decision Making and Analysis: P Mgt 612, 662, 664.

Joint Program—MPA/JD
Because of the unique advantages of a joint degree in law and public administration, the Romney Institute of Public Management and the J. Reuben Clark Law School have approved a four-year joint degree program. This is possible because of the overlapping interests and direction of the two individual programs. Admission to the joint program is contingent upon acceptance into both programs.

FINANCIAL ASSISTANCE
The Romney Institute of Public Management utilizes the Marriott School's financial aid provisions. Qualified students can receive aid from the following: the Marriott School of Management Scholarship Fund, private scholarship donations, assistantship awards, and loan assistance.

Scholarships. The Marriott School of Management has private scholarships available for second-year students. In addition, the MPA program has private scholarships for first- and second-year students.

Assistantships. Research and teaching assistantships are available for qualified second-year students.

Loans. Several loans are available for Marriott School students:
• Marriott School loans: available to full-time Marriott School day students. Marriott School loans are handled on an individual basis, dependent on financial need and standing within the participating program.
• BYU short-term loans: available for up to the cost of tuition only.
• Federal Stafford loans: subsidized by the U.S. government. Not available for international students.

More information on and applications for these loans are available from the BYU Financial Aid Office, A-41 ASB, (801) 422-4104.

RESOURCES AND OPPORTUNITIES
The N. Eldon Tanner Building. The Tanner Building, which houses the Marriott School of Management, is one of the finest facilities of its kind. The dramatic seven-story atrium at the building center is equipped with study tables with Ethernet connections and houses the Marketplace Cafe. Surrounding the atrium are lecture and seminar rooms, study rooms, and a computer laboratory.

The Marriott School of Management. The Marriott School is recognized as one of the outstanding management schools in the nation. Faculty are actively engaged in research and publication, and they fill leadership positions in a number of national professional organizations. The school has developed innovative educational programs that include internships, executive visitation programs, special student consulting and research projects, and other activities designed to bring management education and training closer to management practice. This is accomplished, in part, through the Marriott School’s National Advisory Council and the Executives on Campus Program.

The National Advisory Council. Consisting of sixty-five to seventy prominent business and government executives, the National Advisory Council lends major support to the Marriott School. Students benefit by interacting with council members in special campus lectures and seminars and by visiting or working with these executives in their respective organizations. Furthermore, the council assists students with placement opportunities, helps develop funding sources for scholarships, and provides professional development for faculty members.
621. Public and Nonprofit Budgeting. (3)
   Management of public and nonprofit financial resources: budget allocation, control, and planning.

622. Governmental Finance. (2-3)
   Acquisition and management of government financial resources such as taxes, user fees, and revenue sharing.

623. Nonprofit Structure and Finance. (3)
   Introduction to the study of nonprofit organizations, including history, philosophy, organizational structure, government relations, and applicable laws.

625. Debt Management. (3)
   Advanced study of capital markets, debt instruments, bond issues, debt servicing, and financial disclosure requirements.

626. Budgeting and Finance. (3)
   Exploring policies and systems to guide the acquisition and management of financial resources for governmental functions.

627. Cash Management and Investments. (3)
   Cash-management systems, policies, and processes in the public sector; banking services and relationships; and the investment of idle funds.

628. Program Evaluation and Performance. (3)
   Principles and methodologies of evaluating programs, measuring performance, and assessing program effectiveness in governmental and nonprofit entities.

629R. Seminar in Financial Management. (0.5-3)
   Advanced study in public-sector financial management and analysis, with variation of topics to address emerging issues and meet current needs.

630. Statistical Analysis. (3)
   Introduction to survey research methods and applied basic statistical procedures including sampling, descriptive statistics, estimation, t-tests, analysis of variance, chi-square, and linear and multiple regression.

632. Quantitative Decision Analysis. (3)
   Effective decision making using software decision-analysis tools and applications to important managerial decisions.

633. Advanced Decision Modeling. (3)
   Spreadsheet decision analysis tools to provide powerful support for decision making in the public sector.

636. Process Management in the Public and Not-for-Profit Sectors. (2-3)
   Applying process management theory, tools, and team building in the public and not-for-profit sectors.

638. Public Services Management. (3)
   Managing operating systems and processes involving direct or indirect interaction with customers, including government and other public services.

640. Human Resource Management. (3)
   Current theory and practice of human resource management in the public and not-for-profit sectors.

641. Organizational Behavior. (3)
   Personal effectiveness in organizations; increased awareness of interpersonal strengths and weaknesses.

642R. Management Development Seminar. (0.5-3)
   Workshops and seminars designed for personal growth development and assessment of decision-making skills.

643. Leadership in Public Administration. (3)
   Key aspects of leadership in the public and not-for-profit sectors. Concepts include applied leadership theories, power and politics, conflict, and negotiation.

644. Compensation and Benefits. (3)
   Systems and procedures for determining and administering pay and employee benefits.

645. Human Resource Law. (0.5-3)
   Introduction to human resource law.

647. Human Resource Staffing. (3)
   Staffing needs, planning, recruiting, and hiring.

649R. Seminar in Human Resource Management. (0.5-3)
   Advanced study in human resource management with variation in topics to meet current needs.
650. Public and Nonprofit Marketing. (2-3)
Role and application of marketing management in activities of government agencies and nonprofit institutions, emphasizing marketing research, analysis, and strategy.

651. Nonprofit Organization Management. (1.5)
Managing the various stakeholders in the nonprofit sector, including staff, volunteers, boards of directors, political leaders, media, and other external relations.

652. Nonprofit Resource Development. (1.5)
Resource development skills including grant writing and contract management.

656. Creating and Managing Social Ventures. (3)
Key issues facing social entrepreneurs. Helpful for students starting or consulting with a social venture.

658. International Development Management. (2-3)
Issues in managing international development organizations: legal and cultural issues, funding sources such as the World Bank and International Monetary Fund, and leadership challenges.

659R. Seminar in International Management. (1-3)
Examination of international administration, with variation in topics to meet current needs, including comparative administration, technical assistance, and cultural restraints.

660. Public and Nonprofit Marketing. (2-3)
Role and application of marketing management in activities of government agencies and nonprofit institutions, emphasizing marketing research, analysis, and strategy.

664. Writing Practicum. (3)
Style, organization, and practice in writing major reports about substantial issues in public administration.

666. Writing Practicum. (3)
Writing Practicum.

668. Public Administration Capstone. (3)
Exploration of critical issues in public administration in the context of the theories presented in the MPA program.

671. State and Local Government Law. (1-3)
Introduction to legal principles involving governmental powers in a federal system, land use, state and local finance, public meetings/records, contracts, and liability for government actions.

675. Local Government 1: Form of Government and Service Delivery. (3)
Introduction to the dynamic world of local government. Topics include forms of government, political relationships and policy making, and issues of service delivery.

676. Local Government 2: Planning, Land Use, and Growth. (3)
Current issues facing local governments, including planning, land use and zoning, annexation, growth and sprawl, economic development, and other contemporary issues.

679R. Seminar in Local Government Administration. (0.5-3)
Advanced study in local government administration with variation in topics to meet current needs.

682. Ethics for Management. (3)
Ethical theory and its application to managerial issues. Ethical conflict and dilemmas and choosing between conflicting goods.

683. Legal Issues in Public Administration. (3)
Introduction to legal issues affecting public administration, including the legislative and judicial processes, administrative law, and basic constitutional law.

685. Management Strategy (3)
Developing mission and goals, analyzing environment, and assessing and developing organization capacity.

686. Public Administration Capstone. (3)
Exploration of critical issues in public administration in the context of the theories presented in the MPA program.

687. Qualitative Public Decision Making. (3)
Qualitative, political, and constructive approaches to analyzing public issues.

689R. Policy Analysis Theory. (0.5-3)

690R. Public Management Field Study. (1-3)
Faculty-directed applied research and technical assistance projects for public and nonprofit organizations.

691R. Readings and Conference. (0.5-3)
Prerequisite(s): departmental consent.
Individualized readings and consultations.

692R. Directed Research. (0.5-3)
Prerequisite(s): departmental consent.
Application of research methods relative to managers.

693R. Practicum. (0.5-4)
Prerequisite(s): departmental consent.
Planned application of administrative concepts in a management work situation and analysis of the impact.

FACULTY

ADOLPHSON, DONALD L., Professor.

ARBON, CHYLEEN A., Assistant Professor.

CORNIA, GARY C., Professor.
PhD, Ohio State University, 1979. Public Finance; Budgeting.

FACER, REX L., Assistant Professor.
PhD, University of Georgia, 2002. Local Government; Public Budgeting; Leadership.

HART, DAVID W., Assistant Professor.
Seawright, Kristie W., Associate Professor. PhD, University of Utah, 1994. International Business; Service Operations.

Thompson, Jeffery A., Assistant Professor. PhD, University of Minnesota, 1999. Leadership; Ethics; Nonprofit Management.


The Program of Studies
The interdisciplinary MPP degree in public policy analysis seeks to equip students with the skills required to evaluate laws, regulations, programs, and other efforts of governments. Public policy is not simply the aggregation of demands individuals and groups make on governments. It is ultimately concerned with ideas of justice and fairness and other values that are at the heart of democratic government, with expectations of economic efficiency, and with societal choices concerning the allocation of resources and distribution of benefit and burdens.

The study of public policy analysis involves and draws on, in general, several core disciplines, particularly economics, political science, and public management, in assessing policy choices. Analyses of specific policies may borrow from a number of relevant disciplines, such as biology, education, engineering, family sciences, geography, sociology, and social work.

Among the kinds of questions public policy students study are: What are governments doing to address social, economic, and natural resource problems, and how successful are they? What principles can guide government officials in intervening in the lives of families and individuals? How can the effectiveness of policies be compared and evaluated?

Graduates who have an understanding of the political process, how government works, and the nature of specific public policies are in a strong position to play a major role in helping these organizations deal with the public policies affecting them. Studying public policy may also help prepare students for further study in economics, law, political science, public administration, and related fields.

One degree is offered in this interdisciplinary program: Public Policy—MPP.

Public Policy—MPP
The public policy master’s program prepares students for careers as policy analysts in all levels of government and in other organizations that seek to study and affect public policy. Although most of the opportunities are in state and local government agencies, students may also pursue careers with the federal government and with international organizations.

The combination of general political and analytic skills with preparation in a specific policy area gives students a strong background for a wide variety of positions. Some students may choose careers that are specialized and focus on particular areas of policy, such as social welfare, education, environmental protection, natural resource preservation, housing, or health care, or they may choose more general or politically oriented careers. The study of public policy also prepares students for work in the private sector and nonprofit organizations and other areas that interact with government.

Admission and Entry.
• Semesters of entry and application deadlines: fall, March 1 (U.S. and international). Applicants should apply online and indicate the department/program as Public Policy.
• Prerequisite: baccalaureate degree, any field. Students should complete the following courses before applying to the graduate program (BYU equivalent listed in parentheses): principles of economics (Econ 110); introductory statistics (Stat 221 or 510); introductory calculus (Math 112 or 119). A strong performance in these prerequisite courses is an important criterion in the admissions decision process.
Students who have not completed the prerequisites may still apply for admission, but they will not be formally admitted until the prerequisites have been completed.

- The GRE is required of all applicants. Other exams (such as the LSAT or GMAT) will not be accepted as substitutes for the GRE.

Requirements for Degree.

- Credit hours: 48.
- Three-part economics proficiency requirement: (1) Econ 380 or equivalent; (2) Econ 381 or 382 or equivalent; and (3) Econ 475 or P Mgt 622. These courses are required for completion of the master’s degree but, with the exception of P Mgt 622, are not counted toward the 48 total hours. The courses can be applied toward completion of a bachelor’s degree, and students are encouraged to begin completing them before enrolling in the graduate program. D credit in the above courses will not be accepted.
- Electives: must be approved in advance by the graduate coordinator.
- Fields of specialization: at least four courses in a particular policy area. Current emphases are (1) health and aging; (2) natural resources and the environment; (3) education; (4) family and society; (5) public economics; (6) advanced research methods; (7) international development; and (8) urban planning. More information on requirements for each emphasis can be obtained from the Public Policy Graduate Handbook.
- Internship (599R): must be approved in advance by the graduate coordinator.

Joint Program MPP/JD

Public policy analysts and legal analysts often study the same issues. The joint MPP/JD program allows students of the law to complement their training with the rich set of quantitative and analytical skills that are the core of the MPP program. The joint program takes four years to complete, and admission to it is contingent on successful admission to both the J. Reuben Clark Law School and the MPP program. More information on the joint program can be obtained from the MPP program office.

FINANCIAL ASSISTANCE

The financial aid application deadline is March 1. Financial aid available includes graduate student assistantships and scholarships.

COURSE DESCRIPTIONS

501. Introduction to Policy Analysis. (3)
Models of policy analysis; defining policy; problems and policy analysis questions.

502. Policy Process. (3)
Models of public policy making; interaction of politics and policy making.

505. Normative Theories of Policy Analysis. (3)
Alternative norms and values used in making policy choices.

514. Policy Analysis Workshop. (3)
Policy analysis projects in varying formats.

599R. Academic Internship. (0.5-9)
Prerequisite(s): P Pol 501, 502, 505, 603, 604; Econ 380, 382, 475, or equivalents.
Internship with an organization conducting policy analysis.

603. Data Analysis 1. (3)
Introduction to descriptive and inferential statistics.

604. Data Analysis 2. (3)
Prerequisite(s): P Pol 603.
Quantitative data collection and analysis.

611. Policy Analysis 1. (3)
Introduction to applied cost-benefit analysis and methods of measuring economic values.

612. Policy Analysis 2. (3)
Prerequisite(s): P Pol 611.
Advanced techniques of policy analysis.

613. Field Experience. (3)
Design and implementation of a policy analysis project.

615. Graduate Seminar. (3)
Prerequisite(s): P Pol 613.
Continuation of field experience project; preparation and presentation of final report.

680R. Topics in Public Policy. (0.5-3)
Advanced topics in public policy methods, process, and specializations.

689R. Directed Individual Study. (0.5-3)
Tutorial in public policy process and specializations.

FACULTY

Public Policy Advisory Committee:
J. R. Kearl
Kelly Patterson
E. Vance Randall
Sven E. Wilson

Current faculty teaching public policy–related courses include the following:

BRADFORD, SCOTT C., Assistant Professor. PhD, Harvard University, 1998. Economics.

BRYNER, GARY, Professor, PhD, Cornell University, 1982. Political Science.

CORNIA, GARY C., Professor. PhD, Ohio State University, 1979. Public Management.

GOODLIFE, JAY M., Assistant Professor. PhD, University of Rochester, 1998. Political Science.


PATTERSON, KELLY, Associate Professor. PhD, Columbia University, 1989. Political Science.
SHOWALTER, Mark H., Associate Professor. PhD, Massachusetts Institute of Technology, 1991. Economics.

RECREATION MANAGEMENT AND YOUTH LEADERSHIP

Chair: Patti A. Freeman
Graduate Coordinator: Brian J. Hill
269 RB
Provo, UT 84602-2031
(801) 422-1287

THE PROGRAM OF STUDIES
The Department of Recreation Management and Youth Leadership, in affiliation with the School of Family Life, offers a two-year graduate degree: Youth and Family Recreation—MS. Curriculum focuses on issues related to adolescent development, leadership, youth at risk, leisure philosophy, leisure and family theory, and strengthening families through wholesome recreation. The common goal of the program is to develop expertise and expand knowledge in building strong youth and families through recreation.

Students work closely with faculty in building conceptual models and conducting research that is both theoretical and applied in nature. After completing course work, each student writes a thesis that involves conducting a study related to youth and family recreation.

Each spring the department accepts four or five new students, who begin their studies the following September. The average student graduates after two years of course work and completing a thesis.

Youth and Family Recreation—MS

Admission and Entry.
• Semesters of entry and application deadlines: fall, February 1 (U.S. and international).
• Entrance examination: GRE general test.
• GPA: minimum 3.0 for last 60 semester hours of undergraduate work.

Requirements for Degree.
• Credit hours (33): 27 course work hours, plus 6 thesis hours (RMYL 699R).
• Required courses: MFT 630, MFHD 612, STAT 511, RMYL 601, 610, 611, 612, 613, 699R; 3–6 hours of committee-approved statistics from STAT 512, SOC 605, or committee approved course.
• Electives: 6 credits upon committee approval.
• Minor (optional): any approved minor.
• Thesis.
• Examinations: oral defense of proposal, oral comprehensive exam and defense of thesis.

FINANCIAL ASSISTANCE
Graduate awards are available in the form of assistantships and scholarships. Occasionally some graduate faculty members are awarded research grants that may include opportunities for paid research assistantships for department graduate students.

RESOURCES AND OPPORTUNITIES
The college Learning Resource Center is available to graduate students. The Center includes desks, storage, computers (with Internet access), printers, a small library, a refrigerator, and phone.

Opportunities: The department has an affiliation with key family and youth recreation programs that offer excellent research opportunities for graduate students.

Learning Resource Center. This center contains eighteen individual study areas for graduate students as well as computer, audio, and video equipment to assist them in their work.
For a more detailed description of the graduate program requirements, send for a copy of the department’s bulletin.

**Course Descriptions**

**599R. Academic Internship.** (0.5-8)
Prerequisite(s): Instructor’s consent.
Professional leadership practicum.

**601. Theoretical Foundations of Family Recreation.** (3)
Prerequisite(s): Formal acceptance into recreation management graduate program.
Historical development, theoretical basis, and applied techniques of family recreation.

**603. Readings in Youth and Family Recreation.** (3)
Prerequisite(s): Formal acceptance into recreation management graduate program.
Readings from professional literature and current publications.

**604. Seminar on Youth and Family Recreation.** (3)
Prerequisite(s): Formal acceptance into recreation management graduate program.
Intensive investigation and discussion of current issues, problems, and trends in family recreation and youth programs.

**610. Statistics for Recreation and Leisure Services.** (3)
Calculating descriptive, correlational, and inferential statistics commonly employed in recreation research studies; making decisions regarding the null hypothesis; writing and interpreting research findings commonly used in recreation and leisure literature.

**611. Philosophy and Social Psychology of Leisure.** (3)
Prerequisite(s): Graduate status.
Historical and theoretical roots of developmental youth programs that stress preventative approaches. How to develop character, citizenship, moral and physical fitness, and volunteerism; service learning.

**612. Issues and Applications in Family Recreation.** (3)
Prerequisite(s): Graduate status.
Survey of critical issues in family recreation; applying theory to address them.

**613. Graduate Research Seminar.** (3)
Prerequisite(s): Acceptance to a graduate program.
Research methods and current issues regarding research methodology. Preparing students to write and defend research proposals.

**699R. Master’s Thesis.** (0.5-9)

**Faculty**

**Freeman, Patti A., Professor.** PhD, Indiana University, 1993. Leisure Behavior; Family Leisure; Women’s Leisure; Outdoor Recreation.

**Gray, Howard R., Professor.** PhD, Pennsylvania State University, 1977. Therapy; Gerontology.

**Hill, Brian J., Professor.** PhD, Clemson University, 1994. Family Recreation; Marital Recreation; Tourism.

**Lundberg, Neil R., Assistant Professor.** PhD, Brigham Young University, 2004. Outdoor Recreation; Experiential Education; Law and Recreation Law.

**Ward, Peter J., Assistant Professor.** PhD, University of Utah, 2006. Youth Development and Leadership; Recreation Management.

**Widmer, Mark A., Professor.** PhD, University of Utah, 1993. Therapeutic Recreation; Assessment; Adolescence.

**Zabriskie, Ramon B., Associate Professor.** PhD, Indiana University, 2000. Therapeutic Recreation; Family Leisure.

**Religious Education**

**Chair—Ancient Scripture:**
Dennis L. Largely
375-A JSB
Provo, UT 84602-5690
(801) 422-2067

**Chair—Church History and Doctrine:**
Arnold K. Garr
375-B JSB
Provo, UT 84602-5690
(801) 422-3691

**Graduate Coordinator:**
Clyde Williams
316-A JSB
Provo, UT 84602-5690
(801) 422-2124

**The Program of Studies**

Religious Education offers one degree: Religious Education—MA. Within Religious Education there are two departments: Ancient Scripture and Church History and Doctrine.

**Religious Education—MA**

The master’s degree in religious education is open to full-time teachers in the LDS Church Educational System (CES).

The master’s degree is designed to provide advanced preparation for teaching in the LDS Church Educational System. Emphasis is placed primarily on five areas: Old Testament, New Testament, Book of Mormon, Doctrine and Covenants, and Church History. The degree provides the student with a sound historical, doctrinal, and methodological foundation. It is writing intensive and includes a thesis that is expected to enhance the student’s abilities in research, critical thinking, and writing.

Religious Education admits approximately fifteen students to the master’s program every other academic year. Course work begins summer term. The program is designed to be
completed in three years (two for course work and one for the thesis).

Admission and Entry.
• Semesters of entry: summer only.
• Application deadline: December 1.
• Application requirements: baccalaureate degree; minimum GPA of 3.0 for last 60 hours of undergraduate work.
• Entrance examination: GRE general test.
• Completion of Church Educational System apprenticeship (and minimum of one year teaching).
• Essay (1,000 words) on either (A) your philosophy on teaching and the teacher in the Church Educational System or (B) your analysis of a scripture block from the standard works.
• Two letters of recommendation. One of these letters must be from the applicant’s CES area director and include signature approval of the zone administrator.

Requirements for Degree.
• Credit hours (36): minimum 30 course work hours plus 6 thesis hours (699R).
• Required courses: Rel A 601, 611, 621; Rel C 624, 625, 640, 650; Rel E 500, 501, 595, 699R.
• Graduate committee: must include one member from Ancient Scripture faculty and one member from Church History and Doctrine faculty.
• Thesis.
• Examinations: written examination of course work and oral defense of thesis and course work.

RESOURCES AND OPPORTUNITIES

Religious Studies Center. The dean of Religious Education is also the general director of the Religious Studies Center, which promotes research in ancient studies, the Bible, the Book of Mormon, LDS Church history, the Doctrine and Covenants, the Pearl of Great Price, and world religions.

The center is a supporting and coordinating agency for religion-oriented research throughout the university.

Concentrating on research, writing, and other scholarly activities, it is not involved in classroom instruction or degree programs.

The Richard L. Evans Chair of Religious Understanding. The occupants of the Richard L. Evans Chair of Religious Understanding promote understanding among people of different faiths through teaching and other activities. The chair was established to articulate to a broad audience the religious values to which Elder Evans dedicated his life and to promote an enlightening exchange among Latter-day Saints, members of other faiths, and people of good will everywhere.

COURSE DESCRIPTIONS

Ancient Scripture

510R. Special Topics in Ancient Scripture. (0.5-3)
Prerequisite(s): Graduate standing and instructor’s consent.
Subjects and questions typically addressed by Church Educational System instructors.
No more than 3 hours may apply toward a graduate degree.

601. Graduate Seminar on the Old Testament. (4)
Topics in the Old Testament emphasizing doctrinal, historical, and cultural background.

Topics in the New Testament emphasizing doctrinal, historical, and cultural background.

614. Historical Background of the Bible. (3)
Historical and cultural contexts out of which the Old and New Testaments derive.

621. Graduate Seminar on the Book of Mormon. (4)
Topics in the Book of Mormon focusing on doctrine and the historical background of the text.

695R. Directed Readings in Ancient Scripture. (0.5-3)

Church History and Doctrine

510R. Special Topics in Church History and Doctrine. (0.5-3)
Prerequisite(s): LDS Church Seminaries and Institutes personnel only.
Subjects and questions typically addressed by Church Educational System instructors.
No more than 3 hours may apply toward a graduate degree.

540R. Special Topics in Church History and Doctrine. (0.5-3)

541. Military Ministry 1. (3)
Preparation of new military chaplains; leading worship, preaching, and guiding the teaching ministry within a chapel, emphasizing a practical ministry within a theological and spiritual context.
Available to prospective chaplains only.

542. Military Ministry 2. (3)
Prerequisite(s): Rel C 541.
Continued focus on leading worship, preaching, and guiding the teaching ministry within a chapel, emphasizing a practical ministry within a theological and spiritual context.
Available to prospective chaplains only.

Topics in LDS Church history, emphasizing the text of the Doctrine and Covenants.

625. Graduate Seminar on the Doctrine and Covenants and Church History, Part 2 (1900–Present). (3)
Topics in LDS Church history, emphasizing the twentieth-century Church.

630. Graduate Seminar in Indian and Chinese Religions. (3)
Doctrines, world views, and practices of Hinduism, Jainism, Buddhism, Confucianism, and Taoism with comparisons to the restored gospel.
631. Graduate Seminar in Monotheistic and Japanese Religions. (3)
   Doctrines, world views, and practices of Sikhism, Judaism, Islam, Baha’i, and Shinto with comparisons to the restored gospel.

640. History of the Christian Church. (3)
   Background and history of Christianity from the first century A.D. to the present.

641. Graduate Seminar in Christian Theological Thought. (3)
   Doctrines about God, Christ, the Trinity, salvation, human beings, sin, grace, the Church, sacraments, and Christian hope in comparison with the restored gospel.

650. Doctrinal Contributions of the Restoration. (3)
   Doctrinal contributions of the Restoration from Joseph Smith to the present prophets, seers, and revelators; LDS theology and practice.

655R. Clinical Pastoral Education Practicum. (1-4)
   Supervised encounters with persons in crisis. Experiencing the interdisciplinary team process of helping persons. Developing skill in interpersonal and interprofessional relationships and a deeper understanding of ministry.

695R. Directed Readings in Church History and Doctrine. (0.5-3)
   Prerequisite(s): Graduate standing; instructor's consent.
   Topics include the Doctrine and Covenants, LDS Church history, LDS doctrine, Christian history, Christian theology, world religions, etc.

**Religious Education**

500. Educational Philosophy and Values in Religious Education. (2)
   Philosophical basis and underlying values in religious education.

501. Scripture Teaching. (2)
   Theory, methodology, and issues of scripture-based teaching in religious education.

595. Research Methods in Religious Education. (2)
   Methodology in and resources for research in the four areas of focus: Church History and Doctrine, Old Testament, New Testament, and Book of Mormon.

699R. Master's Thesis. (0.5-6)
   Prerequisite(s): Graduate coordinator's consent.

**Faculty**

**Ball, Terry B., Professor. PhD, Brigham Young U., 1992.**
   Archeobotany; Old Testament.

**Baugh, Alexander L., Associate Professor. PhD, Brigham Young University, 1996. LDS Church History—Missouri Period, 1831–1839.**

**Bennett, Richard E., Professor. PhD, Wayne State U., 1984. LDS Church History.**

**Black, Susan Easton, Professor. EdD, Brigham Young University, 1978. LDS Church History.**

**Brinley, Douglas E., Professor. PhD, Brigham Young U., 1975. LDS Marriage and Family.**

**Chadwick, Jeffrey R., Associate Professor. PhD, University of Utah Middle East Center, 1992. Land of Israel Studies; Biblical Archaeology, New Testament.**

**Choi, Dong Sull, Professor. PhD, Brigham Young University, 1990. World Religions.**

**Cowan, Richard O., Professor. PhD, Stanford U., 1961. History of Temples.**

**Darius, Guy L., Associate Professor. PhD, Brigham Young University, 1994. Family Studies.**

**Dokey, Cynthia, Assistant Professor. PhD, Brigham Young University, 1994. LDS Marriage and Family; Family History.**

**Draper, Richard D., Professor. PhD, Brigham Young University, 1988. Bible and Near Eastern History.**

**Espin, Scott C., Assistant Professor. PhD, Brigham Young University, 2006. Church History and Doctrine.**

**Flake, Lawrence R., Professor. DRE, Brigham Young University, 1970. LDS Church History Biography.**

**Fluhman, J. Spencer, Assistant Professor. PhD, University of Wisconsin, Madison, 2006. Early Latter-day Saint History; American Religious History.**

**Freeman, Robert C., Professor. JD, Western State University, 1989. Twentieth-Century Church History.**

**Garr, Arnold, Professor. PhD, Brigham Young University, 1986. LDS Church History.**

**Gaskill, Alonzo L., Associate Professor. PhD, Brigham Young University, 1986. LDS Church History.**

**Garr, Arnold, Professor. PhD, Brigham Young University, 1986. LDS Church History.**

**Harper, Steven C., Assistant Professor. PhD, Lehigh University, 2001. Early American Religion and Culture.**

**Hauglid, Brian M., Assistant Professor. PhD, University of Utah, 1998. Pearl of Great Price; World Religions.**

**Hedges, Andrew H., Associate Professor. PhD, University of Illinois, 1996. American History.**

**Holzapfel, Richard Neitzel, Associate Professor. PhD, University of California, Berkeley, 1978. Early Christian History.**

**Hoskisson, Paul Y., Professor. PhD, Brandeis University, 1986. Ancient Near Eastern Studies.**

**Huntington, Ray L., Associate Professor. PhD, Brigham Young University, 1995. Sociology—Middle East.**

**Huntsman, Eric D., Assistant Professor. PhD, University of Pennsylvania, 1997. New Testament Studies; Early Christianity.**

**Jackson, Kent P., Professor. PhD, University of Michigan, 1980. Bible and Near Eastern History.**

**Judd, Daniel K., Associate Professor. PhD, Brigham Young University, 1987. Religion and Mental Health.**

**Judd, Frank E., Assistant Professor. PhD, University of North Carolina, Chapel Hill, 2003. New Testament.**

**Keller, Roger R., Professor. PhD, Duke University, 1975. World Religions.**

**Riley, Ronald D., Professor. PhD, University of California, Berkeley, 1970. World Religions.**
SCHOOL OF SOCIAL WORK


LIVINGSTONE, JOHN F., Associate Professor. EdD, Brigham Young University, 1986. LDS Family and Psychotherapy.


MARSH, W. JEFFREY, Associate Professor. PhD, Brigham Young University, 1989. Joseph Smith Translation and Teachings.

MERRILL, BYRON, Associate Professor. JD, University of California, Davis, 1975. Book of Mormon.


NEILSON, REID L., Assistant Professor. PhD, University of North Carolina, Chapel Hill, 2006. American Religious History.

OGDEN, D. KELLY, Professor. PhD, University of Utah, 1982. Hebrew Language; Historical Geography of the Holy Land.

OLSON, CAMILLE FRONK, Associate Professor. PhD, Brigham Young University, 1996. Sociology — Middle East.

OSTLER, CRAIG J., Associate Professor. PhD, Brigham Young University, 1995. Doctrine and Covenants.

PARRISH, ALAN K., Professor. EdD, University of Southern California, 1981. Pearl of Great Price.


RICHARDSON, MATTHEW O., Associate Professor. EdD, Brigham Young University, 1996. LDS Marriage and Family.


SKINNER, ANDREW C., Professor. PhD, University of Denver, 1986. Intertestamental Period; Near Eastern History.

SPERRY, KEN, Professor. MLS, Brigham Young University, 1974. Genealogy.


SZINK, TERRY, Assistant Professor. PhD, University of California, Los Angeles 2005. Near Eastern Languages and Cultures.

TOP, BRENT, Professor. PhD, Brigham Young University, 1984. LDS Doctrine.


WHITCHURCH, DAVID M., Associate Professor. PhD, Brigham Young University, 1991. New Testament; Old Testament; Book of Mormon; History of English Bible; Biblical Geography.

WILLIAMS, CLYDE, Associate Professor. EdD, Brigham Young University, 1989. Book of Mormon.


WOODGER, MARY JANE, Associate Professor. EdD, Brigham Young University, 1997. LDS Women’s History.

WOODS, FRED E., Professor. PhD, University of Utah, 1991. Middle Eastern Studies.


SCHOOL OF SOCIAL WORK

Director: Gordon E. Limb
Associate Directors: Michael O. Seipel and Kenneth W. Matheson
Graduate Coordinator: Michael O. Seipel
Field Education Director: Kevin Maret

2190 JFSB
Provo, UT 84602-6709
(801) 422-3282
E-mail: msw@byu.edu
Internet: http://socialwork.byu.edu

THE PROGRAM OF STUDIES

Accredited by the Council on Social Work Education.

The School of Social Work is committed to the general objective of the social work profession, which is to promote the welfare of society by enhancing the social functioning of individuals, families, groups, organizations, and communities. The goal of the MSW program is to prepare students for the practice of clinical social work, with an emphasis on work with the family and children. The School of Social Work offers a core curriculum in the basic knowledge, skills, and values essential to all social work practice.

One graduate degree is offered in the School of Social Work: Social Work—Master of Social Work (MSW).

Approximately forty students are admitted to the MSW program each fall semester. Candidates usually pursue the degree over a contiguous twenty-month period, which includes 1,100 clock hours of field practicum.

Social Work—MSW

The curriculum is designed around a biopsychosocial approach to practice within an integrating framework of systems theory. This approach will allow the practitioner to be responsive to the special issues of diversity in a pluralistic society.
SCHOOL OF SOCIAL WORK

Admission and Entry.
• Semesters of entry and application deadlines: fall, January 15 (U.S. and international).
• Application requirements:
  — Complete a four- to six-page, typed (double-spaced) statement of intent organized under five headings: (1) your limitations and talents; (2) your reasons for pursuing a master’s degree at this point in your life; (3) your understanding of the profession of social work and reasons for wanting to be a social worker; (4) your reactions to your family of origin during your developmental years from your present perspective; (5) elaboration on any paid and/or voluntary experiences in human services (e.g., crisis line, formal field practicum, summer camp counseling), including growth-producing experiences in leadership, travel, military service, etc. Write your name, BYU ID, and the MSW code (735960) on the first page of this statement. Submit the MSW admissions requirements form (http://fhss.byu.edu/socwork/mswchecklist.htm) as the 7th page.
  — Include a résumé with specifics, including dates, regarding educational and paid and volunteer experience.
• Entrance examination: at school’s discretion.
• Prerequisite: applicants are expected to have prepared themselves for the MSW program by completing the following seven courses: (1) research methods (3 hours); (2) research statistics (3 hours); (3) abnormal behavior (3 hours); (4) human development life span—infancy through aging (3 hours); (5) human biology—anatomy and physiology (3 hours); (6) social sciences with macro context (3 hours); (7) introduction to social work (3 hours).
Note: At least a B grade in each prerequisite course is required for application to the program.

Requirements for Degree.
• Credit hours for students entering without an undergraduate social work degree: minimum 64 course work hours distributed as follows: social work practice courses (25 hours); human behavior and social environment (9 hours); social welfare policy (3 hours); research (6 hours); field practicum (12 hours); electives (9 hours, six of which are clinical); four of the elective hours may be selected from a variety of clinical/family courses outside the school with prior approval from the Graduate Coordinator or from other educational opportunities to be negotiated with the faculty advisor.
• Credit hours for students entering with a social work degree (BSW): minimum 59 course work hours distributed as follows: social work practice courses (16 hours); human behavior and social environment (9 hours); research (6 hours); field practicum (12 hours); electives (16 hours, six of which may be selected from a variety of clinical/family courses outside the school with prior approval from the Graduate Coordinator or from other educational opportunities to be negotiated with the faculty advisor).

FINANCIAL ASSISTANCE
Financial assistance is available through university funds. Research and teaching assistantships as well as field internships are available through the School of Social Work. Some scholarships are also available.

RESOURCES AND OPPORTUNITIES
The School of Social Work utilizes the Comprehensive Clinic, an interdisciplinary training and research facility. The facility houses state-of-the-art video and computer equipment, as well as a staff of skilled technicians and secretaries to support graduate student and faculty research. Faculty and student research is also facilitated through the Family Studies Center (1053 JFSB) and the Women’s Research Institute (1063 JFSB). Students who plan on further graduate work are encouraged to conduct individual research (e.g., Soc W 698R) or work with a faculty member.

Faculty research interests currently include: American Indian child welfare; child welfare; computerization of social services; health care; marriage and families; mental health; military social work; mood disorders; poverty; school social work; spirituality; substance abuse; women and gender.

Certification: MSW students can graduate with four certificates, should they choose to take corresponding elective courses: child welfare; gerontology; mediation; and school social work.

For a more detailed description of the graduate program requirements, see http://socialwork.byu.edu.

COURSE DESCRIPTIONS

570. Crisis Intervention. (3)
Assessment and intervention in crisis situations with clients.

571. Basic Mediation. (3)
Introduction to the conceptual knowledge and practical skills training for a mediator. Concepts taught include: gathering, managing conflict, identifying issues, active listening, reframing, problem solving, negotiating, and agreement writing.

580. Social Work in the School Setting. (3)
Overview of knowledge and skills essential to the practice of social work in educational settings; emphasizes practical interventions when working with student/family/teacher/community resources.

581. Social Services for the Aging. (3)
Process and impact of social service delivery systems on the aged. Utah state certificate available.
583. Child Welfare Services 1, 2. (3)
   State of Utah training. The effects of abuse and neglect on child development, including casework and case planning processes.

584. Child Welfare Services 3, 4. (3)
   State of Utah training. The effects of abuse and neglect on development, along with attachment, loss, grief, and separation in placement.

585. Global Issues of Children at Risk. (3)
   Analyzing major challenges facing children and their families globally, including poverty, malnutrition, poor health care, gender-based discrimination, child labor and sexual exploitation, AIDS orphans, child soldiers, and refugees.

595R. Directed Readings. (0.5-3)
   Prerequisite(s): instructor’s consent.

600. Applied Social Work Research and Statistics. (3)
   Prerequisite(s): Major status.
   Application of qualitative/quantitative research and statistical methods to increase clinical effectiveness and to guide social policy. Emphasis on issues affecting oppressed populations and research ethics.

601. Practice Evaluation. (3)
   Prerequisite(s): Soc W 600; major status.
   Methods of social work practice evaluation, including a focus on clinical measures for monitoring client progress and outcomes.

611. Clinical Practicum. (1)
   Prerequisite(s): Bachelor of social work or Soc W 660 or concurrent enrollment.
   Clinical supervision of clients seen in the BYU Comprehensive Clinic, including video taping of student therapy sessions.

620. Human Behavior and Social Environment 1: Person and Environment. (3)
   Persons in their social environment as individuals, members of families, other groups, organizations, and communities. Cultural, social, psychological, biological, spiritual, and physical forces.

622. Human Behavior and Social Environment 2: Psychopathology (3)
   Prerequisite(s): Psych 342 or equivalent; Soc W 620 or bachelor of social work; major status.
   Etiology and symptoms of dysfunctional behavior and their effects on the individual, family, and community.

624. Human Behavior and Social Environment 3: Marriage and Family Theories and Treatment. (3)
   Prerequisite(s): Major status.
   Various models of marriage and family treatment; appropriate intervention skills.

   Prerequisite(s): For majors only.
   Analyzing and changing social policies and programs.

   Prerequisite(s): Major status; Soc W 630 or bachelor of social work.
   The law relative to formation, functioning, and dissolution of families and delivery of social services to them.

64R. Field Practicum. (1-3)
   Prerequisite(s): First-year placement. For majors only.
   Practicum in social service agencies with an integrative seminar to examine relationship between theory and practice.

655R. Field Practicum. (1-3)
   Prerequisite(s): Second-year placement. For majors only.
   Practicum in social service agencies with an integrative seminar to examine relationship between theory and practice.

660. Social Work Practice: Casework. (3)
   Prerequisite(s): Major status; bachelor of social work or Soc W 620 or concurrent enrollment.
   Psychosocial assessment of individuals and implementing interventions.

661. Social Work Practice: Advanced Casework. (3)
   Prerequisite(s): Major status; Soc W 660 or bachelor of social work.
   Building on skills acquired in Soc W 660; using different microintervention models and approaches.

662. Social Work Practice: Group Work. (3)
   Prerequisite(s): Major status; Soc W 620 or bachelor of social work.
   Structure, function, dynamics, and development of small groups, emphasizing group models and group theory.

663. Social Work Practice: Advanced Group Work. (3)
   Prerequisite(s): Major status; Soc W 620 or bachelor of social work.
   Applying group theory to individual and family problems. Role of social workers in group process. Group leadership experience required.

664. Social Work Practice: Community Organization. (3)
   Prerequisite(s): Major status; Soc W 620 or concurrent registration.
   Basic practice theory, tactics, and strategies in working with neighborhoods, communities, and organizations toward planned change.

665. Social Work Practice: Introduction to Human Services Administration. (3)
   Key managerial functions of complex organizations and institutions; administrative theory and selected management techniques.

666. Social Work Practice: Advanced Clinical Methods in Assessment/Intervention. (3)
   Prerequisite(s): Major status; Soc W 661.
   Linking psychosocial assessment with advanced clinical theory, skills, and techniques.

667. Social Work Practice: Intervention Methods with Children and Adolescents. (3)
   Prerequisite(s): Major status; Soc W 661.
   Use of interventive methods regarding child and adolescent problems in addition to understanding reciprocal impact of significant systems, i.e., school, family, peers, church, health, socioeconomic status.
668. Advanced Marriage and Family Practice. (2) Prerequisite(s): SocW 642. Advanced methods of intervention with marital dyads, family, and community. For majors only.

671. Play Therapy. (3) Prerequisite(s): Instructor’s consent. History and development of play therapy; model for practical application and child-centered theoretical approaches; primary emphasis on clinical child-centered play therapy.

672. Cognitive Therapy. (2) Prerequisite(s): Instructor’s consent. This particular model of psychotherapy is examined historically and currently. Basic process variables and techniques. Integration with other models.

673. Object Relations Therapy. (2) Prerequisite(s): Instructor’s consent. Object relations-based approaches to intervention, emphasizing treatment of clients with personality disorders, especially borderline disorders.


675. Substance Abuse Treatment. (2) Prerequisite(s): Instructor’s consent. Full spectrum of substance abuse interventions: intervening with selected special populations, such as those who have been sexually abused.

676. Theological Perspectives on Social Work Practice. (2) Prerequisite(s): Instructor’s consent. Interface of religious and social work values, attitudes, and principles.

680R. Selected Fields of Practice. (1-3) Prerequisite(s): instructor’s consent. Current problems and treatments in social work practice.


682. LDS Family Services Programs and Policies. (2) Prerequisite(s): Instructor’s consent. LDS Family Services operation, philosophy, and policies; individual, family, and couples counseling; crisis pregnancy help, adoption preparation, etc., for LDS community; role of social worker explored/defined.

685. Basic Mediation. (3) Prerequisite(s): Instructor’s consent. Interactive lecture, activities, and role plays. Active listening, communication, facilitation, and conflict resolution. Utah state certification available.

698R. Master's Research Project. (1-6) Prerequisite(s): Major status. Applying research and statistical methods; conducting and evaluating experimental or survey research project. Completion of publishable paper required.

FACULTY

COX, SHIRLEY E., Teaching Professor. DSW, University of Utah, 1986. Administration; Clinical Practice; International; Field Internship Placement.


NORMAN, JUDITH L., Associate Professor. DSW, University of Utah, 1990. Women’s Issues; Depression.

PANOS, PATRICK T., Associate Professor. PhD, Brigham Young University, 1993. Cross-Cultural Assessment and Intervention; Computerization of Social Services; Biology of Behavior.

PEHRSON, KYLE L., Professor. PhD, Catholic University, 1980. Personality Styles; Marriage and Family; The Military Family; Ethics.

ROBY, JINI L., Associate Professor. JD, MSW, Brigham Young University, 1990. Social Work and Family Law; Social Welfare Policy and Programs.

SEIP, MICHAEL M. O., Professor. PhD, Cornell University, 1982. Health Care in Developing Countries; Poverty.

SPAI, WANDA M., Associate Professor. DSW, University of Utah, 1988. Substance Abuse; Mental Health; Practice Evaluation.

THE PROGRAM OF STUDIES

The aims of the graduate program in sociology are to educate students in the principles, theories, and methods of sociology; train them in an area of specialization; and create skilled professional teachers and researchers. Faculty in the department are active in producing quality research and maintaining a high level of instruction. Graduate students have many opportunities for funding and being involved in research activities. PhD students are also provided the opportunity to teach an undergraduate course during their graduate career.

The Department of Sociology offers two degrees: Sociology—MS and Sociology—PhD.

The Sociology Department admits an average of eight students (total) to the master’s and doctoral programs each fall semester. Full-time students making good progress in the program will normally finish a master’s degree in two years and a doctoral degree in five years.

Sociology—MS
The master’s degree prepares students along two tracks: (1) doctoral work beyond the master’s degree and (2) professional careers at the master’s level as teachers and researchers.

Admission and Entry.
• Semesters of entry and application deadlines: fall, January 15 (U.S. and international).
• Application requirements: entrance examination is GRE general test.
• Academic writing sample in English.
• Prerequisite: baccalaureate degree in sociology or equivalent.

Requirements for Degree.
• Credit hours (minimum 35): 29 course work hours, including at least 23 hours of formal course work in sociology, plus 6 hours of thesis (Soc 699R). Only course work with a grade of B– or better is acceptable.
• Required courses: Soc 600, 604, 605, 610; and for first-year graduate students 598R in fall and winter; minimum 9 additional hours of graduate sociology course work; demonstration of competence in sociological theory, research methods, and statistics.
• Thesis.
• Examination: oral defense of thesis.

Sociology—PhD
The sociology PhD is a professional degree. It prepares the student for a career in academia or other settings where independent research skills are required. Students can choose one of three different specializations in the sociology PhD: Comparative, Family, Macro Comparative, and Community and Rural Studies.

Note: The department is not accepting applicants for the PhD for the 2008-09 academic year.

Admission and Entry.
• Semesters of entry and application deadlines: fall, January 15 (U.S. and international).
• Application requirements: entrance examination is GRE general test.
• Academic writing sample in English.
• Prerequisite: master’s degree in sociology or equivalent; master’s thesis.

Requirements for Degree.
• Credit hours: 48 hours of approved course work, plus 18 dissertation hours (Soc 799R). Only course work with a grade of B– or better is acceptable.
• Required courses: Soc 600; 604 or 608; 605, 606, 610, 611; and for first-year graduate students 598R in fall and winter; minimum 6 hours in each of two specialty areas selected for comprehensive examinations; demonstration of competence at the doctoral level by required course work and by examination in sociological theory, research methods, and statistics.
• Dissertation.
• Examinations: (A) qualifier exam at the beginning of the second semester; (B) two written comprehensive examinations in two of the following specializations: Comparative, Family, Macro Comparative, or Community and Rural Studies; (C) oral defense of dissertation prospectus.
• Oral defense of dissertation.

FINANCIAL ASSISTANCE

The Department of Sociology offers graduate teaching and research assistantships. These are ten-month appointments with an expectation of twenty hours of work per week. Financial assistance is also available through other agencies in the university.

RESOURCES AND OPPORTUNITIES

The Department of Sociology utilizes as valuable resources the School of Family Life, the Women’s Research Institute, the college computing lab, and the Kennedy Center for International Studies. Funding and research opportunities can be sought through these entities as well as through the department.

Faculty research interests cover a broad spectrum of social science research. However, the make-up of the department faculty generates most research in the following areas: family; religion; stratification; social organization and change; gender; ethnicity; and community.

For a more detailed description of the graduate program requirements, send for a copy of the department’s bulletin or see our Web page at http://sociology.byu.edu.
COURSE DESCRIPTIONS

524. Advanced Political Sociology. (3)
Social basis of political behavior. Modern theories and research concerning use of power and decision making.

525. Sociology of Religion. (3)
Prerequisite(s): Soc 111, 325, or instructor’s consent.
Influences of social factors in the development of various religious systems.

527. Sociology of the LDS Church and Its People. (3)
An advanced analysis of the LDS Church from a social science perspective, including the Church as a new religious movement; LDS culture; the institutionalization process.

528. Sociology of Rural Communities. (3)
Prerequisite(s): Soc 311, 370, or instructor’s consent.
Review and critique of major theoretical and methodological approaches to the study of community, with a focus on rural communities.

550. (Soc-MFHD) Contemporary Family Theories. (3)
Prerequisite(s): SFL (MFHD) 451, Soc 310, 311; or equivalents.
Introduction to basic micro, macro, and processual approaches to the study of the family; social and political theory on the family; and philosophical issues and assumptions underlying family theory, research, and practice.

560. (Soc-MFHD) Contemporary Sociological Theory. (3)
Prerequisite(s): admission to graduate sociology programs; others admitted by instructor’s consent.
Graduate survey of the field of sociological theory. In-depth analysis of structure and assumptions of contemporary sociological theories.

561. The Family Institution. (3)
The family in different societies; problems created by various family systems.

565. The Individual and Family in Later Years. (3)
Developmental aspects of aging, focusing on the biophysical, cognitive, social, affective, and pathological dimensions in people aged 50 and over.

590R. Special Topics in Sociology. (0.5-3)
Prerequisite(s): instructor’s consent.
Course content varies from year to year.

595R. Directed Readings. (0.5-3)
Individualized reading program supervised by faculty member.
Pass/Fail only.

598R. Pro-Seminar. (1)
Current developments in sociology including research, proposals, professional meetings, teaching, and finding a job.

600. Graduate Research Methods. (3)
Prerequisite(s): MFHD 290 or Soc 300 or equivalent.
Introduction to philosophy of science, emphasizing research design and development of thesis prospectus, including strengths, limitations, and constraints of various methodologies.

603R. (Soc-MFHD) Research Practicum. (3)
Prerequisite(s): instructor’s consent.
Design, data collection, data analysis, and write-up.

604. (Soc-MFHD) Ethnographic Research Techniques. (3)
Prerequisite(s): Soc-MFHD 600.
Rationale, methods, and limitations of qualitative research; includes participant observation and hermeneutic skills.

605. Multiple Regression Analysis. (3)
Prerequisite(s): Soc 306 or instructor’s consent.
Ordinary least squares and logistic regression techniques. Data acquisition, management, analysis, and report writing.

606. Intermediate Statistics. (3)
Prerequisite(s): Soc 306, 605; or equivalents.
Path analysis, factor analysis, and event history techniques.

608. Seminar in Survey Research and Sociological Measurement. (3)
Prerequisite(s): Soc 600; 605 or 606.
Survey research techniques in the behavioral sciences, emphasizing research and sampling designs. Measurement techniques, emphasizing consequences of measurement decisions.

610. Classical Social Theory. (3)
Prerequisite(s): Soc 310, 311; or equivalents.
Philosophical foundations of sociological theory; works of major classical theorists such as Marx, Weber, Durkheim, Simmel, Mead, DuBois, Addams, and Parsons.

611. Contemporary Sociological Theory. (3)
Prerequisite(s): Soc 310, 311, 610; or equivalents.
Recent developments in sociological theory. In-depth analysis of structure and assumptions of contemporary sociological theories.

620. Theory and Research in Social Organization. (3)
Prerequisite(s): admission to graduate sociology programs; others admitted by instructor’s consent.
Graduate survey of the field of social organization and the core subfields therein.

621. Complex Organizations. (3)
Prerequisite(s): instructor’s consent.
Theoretical approaches and empirical studies of organizations, their structures, processes, and problems; studies of industrial organizations, universities, hospitals, etc.

622. Social Stratification. (3)
Prerequisite(s): Soc 111.
Status, class, and power systems in various societies.

623. Seminar in Race and Ethnic Relations. (3)
Prerequisite(s): instructor’s consent.
Major theories of race-ethnic relations; critical issues in the field.

625R. Seminar in the Sociology of Religion. (3)
In-depth analysis of theory and research in topical areas of the sociology of religion. Course content varies from year to year.

645. Seminar on Population Analysis. (3)
Prerequisite(s): Soc 306 or equivalent.
Availability, use, and interpretation of population data for local, state, and national areas applied to planning and evaluation.
650. Advanced Social Psychology. (3)
Processes of social influence, emphasizing theory and research testing. Basic principles of social behavior.

660. (Soc-MFHD) Child and Adolescent Socialization. (3)
Child and adolescent development in the context of social interaction, with particular emphasis on the family. Current theory and research evaluated.

667. Sociology of Gender. (3)
Gender as a central organizing principle of society; socialization, social and cultural change, social movements, social stratification, and social policy.

670. Contemporary Urban Social Structure. (3)
Prerequisite(s): Soc 370.
Research-oriented examination of social forces in contemporary urban life that influence patterns of human interaction.

681R. Seminar in Deviance, Crime, and Corrections. (3)
Prerequisite(s): Soc 380, 381 or 383, or instructor’s consent.
In-depth analysis of current issues in the field. Tailored to student interests.

706R. (Soc-MFHD) Advanced Statistical Methods. (3)
Prerequisite(s): Soc 605, 606.
Topics include advanced structural equations and hierarchical linear models, or panel data techniques and generalized linear models.

720R. Seminar: Social Organization. (0.5-3)
Prerequisite(s): Soc 111, 620.

792R. (Soc-MFHD) Family Symposium. (0.5)
Presentation and discussion of professional papers about the family.

799R. Doctoral Dissertation. (0.5-9)

FACULTY

BAHR, HOWARD M., Professor. PhD, University of Texas, Austin, 1965. Urban Problems; Ethnic Relations.

BAHR, STEPHEN J., Professor. PhD, Washington State University, 1972. Family; Deviance.

BROWN, RALPH B., Professor. PhD, University of Missouri, Columbia, 1992. Rural Sociology; Community Development; Social Change.

BURRASTON, BERT O., Assistant Professor. PhD, University of Oregon, 2003. Family; Quantitative Methods; Education; Criminology; Social Psychology.

CALL, VAUGHN R. A., Professor. PhD, Washington State University, 1977. Family Life Course; Research Methods; Aging; Education.

CORNWALL, MARIE, Professor. PhD, University of Minnesota, 1985. Gender; Religion; Social Change.

DUFUR, MIKAELA J., Assistant Professor. PhD, Ohio State University, 2000. Stratification; Work and Occupations; Sport.

ERICKSON, LANCE D., Assistant Professor. PhD, University of North Carolina, Chapel Hill, 2005. Life Course; Family; Adolescence.

FORSTE, REINATE, Professor. PhD, University of Chicago, 1992. Demography; Statistics.

GOODSELL, TODD, Assistant Professor. PhD, University of Michigan, Ann Arbor, 2004. Family; Culture; Sociological Theory; Community.

HEATON, TIM B., Professor. PhD, University of Wisconsin, Madison, 1979. Demography.


JACOBSON, CARDELL K., Professor. PhD, University of North Carolina, Chapel Hill, 1971. Social Psychology; American Race/ethnic Relations; Sociology of Religion.

KING, BRAYDEN G., Assistant Professor. PhD, University of Arizona, 2005. Economic Sociology; Organizations; Social Movements and Policy Analysis.

KNAPP, STAN J., Associate Professor. PhD, Florida State University, Tallahassee, 1996. Family; Social Theory.

MORGAN, CHARLIE V., Assistant Professor. PhD, University of California, Irvine, 2007. Immigration; Race; Ethnicity and Intermarriage.

PHILLIPS, KRISTIE J. R., Assistant Professor. PhD, Vanderbilt University, 2005. Sociology of Education (emphasizing urban education); Education Policy; School Choice and Geographic Distribution of Social Resources.

WARD, CAROL J., Associate Professor. PhD, University of Chicago, 1992. Race; Ethnicity; Education; Community; Ethnography.
SPANISH AND PORTUGUESE

Chair: Alvin F. Sherman, Jr.
Graduate Coordinator:
Douglas J. Weatherford
3190 JFSB
Provo, UT 84602-6705
(801) 422-2196

THE PROGRAM OF STUDIES
Two degrees are offered through the Department of Spanish and Portuguese: Portuguese—MA and Spanish—MA.

Most students who complete a master’s degree in the department either seek jobs in secondary education or continue their studies on the PhD level. Some have located positions with government agencies or in the business sector. Each year from ten to twenty students are admitted to the program. The program is designed for a student to complete the degree in twenty-four months of intensive work.

Portuguese—MA
Areas of specialization: Portuguese Language, Portuguese Literature.

Admission and Entry.
• Semesters of entry and application deadlines: fall, January 1 (U.S. and international).
• Application requirements: applicants may be required to have an oral interview or to produce a tape demonstrating language proficiency. Candidates will also submit a previously written research paper in Portuguese, a one-page composition outlining their academic objectives, and their GRE general test scores.
• Prerequisite: baccalaureate degree in Portuguese or equivalent; minimum (last 60 hours) GPA 3.3; minimum Portuguese GPA 3.5.

Requirements for Degree.
• Credit hours (33): 27 course work hours plus 6 thesis hours (699R).
• Core required courses: 21 course work hours, including Port 601A, B, or C and six courses in Portuguese, Brazilian, or Lusophone areas.
• Electives: 6 hours in any related area of study from Spanish and Portuguese.
• Thesis or two-paper option: 6 credit hours of Port 699R, plus an oral defense.
• Examinations: comprehensive, culminating written exam in specialty.
• Completion of three semesters (or equivalent) of a second foreign language other than English in addition to language of specialization.
• Teaching requirement: teach at least one Portuguese language class (100/200 level).

Spanish—MA
Areas of specialization: Peninsular Literature, Latin American Literature, Hispanic Linguistics, and Spanish Pedagogy.

Admission and Entry.
• Semesters of entry and application deadlines: fall, February 1 (U.S. and international).
• Application requirements: as an entrance examination, applicants may be required to have an oral interview or to produce a tape demonstrating language proficiency. Candidates will also submit a previously written research paper in Spanish, a one-page composition outlining their academic objectives, and their GRE general test scores.
• Prerequisite: baccalaureate degree in Spanish or equivalent; minimum (last 60 hours) GPA 3.3; minimum Spanish GPA 3.5.

Requirements for Degree.
• Credit hours (33): 27 course work hours plus 6 thesis hours (699R).
• Core required courses: 21 hours, including Span 601A and six courses in Hispanic linguistics. (Span 673R does not count toward this requirement.)
• Thesis or two-paper option: 6 credit hours of Span 699R, plus an oral defense.
• Examinations: comprehensive, culminating written exam in specialty.
• Completion of three semesters (or equivalent) of a second foreign language other than English in addition to language of specialization.
• Teaching requirement: teach at least one Spanish language class (100/200 level).

Requirements for Hispanic Linguistics Specialization:
• Credit hours: 33.
• Core required courses: 21 hours, including Span 601A and six courses in Hispanic linguistics.
• Electives (6 hours): 3 hours in Peninsular or Latin American literature and 3 hours in Spanish pedagogy. (Span 673R does not count toward this requirement.)
• Thesis or two-paper option: 6 credit hours of Span 699R, plus an oral defense.
• Examinations: comprehensive, culminating written exam in specialty.
• Completion of three semesters (or equivalent) of a second foreign language other than English in addition to language of specialization.
• Teaching requirement: teach at least one Spanish language class (100/200 level).

Requirements for Spanish Pedagogy Specialization:
• Credit hours: 33.
• Core required courses (18 hours): Span 601C, 671; 12 hours from 577, 670R, 672, 674, 675, 676, 678, 679R.
• Electives (9 hours): 3 hours in Hispanic linguistics, 3 hours in Peninsular literature, and 3 hours in Spanish American literature.
• Thesis or two-paper option: 6 credit hours of Span 699R, plus an oral defense.
• Examinations: comprehensive, culminating written exam in specialty.
FINANCIAL ASSISTANCE

Students may receive a position as a student instructor depending on departmental needs and on their qualifications. All potential student instructors must have completed an undergraduate 3-hour phonetics course and a 3-hour methodology course, and they must participate in an intensive workshop held during the week previous to the commencement of fall classes. Continuing employment and the number of sections assigned to candidates each semester depend on departmental needs and on the students' performance as instructors and on their own academic progress. Additionally, most students receive partial scholarship grants (generally 65-85% of required courses) to help cover tuition expenses. To be eligible for this funding, MA candidates are required to teach for the department as student instructors and must make adequate progress toward degree completion. Qualifying students are limited to receiving tuition assistance for four semesters. Special cases, however, as approved by the graduate coordinator and dependent upon a student's progress toward degree completion, may permit a fifth and final semester grant.

In addition to employment as student instructors, MA candidates may occasionally find on-campus jobs as readers, teaching assistants, or research assistants.

RESOURCES AND OPPORTUNITIES

The Department of Spanish and Portuguese utilizes the Humanities Research Center for world-class computer-assisted language instruction.

Students may choose to participate in a variety of Study Abroad programs conducted by the department in Europe and Latin America.

Every third year during the summer term, the College of Humanities offers the Summer Language Institute, a program that allows a student total immersion in foreign language teaching while receiving course credit. Housing is provided for participants where the language can be applied on a practical level.

Faculty research interests currently include:

1. Acquisition of Spanish as a second language (language teaching methodology, teacher training, oral proficiency testing, computer-administered placement and speaking tests)
2. Hispanic literature (Spanish medieval literature, Spanish golden age literature, eighteenth- and nineteenth-century Spanish literature, Spanish American women writers, Spanish women writers, Hispanic film, Spanish American poetry, modern Spanish poetry, literature and philosophy, contemporary Hispanic theatre, Mexican prose, metafiction and metatheatre, Hispanic romanticism, Spanish realist narrative, intersemiotic analogies, literature and science, Spanish cultural studies)
3. Portuguese literature (classical Portuguese literature, Brazilian literature)
4. Hispanic linguistics (Caribbean sociolinguistics, phonetic spectrography; Romance semantics, Hispanic paleography, mood in the nominal clause, language contact, bilingualism)

For a more detailed description of the graduate program requirements, send for a copy of the department's bulletin.

COURSE DESCRIPTIONS

Linguistics and English Language

(See Linguistics and English Language section of this catalog for courses.)

Portuguese

520. Advanced Portuguese Grammar. (3)
Applying contemporary grammatical concepts to problems in Portuguese grammar.

521. Romance Philology. (3)
Comparative study of evolution of Latin into modern romance languages.

522. History of the Portuguese Language. (3)
Linguistic sources that contributed to formation of Portuguese.

529R. Special Topics in Portuguese Linguistics. (3)
Prerequisite(s): Port 321.
Topics from semantics to dialectology to sociolinguistics.

599R. Academic Internship: Portuguese Internship. (1-3)
Prerequisite(s): Port 321 and instructor's consent.
For supervised internship credit on BYU Study Abroad programs only.

601A. Portuguese Linguistics and Research Methodology. (3)
Basic research fields in linguistics (i.e., phonology, philology, syntax, psycholinguistics), how research differs in each area, and specific theoretical issues associated with each. Bibliographical and field research methods and techniques of reporting findings.

601B. Literary Theory and Research Methodology. (3)

629R. Seminar in Portuguese Linguistics. (3)

639R. Luso-Brazilian Theatre Production. (3)
Theory and practice of dramatic performance. Includes participation in a play to be performed during semester.
Total Port 639R credit toward any degree may not exceed 3 hours.

642. Camões. (3)

649R. Seminar in Portuguese Literature. (3)

652. Machado de Assis. (3)
Prerequisite(s): Port 441, 451, or equivalent.

653. Twentieth-Century Brazilian Literature. (3)
Prerequisite(s): Port 441, 451, or equivalent.

659R. Seminar in Brazilian Literature. (3)

661R. African Literature in Portuguese. (3)
Modern authors from the five African nations whose official language is Portuguese: Angola Cabo Verde, Guiné Bissau, Mozambique, and São Tomé Príncipe. Authors include José Craveirinha, Mia Couto, Noemia de Sousa, José Tenreiro, Castro So- romenho, Luandino Vieira, Pepehtala, and Baltasar Lopes, among others.

662R. Literature of the Lusophone World. (3)
Authors from the eight nations whose official language is Portuguese, plus former colonies and regions of important Portuguese influence. Included are Luso-Amercian and Azorean writers, as well as authors from East Timor (formerly Indonesia), Goa (India), and Macau (China).

673R. Directed Teaching of Portuguese. (1-3)
Prerequisite(s): Teaching assistantship in department.
Supervised, practical experience in teaching Portuguese at the college level.

675. Teaching Literature. (3)
Prerequisite(s): Port 601B
One-third of class time: theory and techniques of literature instruction; two-thirds of class time: practice teaching in undergraduate literature courses.
For graduate students who plan to pursue a career in teaching literature.

680R. Directed Research in Portuguese. (1-3)
Prerequisite(s): Written proposal subject to departmental approval.
Under direction of faculty member, designing and conducting research project that covers material not normally presented in regular course work. Research paper required.
Total Port 680R credit toward any degree may not exceed 3 hours.

698R. Master’s Project. (0.5-6)

699R. Master’s Thesis. (1-9)

Spanish

520. Problems in Spanish Grammar. (3)
Application of contemporary grammatical concepts to problems in Spanish grammar.

521. Romance Philology. (3)
Comparative study of the evolution of Latin into modern Romance languages.

522. History of the Spanish Language. (3)
Linguistic sources that contributed to formation of the Spanish language.

529R. Special Topics in Spanish Linguistics. (3)
Prerequisite(s): Span 520, 522.
Topics could include semantics, dialectology, and sociolinguistics.

577. Spanish Language Teaching Procedures. (3)
Prerequisite(s): For public school teachers.
Mastery of skills specific to foreign language instruction. Lectures, demonstrations, practical experience.

599R. Academic Internship: Spanish Internship. (0.5-3)
Prerequisite(s): Span 321 and instructor’s consent.
For supervised internship credit on BYU Study Abroad programs only.

601A. Hispanic Linguistics and Research Methodology. (3)
Basic research fields in linguistics (i.e., phonology, philology, syntax, psycholinguistics), how research differs in each area, and specific theoretical issues associated with each. Bibliographical and field research methods and techniques of reporting findings.

601B. Literary Theory and Research Methodology. (3)
Introduction to literary theory, emphasizing major theoretical movements and strategies of literary interpretation. Bibliographical techniques, research methodology, and issues pertaining to the profession.

601C. Research Designs in Hispanic Language Teaching. (3)
Designing and evaluating empirical research studies in foreign language learning and teaching methodology. Bibliographical techniques and methods of reporting findings.

602R. Special Topics in Contemporary Literary Theory. (3)
Prerequisite(s): Instructor’s consent.
Topics, figures, themes, and movements in contemporary theory as they relate to Hispanic literatures, cultures, and film.
Especially recommended for students planning to pursue doctoral studies in Hispanic literature.

620. Core Course in Hispanic Linguistics. (3)
Recommended for MA literature and pedagogy specialists (optional for linguistics specialists who may not apply class to 33 hour requirement).

622. Hispanic Dialectology. (3)
Overview of the varieties of spoken Spanish.

625. Spanish Morphosyntax. (3)
Linguistic study of morphological and syntactic structure of Spanish.
626. Spanish Phonetics and Phonology. (3)
Prerequisite(s): Span 326 or instructor’s consent.
Systematic study of articulatory and acoustic Spanish phonetics and of structural and generative approaches to phonological description of Spanish.

629R. Seminar in Spanish Linguistics. (3)

638. Hispanic Cinema. (3)
Prerequisite(s): Span 339 or equivalent.
Introduction to study of film; background in appreciating best of motion picture art in Spain and Spanish America.
Previous experience with film useful but not required.

639R. Hispanic Theatre Production. (3)
Prerequisite(s): director’s consent.
Theory and practice of dramatic performance. Includes participation in play to be performed during semester.
Total Span 639R credit toward any degree may not exceed 3 hours.

640. Medieval Spanish Literature. (3)
Prerequisite(s): Span 441 or equivalent.

Spanish Literature from El Cantar de Mio Cid (1140) through La Celestina (1499).

643R. Golden Age Literature. (3)
Prerequisite(s): Span 441 or equivalent.
Sixteenth- and seventeenth-century Spanish literature.

644. Don Quijote. (3)
Prerequisite(s): Span 441 or equivalent.
In-depth study of Cervantes’s El ingenioso hidalgo don Quijote de la Mancha.

646R. Nineteenth-Century Spanish Literature. (3)
Prerequisite(s): Span 441 or equivalent.
Romanticism (1770s through 1870s) and/or the novels of Benito Perez Galdos and his contemporaries.

648R. Twentieth-Century Spanish Literature. (3)
Prerequisite(s): Span 441 or equivalent.
Genre (twentieth-century novel, drama, or poetry) or particular school (Generation of 1898, Generation of 1927, etc.)

649R. Seminar in Spanish Literature. (3)

650R. Early Spanish American Literature. (3)
Prerequisite(s): Span 451 or equivalent.
Indigenous literature (Maya, Nahuatl, etc.) and other texts written in Spanish colonial America through eighteenth century.

654R. The Spanish American Novel. (3)
Prerequisite(s): Span 451 or equivalent.
Selected Spanish American novelists such as Juan Rulfo, Gabriel Garcia Marquez, Alejo Carpentier, Mario Vargas Llosa, etc.

655R. Spanish American Poetry. (3)
Prerequisite(s): Span 451 or equivalent.
Selected Spanish American poets, movements, and national traditions.

656R. Spanish American Drama. (3)
Prerequisite(s): Span 451 or equivalent.
Twentieth-century theatre from Spanish America and Brazil.

658R. The Hispanic American Short Story. (3)
Prerequisite(s): Span 451 or equivalent.
Introduction and development of an important literary genre in Spanish America, including works of Jorge Luis Borges, Julio Cortazar, Juan Rulfo, Gabriel Garcia Márquez, and others.

659R. Seminar in Spanish American Literature. (3)

670R. Teaching Oral and Literacy Skills in a Foreign Language. (3)
Examining, in alternate years, theory and techniques for teaching oral skills (speaking and listening) and literacy skills (reading and writing) in a foreign language.

671. Principles of Foreign Language Learning and Teaching. (3)
Basic theories and principles of language learning and teaching. History, current research, practices, trends, and issues.
Core course work for all MA candidates.

672. Media and Technology in Foreign Language Instruction. (3)
Applying modern technology and instructional media in teaching foreign languages.

673R. Directed Teaching of Spanish. (1-3)
Prerequisite(s): Span 326, 377, and graduate assistantship in department.
Supervised, practical experience in teaching Spanish at the college level.

674. Teaching Hispanic Culture. (3)
Methods of researching and teaching Hispanic culture.

675. Teaching Literature. (3)
One-third of class time: theory and techniques of literature instruction; two-thirds of class time: practice teaching in undergraduate literature courses.
For graduate students who plan to pursue a career in teaching literature.

676. Principles of Testing Foreign Language Skills. (3)
Test development and analysis for assessment of the four skills plus grammar and culture; survey and questionnaire construction.

678. Research Design in Foreign Language Instruction. (3)
Designing and evaluating empirical research studies in foreign language learning and teaching methodology.

679R. Seminar in Teaching Spanish. (3)
Topics vary. In-depth discussion about issues relating to language teaching and research.
680R. Directed Research in Spanish. (1-3)
Prerequisite(s): Written proposal subject to departmental approval.
Individualized study. Under direction of faculty member, designing and conducting research project that covers material not normally presented in regular course work. Research paper required.
Total Span 680R credit toward any degree may not exceed 3 hours.

698R. Master's Project. (1-6)
Prerequisite(s): committee chair's consent.
Candidates in nonthesis program may complete approved field project as their writing/research experience.

699R. Master's Thesis. (1-9)

**Faculty**


**Alvord, Scott M.**, Assistant Professor. PhD, University of Minnesota, 2006. Hispanic Linguistics; Phonetics; Phonology; Sociolinguistics; Language Contact; Spanish in the U.S.

**Bateman, Blair E.**, Assistant Professor. PhD, University of Minnesota, 2002. Teaching Culture; Language Teaching Methodology; Assessing Language Learning.


**Fails, Willis C.**, Associate Professor. PhD, University of Texas, Austin, 1984. Experimental Phonetics; Spanish and Portuguese Linguistics.

**Fitzgibbon, Vanessa**, Assistant Professor. PhD, University of Wisconsin, Madison, 2006. Contemporary Brazilian Literature; Poetry; Film.

**García, Mara Lucy**, Associate Professor. PhD, University of Kentucky, 1997. Latin American Literature; Contemporary Women Writers.


**Hegstrom, Valerie**, Associate Professor. PhD, University of Kansas, 1992. Golden Age Comedia, Novella, Poetry; Spanish Theater Performance; Women Writers and Feminist Theory.


**Labrum, Marian B.**, Associate Professor. DML, Middlebury College, 1988. Translation/Interpretation; Spanish American Literature.


**Larson, Jerry W.**, Professor. PhD, University of Minnesota, Minneapolis, 1977. Spanish Language Acquisition; Methodology; Technology.

**Lund, Christopher C.**, Professor. PhD, University of Texas, Austin, 1974. Classical Portuguese Literature.


**Martinsen, Rob A.**, Assistant Professor. PhD, University of Texas at Austin, 2007. Foreign or Second Language Acquisition/Teaching Methods; Teaching and Learning Languages Through Study Abroad and Technology.

**Meredith, R. Alan.**, Associate Professor. PhD, Ohio State University, 1976. Second-Language Teaching Methodology; Testing; Research Design.

**Pratt, Dale J.**, Associate Professor. PhD, Cornell University, 1994. Nineteenth- and Twentieth-Century Spanish Literature; Realism; Generation of ‘98; Literature and Science; Theatre Performance; Comparative Literature.

**Preto-Bay, Ana**, Assistant Professor. PhD, Brigham Young University, 2002. Second-Language Literacy; Learning Communities; Teacher Development.


**Sherman, Alvin E., Jr.**, Professor. PhD, University of Virginia, 1990. Eighteenth- and Nineteenth-Century Spanish Literature; Medieval Literature.

**Smead, Robert N.**, Associate Professor. PhD, University of Texas, Austin, 1988. Spanish-English Language Contact; Hispanic Bilingualism; Spanish Linguistics; Variationism.


**Turley, Jeffrey S.**, Associate Professor. PhD, University of California, Berkeley, 1992. Spanish Linguistics; Romance Philology; Semantics.

**Weatherford, Douglas J.**, Associate Professor. PhD, Pennsylvania State University, 1997. Contemporary Spanish American Narrative; Colonial Literature; Historical Novel; Hispanic Film.

**Williams, Frederick G.**, Gerrit de Jong, Jr., Distinguished Professor of Luso-Afro-Brazilian Studies. PhD, University of Wisconsin, 1971. Portuguese, Brazilian, and Mozambican Literatures.

**Williams, Lynn**, Professor. PhD, University of London, 1978. Spanish Linguistics; History of the Spanish Language; Spain as a Multilingual State; Medieval Literature.
The Program of Studies

Statistics is a scientific discipline by which statisticians assist other scientists and researchers in making informed decisions in the face of uncertainty. Statisticians use skills in a variety of areas to solve problems. The application of statistics is the embodiment of the scientific method.

The statistics MS is an applied degree that prepares outstanding students for successful and productive careers. The graduate curriculum is designed to equip students with decision-making skills necessary for successful careers as professional statisticians. Although a firm foundation in theoretical statistics is provided, most of the courses are applied in nature, offering approaches to the solution of important real-world problems.

The Statistics Integrated BS/MS program allows well-prepared students to complete both degree programs efficiently and at lower tuition cost. Majors in the Statistical Science and Biostatistics emphases can apply for the integrated program after taking Stat 336 and completing University Core requirements.

Twenty to twenty-five students are currently enrolled in the master’s program in statistics. Students are expected to complete the master’s program in two years.

Statistics—MS

Admission and Entry.

• Semesters of entry and application deadlines: fall, February 1 (U.S. and international). Entry to the program occurs only fall semester. Students applying for the integrated BS/MS program should contact the department for further information.

• Entrance examination: GRE general test; minimum 3.3 undergraduate GPA required. International applicants whose native language is not English are required to submit TOEFL scores.

• Prerequisites: A methods course beyond introductory statistics and a calculus-based statistical theory course, multivariate calculus, and linear algebra with a B– or better in each. A math minor is recommended. Students whose native language is not English may be required to take one or more ESL classes, depending on the outcome of a departmental interview.

Requirements for Degree.

• Credit hours:
  - Project option (33): minimum 30 course work plus 3 project hours (Stat 698R).

• Required courses: Stat 535, 536, 624, 641, 642, and 9 hours in statistics courses numbered 600 or above, excluding 698R and 699R.

• Minor (optional): any approved minor.

• Thesis or project.

• Examinations: (A) comprehensive written examination covering Stat 535, 536, 641, and 642, (B) oral defense of project or thesis.

• C+ or better in each class, with an overall cumulative 3.0 GPA in all MS degree classes.

Financial Assistance

The department has limited funds to supplement students’ financial resources, and such funds are only available within departmental and university guidelines. All admitted students receive teaching or research assistantships. Some students will receive full graduate tuition awards.

Resources and Opportunities

Center for Collaborative Research and Statistical Consultation. The Center operates with full access to all departmental resources to provide statistical expertise to faculty, graduate students, and off-campus researchers in other disciplines. Areas of particular strength are designing experiments and sample surveys and analyzing the resulting data. Problems are solved by application and adaptation of state-of-the-art methodology and development of new methodology as required.

Computing Facilities. The Department of Statistics provides several excellent general computer laboratories furnished with computing equipment and software for statistical graphics, data analysis, and statistical computing. These laboratories are reserved for students in the department.

Department Research. Faculty members in the Department of Statistics carry out a rich variety of research programs. Research emphases include Bayesian methods, environmental and spatial statistics, reliability of industrial and computing processes, statistical genetics and bioinformatics, mixed models and longitudinal data, data mining, chemometrics, actuarial methods, design and analysis of experiments, and issues in statistical computation. In addition to these general areas, more specific research interests for individual faculty are listed in the faculty section immediately following the course descriptions.

For a more detailed description of the graduate program requirements, send for a copy of the department’s bulletin or visit their website at http://statistics.byu.edu.

Course Descriptions

510. Introduction to Statistics for Graduate Students. (3)
Prerequisite(s): Math 97 or equivalent.

Introductory statistics course for graduate students outside Statistics Department. Topics include probability, estimation, hypothesis tests, simple linear regression, analysis of variance.
511. Statistical Methods for Research 1. (3)
Prerequisite(s): Stat 510 or equivalent.

Basic statistical methodologies and experimental design. Topics include analysis of variance, multiple regression, analysis of covariance, common experimental designs.

512. Statistical Methods for Research 2. (3)
Prerequisite(s): Stat 511.

Advanced statistical methodologies. Topics include repeated measures models, basic multivariate techniques, logistic regression, log-linear models.

532. Quality Improvement for Engineering. (3)
Prerequisite(s): Stat 332, Math 113.

Selected topics in statistical theory; analysis of variance, simple and multiple regression, response surface design and analysis, multi-level experimental designs, blocking designs, confounding.

535. Applied Linear Models. (3)
Prerequisite(s): Departmental consent.

Analysis of full-rank model, over-parameterized model, cell-means model, unequal subclass frequencies, and missing and fused cells. Estimability issues, diagnostics.

536. Modern Regression Methods. (3)
Prerequisite(s): Stat 535, 624; or departmental consent.

Weighted least squares, measurement error models, robust regression, nonlinear regression, local regression, generalized additive models, tree-structured regression.

537. Generalized Linear Models. (3)
Prerequisite(s): Stat 535, 624; or equivalents.

Generalized linear models framework, binary data, polytomous data, log-linear models.

538. Survival Analysis. (3)
Prerequisite(s): Stat 441 or equivalent.

Basic concepts of survival analysis; hazard functions; types of censoring; Kaplan-Meier estimates; Logrank tests; proportional hazard models; examples drawn from clinical and epidemiological literature.

545. Stochastic Processes. (3)
Prerequisite(s): Stat 441 or 470 or equivalent.

Conditional expectation and probabilities; Markov chains; solutions using time-reversible chains; modeling using hidden Markov chains; exponential waiting times; Poisson processes; Brownian motion with approximations.

566. Exploratory Multivariate Methods. (3)
Prerequisite(s): Stat 337 or 512 or instructor’s consent.

Exploratory data analysis; multivariate visualization; dynamic graphics; inference for mean vectors; multivariate regression; principal component analysis; cluster analysis; classification analysis; multidimensional scaling; correspondence analysis; bi-plots.

590. Statistical Consulting. (1-3)
Prerequisite(s): Departmental consent.

Introduction to statistical consulting, oral presentations, presentation packages, written reports. Extensive applied experience in the Center for Collaborative Research and Statistical Consulting.

591R. Graduate Seminar in Statistics. (0)

595R. Special Topics in Statistics. (1-3)
Prerequisite(s): Instructor’s consent.

599R. Academic Internship: Statistics. (1-9)
Prerequisite(s): Departmental consent.


624. Statistical Computation. (3)
Prerequisite(s): Departmental consent.

Fundamental numerical methods used by statisticians; programming concepts; efficient use of software available for statisticians; simulation studies.

631. Advanced Experimental Design. (3)
Prerequisite(s): Stat 431 or equivalent; 535, 642.

Response surface methods, mixture designs, and optimal designs; fractions of two-level, three-level, and mixed-level factorials; analysis of experiments with complex aliasing; robust parameter designs.

635. Mixed Model Methods. (3)
Prerequisite(s): Stat 535, 624, 642.

Fixed effects, random effects, repeated measures, nonindependent data, general covariance structures, estimation methods.

641. Probability Theory and Mathematical Statistics 1. (3)
Prerequisite(s): Departmental consent.

Axioms of probability; combinatorics; random variables, densities and distributions; expectation; independence; joint distributions; conditional probability; inequalities; derived random variables; generating functions; limit theorems; convergence results.

642. Probability Theory and Mathematical Statistics 2. (3)
Prerequisite(s): Stat 641.

Introduction to statistical theory; principles of sufficiency and likelihood; point and interval estimation; maximum likelihood; Bayesian inference; hypothesis testing; Neyman-Pearson lemma; likelihood ratio tests; asymptotic results, including delta method; exponential family.

643. Theory of Linear Models. (3)
Prerequisite(s): Stat 642.

Random vectors; multivariate normal distribution; quadratic forms distribution; full-rank and non-full-rank linear models hypothesis testing; random predictors; estimability; Bayesian topics; mixed and/or generalized linear models.
651. Bayesian Methods. (3) Prerequisite(s): Stat 536, 642. Basic Bayesian inference; conjugate and nonconjugate analyses; Markov Chain Monte Carlo methods; hierarchical modeling; convergence diagnostics.

666. Multivariate Statistical Methods. (3) Prerequisite(s): Stat 535, 624, 642. Inference about mean vectors and covariance matrices; multivariate analysis of variance and regression; canonical correlation; discriminant, cluster, principal component, and factor analysis.

690R. Advanced Special Topics. (3) Prerequisite(s): instructor’s consent.

695R. Readings in Statistics. (1-3) Prerequisite(s): departmental consent.

698R. Master’s Project. (1-3) Prerequisite(s): departmental consent.

699R. Master’s Thesis. (1-6) Prerequisite(s): departmental consent.

FACULTY

Blades, Natalie J., Assistant Professor. PhD, Johns Hopkins University, 2003. Statistical Genetics; Epidemiology.

Christensen, William E., Associate Professor. PhD, Iowa State University, 1999. Environmental and Spatial Statistics; Multivariate Analysis.

Collings, Bruce J., Professor. PhD, University of North Carolina, 1981. Combinatorics; Actuarial Science; Biostatistics.


Engler, David A., Assistant Professor. PhD, Harvard University, 2007. High-dimensional data Analysis; Variable Selection; Biomedical Applications.


Fields, Paul J., Associate Teaching Professor. PhD, Pennsylvania State University, 1992. Applied Statistics; Research Methods; Experimental Design; Quality Control; Time-Series Analysis.

Grimshaw, Scott D., Professor. PhD, Texas A&M University, 1989. Data Mining; Statistical Computing.

Johnson, W. Evan, Assistant Professor. PhD, Harvard University. 2007. Statistical Genomics; Computational Biology; Bioinformatics.


Reese, C. Shane, Associate Professor. PhD, Texas A&M University, 1999. Bayesian Methods; Reliability; Information Combination; Experimental Design.

Schaalje, G. Bruce, Professor. PhD, North Carolina State University, 1988. Mixed Models; Experimental Design; Biostatistics.

Scott, Del T., Professor. PhD, Pennsylvania State University, 1977. Statistical Computing; Categorical Data Analysis; Linear Models.


Whiting, David G., Associate Professor. PhD, Texas A&M University, 1995. Proteomics; Bioinformatics; Statistical Computing; Spatial Statistics.

TEACHER EDUCATION

Chair: M. Winston Egan
Graduate Coordinator: Roni Jo Draper
205 MCKB
Provo, UT 84602-5099
(801) 422-4079

THE PROGRAM OF STUDIES

The Department of Teacher Education offers graduate programs in teacher education and reading. Master’s programs are designed to (A) improve teachers’ work with children in pre-K–12 schools, (B) improve teachers’ mentoring of pre-service and induction-years teachers, and (C) prepare teachers to function as leaders in pre-K–12 schools and other teaching and learning communities. The doctoral program is designed to prepare educators to function in the following career roles: diagnostic-remedial reading specialist, developmental reading specialist, reading consultant/ coordinator/supervisor, or university professor.

One degree is offered through the Department of Teacher Education: Teacher Education—MA.

Teacher Education—MA

The master’s program is a two-year, full-time evening and summer-intensive program for the working professional as well as the full-time student. Students move through their course work as a cohort and complete course work on the BYU campus.

The curriculum is both theory and practice based. The teacher education core provides teachers with a thorough understanding of the theories and practices related to their professional assignment and space for considering their role in supporting and sustaining democracy. The research core includes courses in research methods, statistics, qualitative data analysis, and an action research project. In addition to the
teacher education and research cores, students choose one of two specialty areas: literacy education or teacher education.

**Literacy Education**
The specialty area in literacy education provides experienced teachers (pre-K–12) with increased knowledge and expertise in key areas related to classroom literacy instruction and prepares them to provide leadership in literacy instruction and professional development programs. The course content is aligned with current standards for reading professionals as set forth by the International Reading Association. Participants who complete the master’s degree with a focus in literacy education qualify for a Utah Education Reading Endorsement as well as receiving their MA.

**Teacher Education**
The specialty area in teacher education provides experienced teachers (pre-K–12) with opportunities to develop and deepen their theoretical, philosophical, historical, and practical understandings of teaching, the process of becoming a teacher, and the process of continuing professional development. Particular emphasis is placed on developing the knowledge and ability needed to improve one’s own teaching practice and to assist others in becoming better teachers.

**Admission and Entry.**
- Semesters of entry and application deadlines: February 1. (Applicants are accepted every two years—even-numbered years.)
- Complete admissions procedures and meet the entrance requirements for graduate study at BYU.
- Evidence successful experience as a contracted, certified teacher for a minimum of one year.
- Have a GPA of 3.25 or above for the last 60 semester hours.
- Graduate Record Examination (GRE): submit scores (not more than five years old) to Graduate Studies before application deadline.
- Applications are evaluated by the Teacher Education Graduate Faculty Admissions Committee. Admission is based on faculty approval and available departmental resources.

**Requirements for Degree.**
- Credit hours (42): minimum 36 course work hours plus 6 hours of either thesis (T Ed 699R).
- Required core courses: T Ed 601, 602, 603, 604.
- Required research courses: T Ed 691 692.
- Specialty area courses: either literacy education (T Ed 620, 621, 622, 623, 624, 625) or teacher education (T Ed 660, 661, 662, 663, 664, 665).
- Thesis.
- Examinations: oral defense of course work and oral defense of thesis or project (consult department for details).

**FINANCIAL ASSISTANCE**
A limited number of departmental graduate and research assistantships are available. To qualify, a student must be registered full-time. Assignments may include supervisory positions over undergraduate education majors.

**RESOURCES AND OPPORTUNITIES**
Computer laboratories provide students with access to the Internet. Macintosh and Windows computers in the laboratories also provide graduate students with a variety of computer software packages. All computers have access to Route Y, the university intranet, which provides services such as e-mail and class discussion groups. The Internet links permit students to search library catalogs and databases originating at the university and at countless locations around the world.

**Graduate student office space** is provided for graduate students who are working with faculty on research, evaluation, and development projects.

**COURSE DESCRIPTIONS**

**Elementary Education**
Note: El Ed 514R is for certification purposes only and is listed in the BYU Undergraduate Catalog.

514R. Individualized Instruction Elementary. (0.5-3)
Topics vary.
These courses do not count toward a graduate degree without prior approval.

632. Science in Elementary Education. (2)
Teaching elementary science; current developments and trends. Planning instructional materials and procedures for a science curriculum.

633. Trends and Issues in Literacy Education. (3)
Research, literature, and trends in listening, speaking, and writing, with their implications for instruction.

635. Mathematics in Elementary Education. (2)
Issues, research, and innovations in teaching elementary school mathematics.

636. Social Studies in Elementary Education. (2)
Domains, methods, and theories of social studies, including innovative content, e.g., law-related education, consumer education, etc.

650. Technology in Reading and Evaluation of Reading Materials. (0.5-3)
Using available software and technology for reading instruction in elementary schools and a critical analysis of print and nonprint materials.

660. Historical Foundations in Reading. (2)
In-depth study of the history of reading education, books, and reading instruction with implications for present-day reading practices.
680R. Professional Internship. (0.5-6)  
Professional work experience in  
area of specialization under direction  
of a faculty member.

693R. Directed Individual Study. (0.5-4)  
Directed Individual Study.  
(0.5-4)

695R. Independent Research. (0.5-6)  
Conceptualizing, designing,  
implementing, and evaluating  
a student-initiated project in a school  
classroom for curriculum improvement.

734. Literacy Seminar. (2)  
Significant research and publications  
in language arts and their  
implications for classroom practice.

740. Theoretical Models of Reading. (2)  
In-depth study of the theoretical  
models of the reading process.  
Statistical, psychological, literary,  
linguistic, and motivational models  
analyzed and critiqued.

741. Psychology and Physiology of  
Reading. (2)  
Physiology of the eye, ear, and  
brain as these relate to the reading  
act and potential reading disabilities;  
psychophysical measurement methods.

742. Teaching Reading Vocabulary  
and Comprehension. (2)  
Theories and research studies of  
vocabulary acquisition and reading  
comprehension as they relate to  
effective teaching.

743. Oral Language Acquisition:  
Parallels in Reading and Writing  
Development. (2)  
Developmental reading stage  
thories, writing development theo- 
ries, and invented spelling research;  
how these relate to oral language  
aquisition.

780R. Professional Internship.  
(0.5-8)  
Professional work experience in  
area of specialization under direction  
of a faculty member.

793R. Directed Individual Study.  
(0.5-4)

795R. Independent Research. (0.5-6)  
Conceptualizing, designing,  
implementing, and evaluating  
student-initiated research.

799R. Dissertation. (0.5-12)  
Formal report and defense of  
substantive research, evaluation, or  
curriculum project designed to make  
an original contribution to knowledge  
in the field.

Secondary Education

514R. Special Topics in Secondary  
Education. (0.5-3)  
Topics vary.  
For recertification only. Does not  
count toward preservice secondary  
licensure or graduate degrees.

515R. Special Topics in Education.  
(0.5-3)  
Topics vary.  
For recertification only. Must have  
prior approval of department to  
count toward graduate degrees.

(2)  
Prerequisite(s): ScEd 505 or instruc- 
tor's consent.

622. Literacy Development and  
Instruction.  
(2)  
The public purposes of education,  
including preparing students for active  
participation in a democracy.

620. Foundations of Literacy. (3)  
Prerequisite(s): Membership in  
teacher education cohort or instruc- 
tor's consent.

621. Literature for Young People. (3)  
Prerequisite(s): Membership in  
teacher education cohort or instruc- 
tor's consent.

602. Contemporary Theories of  
Learning and Teaching. (3)  
Prerequisite(s): Membership in  
teacher education cohort or instruc- 
tor's consent.

603. Content-Area Literacy Instruc- 
tion. (3)  
Prerequisite(s): Membership in  
teacher education cohort or instruc- 
tor's consent.

604. Education for Democracy. (3)  
Prerequisite(s): Membership in  
teacher education cohort or instruc- 
tor's consent.
### 623. Reading Comprehension Instruction. (3)
Prerequisite(s): Membership in teacher education cohort or instructor’s consent.
Current theories and models of reading comprehension. Implications for comprehension instruction considering cultural, linguistic, and cognitive differences; curriculum; curriculum integration; motivational strategies.

### 624. Writing Instruction. (3)
Prerequisite(s): Membership in teacher education cohort or instructor’s consent.
Writing development, including spelling, handwriting, and vocabulary. Instructional practices for teaching the writing process, integrating reading, listening, speaking, and assessment.

### 625. Literacy Assessments and Interventions. (3)
Prerequisite(s): Membership in teacher education cohort or instructor’s consent.
Formal and informal assessment procedures. Appropriate instructional interventions for students of varying ages, performance levels, and linguistic abilities, particularly struggling students.

### 626. Organization and Administration of Literacy Programs. (3)
Examining ways to organize and administer school and classroom reading programs. Examining issues relating to program types, reading assessment, grouping, grade level articulation, and supervision.

### 627. Research in Literacy. (3)
Prerequisite(s): Ed Ed 641.
Research literature in reading, both classical and current, emphasizing application of findings to educational practice.

### 660. History of Teaching and Teacher Education. (3)
Prerequisite(s): Membership in teacher education cohort or instructor’s consent.
History of teaching as a cross-generational social and cultural activity; teacher education as a professional practice with present-day educational implications.

### 661. Classroom as Culture and Knowledge System. (3)
Prerequisite(s): Membership in teacher education cohort or instructor’s consent.
Classrooms as culture and knowledge systems and how those systems are created and sustained over time.

### 662. Teacher Learning and Development. (3)
Prerequisite(s): Membership in teacher education cohort or instructor’s consent.
Various models and aspects of teacher development. Topics include teacher identity formation, socialization, expertise, life and career cycles, burnout, and renewal.

### 663R. Seminar in Teacher Education. (3)
Prerequisite(s): Membership in teacher education cohort or instructor’s consent.

### 664. Mentoring and Supervision. (3)
Prerequisite(s): Membership in teacher education cohort or instructor’s consent.

### 665. Best Practices in Teacher Education. (3)
Prerequisite(s): Membership in teacher education cohort or instructor’s consent.
Various models and aspects of teacher development. Topics include teacher identity formation, socialization, expertise, life and career cycles, burnout, and renewal.

### 666. Writing Intervention. (3)
Prerequisite(s): Membership in teacher education cohort or instructor’s consent.
Teacher education curriculum; theories and research that support current practice; improving that practice.

### 688R. Internship in Literacy. (1-6)
Current research and educational studies by faculty and students for collegial critique and analysis.

### 691. Introduction to Research Design. (3)
Prerequisite(s): Membership in teacher education cohort or instructor’s consent.
Designing, conducting, analyzing, reporting, and evaluating research studies in education.

### 692. Data Analysis. (3)
Prerequisite(s): T Ed 691.

### 698R. Action Research Project. (1-6)
Developing, observing, gathering, interpreting, and reporting data from action research project. Two project credit hours must be taken during semester of project defense.

### 699R. Master’s Thesis. (1-2)
Formal report/defense of substantive research, evaluation, or curriculum project that makes original contribution to field. Thesis credit hours distributed and accompanied by seminars.

### FACULTY

**Bahr, Damon L., Associate Professor.**
EdD, Brigham Young University, 1988. Mathematics Education; Curriculum and Instruction; Assessment.

**Birrell, James R., Associate Professor.**
EdD, University of Nevada, Las Vegas, 1993. Teacher Education; Multicultural Education; Qualitative Research.

**Bulloch, Robert V., Jr., Professor.**
PhD, Ohio State University, 1976. Teacher Education.

**Cantrell, Pamela P., Associate Professor.**
PhD, University of Wyoming, 2000. Science Education; Teacher Education; Mathematics, Science, and Technology Integration.

**Cutri, Ramona M., Assistant Professor.**
PhD, University of California, Los Angeles, 1997. ESL/Multicultural.

**Draper, Roni Jo, Associate Professor.**
PhD, University of Nevada, Reno, 2000. Literacy Education; Teacher Education; Research Design.

**Egan, M. Winston, Professor.**
PhD, University of Florida, 1974. Special Education; Teacher Education.
School of Technology

Director: Val Hawks
Graduate Coordinator: Barry M. Lunt, (801) 422-2264

265 CTB
Provo, UT 84602-4206
(801) 422-7433

The Program of Studies

The master of science in technology degree is designed to develop leaders who respond to the needs of a technology-based society for advanced technical, managerial, and educational personnel. Graduate level leadership and technology application capabilities are developed through rigorous courses and in-depth research and development experiences. The MS in technology provides opportunities for students to engage in applied technical research that adds to the knowledge of relevant practice or solves problems that arise in the workplace.

One degree is offered through the School of Technology:

Technology—MS

Technology—MS

The School of Technology, an academic unit in the College of Engineering and Technology, provides a master of science degree with specialization in Construction Management, Information Technology, Manufacturing Systems, or Technology and Engineering Education. Twenty-two faculty professionals having diverse educational and experiential backgrounds provide strong research expertise and student mentoring. The faculty are well-published, belong to professional societies, and are involved in developing and commercializing recognized software and hardware products used throughout the world.

Admission and Entry.

• Semesters of entry and application deadlines: fall, spring, summer, February 15 (U.S. and international) Note that the Fall Semester deadline is earlier than the University deadline; winter, September 15 (U.S. and international).

• Application requirements: 3.0 or higher GPA. Consult graduate coordinator for additional information.

• Entrance examinations: GRE general test. For students considering construction management (CM) or the product development program (PD), the GMAT test may be substituted for the GRE. Minimum GRE and GMAT scores must be above the 55th percentile in all sections. For all international applicants whose native language is not English, a minimum TOEFL score of 580 (paper) or 237 (computer) or a minimum IELTS score of 7 is also required. International applicants who have obtained their degree(s) outside the U.S. must submit all official transcripts, diplomas, and mark sheets to one of the following agencies for an evaluation: Education Credential Evaluators (ECE), International Education Research Foundation (IERF), or World Education Services (WES).

• Prerequisite: baccalaureate degree in a related field with program approval. Those students entering this program from related fields may be required to take additional prerequisite courses.

Requirements for Degree.
The technology MS degree must be completed within three years.

• Credit hours: 24 minimum approved course hours plus 6 thesis hours (Tech 699R).

• Required courses: Tech 601, 638, 699R.

• Specialization: minimum 18 hours from approved courses in the area of study. List of proposed courses required.

• Examination: comprehensive exam at end of course work and oral defense of thesis.

Construction Management

Advisor: Kevin Burr

This specialization prepares graduates to be successful leaders in upper-level management positions within an increasingly demanding...
construction profession. Graduate curricula is designed to increase both the breadth and depth of knowledge in the management of construction projects and enterprises. With advisor approval, students are encouraged to take graduate courses in business management and civil engineering and to prepare for potential careers as faculty in construction management.

- Required courses: CM 510, 600, 640, 650. (CM 601 also required for non-CM undergraduates.)
- Electives: 6 credit hours.

**Information Technology**

*Advisor: Barry Lunt*

Those qualifying for this specialization prepare for information technology (IT) leadership positions in an organization of their choice. The curriculum addresses the many applications and developments of IT, focusing on those in science, engineering, and technology. The MS degree is awarded to students who have mastered a professional level of education in core and related areas of information technologies.

- Required courses: three courses from the following: IT 529, 531, 548, 566, 650.
- Approved electives: 9 hours.

**Manufacturing Systems**

*Advisor: Mike Miles*

Students who have graduated in manufacturing engineering technology or related technical areas will find that this specialization is an opportunity to prepare for a career in a rapidly growing field. Increased international focus on productivity, quality, and automation has thrust the most advanced concepts of technology and management directly into the manufacturing arena. The critical need for integrating and applying these concepts into manufacturing systems is central to this specialization.

- Required courses: 18 credit hours from the following list, based upon committee approval: Mfg 531, 532, 533, 555, 572, 574, 580.

**Technology and Engineering Education**

*Advisor: Ron Terry*

The technology and engineering education specialization helps students who have graduated in technology and/or engineering teacher education or related areas to be more effective leaders. The opportunity will be theirs to achieve knowledge and skills for leadership in teaching, supervising, and managing in schools or industry. Through a research-oriented thesis, students will develop writing and research abilities related to technology and engineering education.

- Required courses: Stat 510, TEE 610, 625.
- Approved electives: 11 hours, based upon committee assignment.

**FINANCIAL ASSISTANCE**

The School of Technology offers a limited number of scholarships. Application for financial aid is made through the program’s graduate coordinator.

**RESOURCES AND OPPORTUNITIES**

Nationally recognized instructional laboratories are available to provide students with the most current concepts, curriculum, software, equipment, and laboratory instructional/physical organization.

**COURSE DESCRIPTIONS**

**Construction Management**

510. Integrating Construction Software. (3)
Prerequisite(s): CM 411 or equivalent.
Integrating information generated through state-of-the-art hardware and software using scheduling, cost control, estimating, spreadsheets, databases, and word processing to improve the construction process.

600. Trends and Issues in Managing Construction. (3)
Current political, regulatory, technological, environmental, and leadership trends and issues.

601. Construction Materials and Methods. (3)
Advanced applications of construction materials, methods, and processes integrated with MEP systems to create world-class projects. Global construction methods and challenges addressed.

620. Innovative Construction Management Controls. (3)
Innovative estimating, bidding, and scheduling techniques; integrating the estimate and schedule to create a system for managing and controlling costs and time.

640. Construction Productivity Improvement. (3)
Improving construction productivity and quality through management issues and field issues. Overall organizational and management strategies; techniques for observation, analysis, and problem solving to improve on-side productivity.

650. Construction Company Development and Strategic Planning. (3)
Advanced topics in construction company operations and management, including strategic planning processes, company growth and development, systems management, and performance analyses.

695R. Special Topics in Construction Management. (3)
Based on needs, interest, and significance, topics important to leaders and managers in the construction industry.

**Information Technology**

515R. Special Topics in Information Technology. (1-3)

529. Advanced Networking. (3)
Prerequisite(s): IT 344, 347; or equivalents.
Analyzing, selecting, configuring, monitoring, and managing of computer network equipment. SNMP-based monitoring and control in process of fault isolation and root cause analysis.
### Manufacturing Engineering Technology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>531.</td>
<td>Advanced Computer-Aided Manufacturing Programming</td>
<td>(3)</td>
<td>Prerequisite(s): previous introductory computer-aided manufacturing programming; senior or graduate status or instructor's consent. CAD/CAM programming techniques and requirements for manufacturing components on computer numerical-control machine tools, emphasizing CAM programming, postprocessors, and CAM software evaluation.</td>
</tr>
<tr>
<td>532.</td>
<td>Manufacturing Systems</td>
<td>(3)</td>
<td>Prerequisite(s): Mfg 480 or instructor’s consent. Analyzing lean manufacturing systems. Numerous examples and case studies from industry demonstrating principles of lean production, inventory management, and lean distribution. Project with a local company to gain confidence with these principles in an industrial setting.</td>
</tr>
<tr>
<td>533.</td>
<td>Manufacturing Information Systems</td>
<td>(3)</td>
<td>Prerequisite(s): Graduate standing or instructor’s consent. Applying and integrating software and information technologies in planning, executing, and monitoring production operations.</td>
</tr>
<tr>
<td>534.</td>
<td>Composite Materials and Processes</td>
<td>(3)</td>
<td>Prerequisite(s): Graduation standing or instructor’s consent. Structure, processing, properties, and uses of composite materials, including various manufacturing methods and the relationship between properties and fabrication.</td>
</tr>
<tr>
<td>535.</td>
<td>Design for Manufacturing</td>
<td>(3)</td>
<td>Prerequisite(s): Graduate standing or instructor’s consent. Introduction to design evaluation techniques, including design for mechanical assembly, printed circuit board assembly, plastic injection molding, machining, and sheet metal fabrication.</td>
</tr>
<tr>
<td>536.</td>
<td>Advanced Tool Design</td>
<td>(3)</td>
<td>Prerequisite(s): Instructor’s consent. Advanced design of net-shape products utilizing CAD and CAE methods. Plastic injection mold design and construction. Rapid prototyping and injection molding project.</td>
</tr>
</tbody>
</table>

### Technology

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Units</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>601.</td>
<td>Research and Development in Technology</td>
<td>(3)</td>
<td>Successful strategies in graduate programs. Identifying appropriate direction of research and study. Research tools as aids in decision making: strategies, literature, logic, survey techniques, research design, statistics, computers. Preparing proposals for research papers and thesis research; organizing first three thesis chapters.</td>
</tr>
<tr>
<td>638.</td>
<td>Technology Leadership</td>
<td>(3)</td>
<td>Strategic planning and policy development. Theoretical and practical leadership aspects of conceptual and implementation processes. Articulation and team building among various organizations. Ethics and conflict resolution. Developing and implementing solutions to special problems; advanced skills/concepts in traditional and emerging technology areas.</td>
</tr>
<tr>
<td>695R.</td>
<td>Technology Special Topics</td>
<td>(0.5-9)</td>
<td>Topics arranged in consultation with instructor.</td>
</tr>
<tr>
<td>696R.</td>
<td>Advanced Technological Processes</td>
<td>(0.5-3)</td>
<td>Developing and implementing solutions to special problems; advanced skills/concepts in traditional and emerging technology areas.</td>
</tr>
</tbody>
</table>
699R. Master’s Thesis. (0.5-9)
Prerequisite(s): departmental consent.

Technology Teacher Education
593R. Workshop in Applied Technology Education. (0.5-2)
Teaching and learning technological literacy skills. Reviewing and participating in current technological advances, with a focus on teaching practice and methods.
Maximum of 2 credit hours applicable to MS program. Fee.

610. History and Philosophy of Technology Education. (2)
Historical and philosophical basis of today’s technology programs.

625. Teaching and Learning in Technology Education. (2)
Identifying, developing, and implementing instructional strategies unique to technology education.

630. Adult Applied Technology Programs. (2)
Identifying, developing, and implementing relevant applied technology training programs.

635. Facility Design for Applied Technology Programs. (2)
Developing instructional facilities and educational specifications for vocational and technology laboratories.

675. Curriculum Development in Technology Education. (3)
Prerequisite(s): Graduate standing.

Faculty
Adams, R. Brent, Professor. MFA, University of Utah, 1992. 3-D Computer Graphics; Animation.
Burr, Kevin L., Associate Professor. EdD, Oklahoma State University, 1997. Construction Management; Teacher Education.
Campbell, Jeffrey L., Associate Professor. PhD, University of Idaho, 1999. Facilities Management; Strategic Planning; Construction Marketing.

Christensen, Kip W., Professor. PhD, Colorado State University, 1991. Teacher Education.
Gonzales, Ronald E., Professor. PhD, Purdue University, 1982. Teacher Education.
Harrell, Charles R., Associate Professor. PhD, University of Denmark, 1988. Simulation.
Hawks, Val D., Associate Professor. PhD, Gonzaga University, 2005. Leadership; Global Issues; Quality; Ethics.
Howell, Bryan, Associate Professor. MFA, University of Texas, Austin, 2003. Industrial Design.
Hutchings, Mark D., Assistant Professor. PhD, Texas A&M, 2002. Construction Company Management; Legal Aspects of Construction; Real Estate, Investment, and Development.
Koikkonen, Kent E., Associate Professor. MS, Brigham Young University, 1976. CNC Software Development; Processing Languages; Parametric Programming.
Miles, Michael P., Associate Professor. PhD, Ecole des Mines de Paris, 1995. Lean Manufacturing; Materials Science; Finite Element Analysis.
Shumway, Steven L., Associate Professor. PhD, Utah State University, 1999. Student Learning and Motivation Theory.
Skaggs, Paul T., Associate Professor. MFA, Rochester Institute of Technology, 2002. Interior Design.
Strong, A. Brent, Professor. PhD, University of Utah, 1971. Composites; Plasma Surface Treatments; Plastics.
Terry, Ronald E., Professor. PhD, Brigham Young University, 1976. Student Learning and Pedagogy of Engineering and Technology.
The Department of Theatre and Media Arts supports the university’s synthesis of religious, humanistic, artistic, and professional education. The department serves people who love theatre and media arts and who believe in the value of the arts in education.

Recognizing the need to enrich people’s lives through theatre and media arts, the department seeks excellence in the study and practice of these arts by stressing rigorous scholarship, high artistic standards, and Christian behavior. The department (1) educates broadly in the best liberal arts tradition; (2) develops disciplined scholars, artists, and educators; and (3) prepares articulate, thinking, caring individuals who will effectively serve their professions, their communities, and their church.

We believe in the power of the arts and in the capacity of theatre and media arts to enlighten, humanize, civilize, and edify. The desire of human beings through the ages to create art and to pursue beauty for its own sake becomes, in the light of the gospel, powerful evidence of people’s divine nature and parentage. Such a spiritual assurance of the eternal validity and importance of the arts brings, in turn, greater meaning and satisfaction to the study of theatre and media arts at BYU.

Three degrees are offered through the Department of Theatre and Media Arts: Theatre and Media Arts—MA, Production Design—MFA, and Theatre and Media Arts—PhD.

**Theatre and Media Arts—MA**

Areas of emphasis: Theatre Arts History, Theory, Criticism; Media Education.

Note: The department is not offering Media Arts History, Theory, Criticism or Theatre for Young Audience emphases for the 2008–2009 academic year. See the department for further details.

**Admission and Entry.**

- Semesters of entry and application deadlines: fall, February 1 (U.S. and international) odd-numbered years.
- Application requirements: entrance examination is GRE general test (scores subject to review); samples of written work demonstrating capacity to function at acceptable graduate student entry level; letter of intent; letters of recommendation.
- Prerequisite: theatre history, theory, criticism: acceptable undergraduate background in theatre arts; media education: teacher certification or experience teaching in a public, private or non-profit secondary setting.

**Requirements for Degree.**

- Credit hours (32): minimum 26 course work hours plus 6 thesis hours (TMA 699R) (minimum 20 hours must be in theatre/media arts or theatre/media arts–related courses).
- Required courses: all MA students will complete TMA 690; students in theatre arts history, theory, or criticism will also complete TMA 600, 601, 602, 696R and 3 hours of media arts history, theory, or criticism; students in media education will also complete TMA 668, 680,687, 689, 691, 700; all MA students will complete their coursework with electives, selected in consultation with the advisory committee.
- Minor (optional): any approved minor.
- Production (recommended): at least one significant production experience, determined in consultation with advisory committee (evaluation will occur immediately after the production).
- Thesis: thesis must make a genuine contribution to body of knowledge and meet highest academic standards. Three kinds of thesis research will be accepted:
  - (A) scholarly analysis of theatre or media education history, theory, or criticism; (B) research and strong creative achievement in theatre arts or media education; (C) measurement studies or action research.
- Examinations: (A) comprehensive written examination; (B) comprehensive oral examination; (C) oral defense of thesis.

**Production Design—MFA**

**Admission and Entry.**

- Semesters of entry and application deadlines: fall, February 1 (U.S. and international), odd-numbered years.
- Application requirements: entrance examination is GRE general test (scores subject to review); résumé; design placement examination of portfolio review, as determined by appropriate area committee; samples of written work demonstrating capacity to function at acceptable graduate student entry level; interview with area committee.
- Prerequisite: TMA 112, 123, 201, 202, 236, 262, 265A,B, 267, 362, 395, 396, 462; VASTu 108, 422R; or equivalents.

**Requirements for Degree.**

- Credit hours: minimum 60 course work hours, including 6 project hours (TMA 698R).
- Electives (3 hours selected in consultation with advisory committee).
- Off-campus internship (TMA 599R).
- Project (minimum 6 hours; TMA 698R): costume design for and supervision of at least one full-length production (must be reported in thesis form and accepted by area committee).
• Examinations: (A) comprehensive written examination; (B) comprehensive oral examination; and (C) oral defense of project.

Theatre and Media Arts—PhD
Areas of emphasis: Theatre or Media Arts History, Theory, Criticism; Theatre for Young Audiences.

Note: The department is not admitting PhD students for the 2008–2009 academic year. See the department for further details.

FINANCIAL ASSISTANCE
The following financial support is available through the Department of Theatre and Media Arts:

Assistantships. Graduate students may work in many areas, including performance, production, research, and teaching.

Applicants must have appropriate background and experience to be considered. Assistantships range up to half-time; pay is based on applicant’s experience, year in school, and the type of assistantship.

Internships. The department occasionally offers a quarter-time internship.

Supplemental Tuition Awards. A number of supplemental tuition awards are offered by the department during all semesters and terms. The size of these awards is determined by the applicants’ qualifications and the availability of funds.

RESOURCES AND OPPORTUNITIES
The Harris Fine Arts Center houses the Department of Theatre and Media Arts, five theatres, two concert halls, rehearsal rooms, three media arts labs, two television sound stages, a PBS affiliate, and a 24-hour FM station. These facilities, as well as a feature-film studio near campus, serve as laboratories for students.

Graduate students also may perform individually and with some of the many talented groups on campus.

For a more detailed description of the graduate program requirements, send for a copy of the department’s bulletin.

COURSE DESCRIPTIONS

515R. Workshop 3: Special Projects. (1-6)
Prerequisite(s): TMA 114 and instructor’s consent.
Advanced special projects in theatre or media arts.

516R. Theatre and Media Arts Instruction. (1-3)
Prerequisite(s): TMA 114 and instructor’s consent.
Developing teaching methods and techniques for instruction in theatre and media arts classroom.

536R. Directing Workshop. (0.5-3)
Prerequisite(s): TMA 436 or equivalent. By application only.
Advanced experience in production: directing.

550R. Theatre for Young Audiences. (3)
Prerequisite(s): TMA 114 or equivalent.
Theories, techniques, and experience in creating formal drama for child and youth audiences.

551R. Playwriting 4. (3)
Prerequisite(s): TMA 451 or equivalent; instructor’s consent.
Workshop course designed to assist more advanced students in furthering their playwriting skills by writing or rewriting a play.

552. Improvisation. (3)
Prerequisite(s): Instructor’s consent.
Informal or improvised dramatic techniques with children, adolescents, and/or adults.

557. Storytelling. (2)
Prerequisite(s): TMA 114 or instructor’s consent.
Theories, techniques, and practice in the art of telling spellbinding stories.

561R. Stage Management Project. (1-6)
Prerequisite(s): TMA 361, 461R; or equivalents.
Hands-on training for student stage managers through assigned realized productions, including supervision through full positions on stage and media productions. Department-arranged assignments.

562. Costume Design 3. (2)
Prerequisite(s): TMA 362, 462; or equivalents.
Advanced conceptual approaches to costume design. Strong background in costuming required. Designers for departmental productions will be selected from students enrolled in this course.

563. Scenic Design 3. (2)
Prerequisite(s): TMA 363, 463; or equivalents.
Advanced conceptual scenic design. Assumes strong background in scenography. Designers for departmental productions may be selected from students enrolled in this course.

564. Lighting Design 3. (2)
Prerequisite(s): TMA 114, 364; or equivalents.
Advanced conceptual lighting projects. Assumes strong background in lighting. Designers for departmental productions may be selected from students enrolled in this course.

565R. Specialty Costumes. (2-6)
Prerequisite(s): Instructor’s consent.
Advanced skills in millinery, dyes, footwear, and allied project areas.

567R. Makeup Project. (1-6)
Prerequisite(s): TMA 267 and instructor’s consent.
PRACTICUM IN MAKEUP DESIGN AND APPLICATION. Departmental production designers and teaching assistants will be enrolled in this course.

568. Sound. (2)
Prerequisite(s): Theatre arts foundation courses.
Basics in sound design and reinforcement. Work on departmental productions.
569R. Design for Production. (1-4)
Prerequisite(s): TMA 369 and instructor’s consent.
   Practical experience working with departmental designers; related topics.

580R. Introduction to Dramaturgy. (3)
Prerequisite(s): Instructor’s consent.
   Graduate-level research and application of hands-on theatrical skills in four critical studies areas: literary management, production dramaturgy, new play development, educational outreach.

585R. Production Dramaturgy. (1-3)
Prerequisite(s): TMA 580.
   Experience as lead dramaturg for main-stage productions; building casebooks and overseeing audience education efforts. Rehearsal and production meeting attendance required.

599R. Academic Internship. (1-9)
Prerequisite(s): Major status; theatre or media arts foundation courses. By application only.
   Off-campus experience or internship in theatre or media arts.

600. Theatre History and Theory 1: Greek through Renaissance. (3)
Prerequisite(s): TMA 201, 202; or equivalents.
   Theatre history sites--Greek through Renaissance--emphasizing existing archives, representative texts and cultural documents, and contemporary criticism.

601. Theatre History and Theory 2: Elizabethan through Eighteenth Century. (3)
Prerequisite(s): TMA 201, 202; or equivalents.
   Theatre history sites--Elizabethan through eighteenth century--emphasizing existing archives, representative texts and cultural documents, and contemporary criticism.

602. Theatre History and Theory 3: Nineteenth and Twentieth Centuries. (3)
Prerequisite(s): TMA 201, 202; or equivalents.
   Theatre history sites--nineteenth through twentieth centuries--emphasizing existing archives, representative texts and cultural documents, and contemporary criticism.

650R. Computer Graphics for Stage and Screen. (3)
Prerequisite(s): Acceptance to MFA costume program; instructor’s consent.
   Instruction in current computer software related to theatre and media arts design, including several basic graphics packages; between-program projects to enhance skills; assigned projects for current production.

651. Costume Graphics. (3)
Prerequisite(s): Instructor’s consent.
   Figure-drawing approaches, clothing techniques, and various mediums applied to costume rendering, layout, and presentation.

652R. Costume Approaches. (3)
Prerequisite(s): Instructor’s consent.
   Alternating studies in (1) costume design reflecting directorial concepts and (2) specific applications for dance, opera, spectaculars, puppetry, and avant-garde productions.

653. Styles. (3)
Prerequisite(s): Instructor’s consent.
   Guided research and application to visual design for major movements of theatre history.

654R. Period Foundations. (3)
Prerequisite(s): Instructor’s consent.
   Costume patterning and construction techniques for under structures. One major fashion era covered in each course rotation.

655R. Women’s Period Fashions. (3)
Prerequisite(s): Instructor’s consent.
   Costume patterning and construction techniques for women’s over garments. One major fashion era covered in each course rotation.

656R. Men’s Period Fashions. (3)
Prerequisite(s): Instructor’s consent.
   Costume patterning and construction techniques for men’s over garments. One major fashion era covered in each course rotation.

657R. Costume Topics. (3)
Prerequisite(s): Instructor’s consent.
   Rotating area studies emphasizing costume history, shop management, and tailoring techniques.

658R. Project: Assistant Design. (1-4)
Prerequisite(s): Acceptance to MFA costume program; instructor’s consent.
   Applied projects in assisting costume design for realized productions in theatre and media arts.

659R. Project: Design. (1-6)
Prerequisite(s): Acceptance to MFA costume program; instructor’s consent.
   Applied projects in costume design for realized productions in theatre and media arts.

668R. Special Studies in Theatre or Media Arts. (1-3)
Prerequisite(s): Acceptance to MFA; instructor’s consent.
   Supervised research in selected historical, theoretical, or critical problems.

671R. Advanced Directing. (3)
Prerequisite(s): TMA 201, 202, 235, 335; or equivalents.
   Theories and techniques of directing for the stage through directing projects for public presentation.

673. Advanced Media Arts Production. (1-3)
Prerequisite(s): TMA 185, 187, 241 (or equivalents); instructor’s consent.
   Principles and techniques of advanced media production, information gathering, conceptualizing and storytelling for broadcast production.

674R. Projects in Theatre or Media Arts. (1-4)
Prerequisite(s): TMA 685, 687, 689, 690.
   Supervised applied theory in playwriting/screenwriting, directing, acting, design, criticism, stagecraft, or curriculum design.

680. Media Production Experience for Secondary Teachers. (3)
Prerequisite(s): TMA 690.
   Basics of film and video production as they apply to the secondary classroom/student.
687. Pedagogical Theory and Methods of Media Instruction. (3)
Prerequisite(s): TMA 690.
Educational methods and techniques for addressing media in the secondary classroom; educational models and theories related to cultural and historical representations of media technologies.

688R. Academic Internship. (1-9)
Off-campus experience or internship in theatre or media arts.

689. Film History. (3)
Prerequisite(s): Acceptance to the MA program.
Social, aesthetic, financial, and technical dimensions of film and media. Key methodologies for teaching film history.

690. Introduction to Graduate Studies in Theatre and Media Arts. (3)
Introductory seminar required of all graduate students during first semester or term that class is offered.

691. Screens Theory. (3)
Prerequisite(s): TMA 689, 690.
Identifying and analyzing similarities and discontinuities in moving images, from classical film through digital media.

696R. Graduate Design Seminar. (3)
Prerequisite(s): Acceptance to MFA costume program; instructor’s consent.
Costume, scenic, and lighting design in relation to their collaborative support of production concept and approach. Previous design experience not required.

700R. Master Seminar. (3)
Selected topics.

797R. Research. (1-18)
799R. Doctoral Dissertation. (1-18)

FACULTY

Duncan, Dean, Associate Professor.
PhD, University of Glasgow, Scotland, 1999. Film History; Theory; Criticism.

Farahnakian, Mary, Associate Professor.
PhD, Brigham Young University, 1977. Costume Design; Costume History.

Fielding, Eric, Professor. MFA,
Goodman School of Drama, Art Institute of Chicago, 1976. Set Design; Lighting Design; Theatre Management.

Harrop-Purser, Laurie, Assistant Professor.

Heiner, Barta, Associate Professor.
MFA, American Conservatory Theatre, 1977. Acting; Directing.

Jensen, Amy Petersen, Assistant Professor.
PhD, University of Illinois at Urbana Champaign, 2003. Media Education; Secondary Education.

Jones, Megan Sanborn, Assistant Professor.
PhD, University of Minnesota, 2003. Theatre History; Theory; Criticism.

Larsen, Darl, Associate Professor.
PhD, Northern Illinois University, 2000. Film History; Theory; Criticism.

Morgan, David E., Associate Professor.
MFA, National Theatre Conservatory, 1990. Acting; Directing.

Nelson, George D., Associate Professor.
MFA, University of Washington, 1979. Child Drama; Secondary Education.

Parkin, Jeffrey L., Associate Teaching Professor.
MFA, University of Southern California, 1991. Media Arts Production.

Samuelsen, Eric, Associate Professor.
PhD, Indiana University, 1991. Creative Writing; Theatre History; Theory; Criticism.

Scanlon, Rory R., Professor.
MFA, University of Illinois, 1984. Set and Costume Design; Costume History; Lighting Design.
The Program of Studies

Three postgraduate degrees are offered in the Department of Visual Arts: Art Education—MA, Art History and Curatorial Studies—MA, and Studio Art—MFA. Each requires practicing the component disciplines of art, as well as acquiring certain skills, knowledge, and understandings.

These three strong graduate programs examine and promote the study, creation, and teaching of the visual arts, historically and from contemporary perspectives. Faculty in each area are recognized leading practitioners as well as students of the theoretical, philosophical, and professional issues of their respective academic specialties. The academic thrust of graduate studies in the Department of Visual Arts provides a rich blend of the theoretical and the practical for a balanced understanding of art. High standards for study and practice in each degree program promote the high levels of professional practice and accomplishment expected of and achieved by our graduates.

The average number of students in each program and the duration of each program is as follows:

- Art Education: twelve students as a cohort group in program; two years to completion.
- Art History: sixteen students in program; three years to completion.
- Studio Art: fourteen students in program; two years to completion.

Art Education—MA

The MA in art education is a cohort program intended for those who plan to pursue a PhD or EdD in art education. It is also for those teaching and making art who desire intensive curriculum development and additional content and skills in the disciplines of a comprehensive art program.

Admission and Entry.
- Application requirements: CD of applicant’s recent work (for specific information regarding CD submission, please contact the department); one or two written papers demonstrating applicant’s writing skills; minimum 3.0 GPA for last 60 hours.
- Prerequisite: baccalaureate degree in art education from an accredited institution (applicants holding a minor in art education from an accredited institution). One 3-hour curatorial museum internship may be taken in place of a topical seminar.
- Entrance examination: GRE.

Requirements for Degree.
- Credit hours (36 hours): minimum 30 course work hours plus 6 thesis hours. Course work hours primarily from 500- and 600-level courses (no more than 9 hours of 300- or 400-level courses may apply).
- Course requirements: 15 hours of core art education seminar (VAEd 678R); 12 hours of VAEd 578R (3 hours of digital art; 9 hours of studio art); 3 hours of art history courses; 6 thesis hours (VAEd 699R).
- Select graduate committee and submit study list no later than second week of second semester.
- Examinations: comprehensive examination and oral defense of thesis.

Art History and Curatorial Studies—MA

The MA in art history and curatorial studies is designed to prepare students for advanced graduate study at the PhD level and to provide a foundation for students desiring a career in a museum or art gallery.

Admission and Entry.
- Semesters of entry and application deadlines: fall, February 1 (U.S. and international).
- Application requirements: minimum 3.5 GPA for last 60 hours.
- Prerequisite: baccalaureate degree in art history or related field, including at least 18 credit hours in art history above the introductory survey levels.
- Entrance examination: GRE.

Requirements for Degree.
- Credit hours (30 hours): minimum of eight ArtHC 500-level seminars (three theory and five topical) plus 6 thesis hours (ArtHC 699R). One 3-hour curatorial museum internship may be taken in place of a topical seminar.
- Required courses: the theory core (ArtHC 500, 505, 510) is required. Other seminars will be selected in consultation with the graduate coordinator and graduate committee chair. The MA program is designed to allow maximum exposure to the various areas of art history and curatorial studies.
- Language requirement: reading knowledge of at least one foreign language, preferably French, German, or Italian; similar competency required in a second language by end of program.
- Select major area of emphasis: ancient, early Christian/Byzantine, medieval, Renaissance, baroque, eighteenth-century, nineteenth-century, American, European modernism, contemporary, curatorial studies.
- Select a graduate committee based on your major area during first semester of studies.
- Examinations: (A) comprehensive exam; (B) oral defense of thesis.
- Thesis.
**Studio Art—MFA**

A terminal degree, the MFA in art is dedicated to generating artists with significant skills and understandings that can influence the discipline. The MFA has four areas of specialization: Ceramics, Painting-Drawing, Printmaking-Drawing, and Sculpture. Each area requires 60 credit hours. A minor in art history may be earned by completing an additional 9 hours with the approval of the art history area head.

**Admission and Entry.**

- Semesters of entry and application deadlines: fall, February 1 (U.S. and international) Note: The number of resident MFA candidates is restricted by availability of individual studio space.
- Application requirements: minimum 3.0 GPA for last 60 hours; complete university and department graduate application forms; submit a twenty-slide portfolio of applicant’s work.
- Prerequisite: baccalaureate degree in art or equivalent with minimum 20 hours of upper-division coursework and 12 hours of art history.

Students will be required to enroll in a minimum of 9 credit hours each semester to maintain their status within the program.

Only credit earning 3.0 or better can be applied toward graduation. Students who fall below this standard will be placed on academic probation. If they fall below this average in any semester following, they will be terminated from the program.

**Requirements for Degree.**

- Credit hours:
  - MFA degree (60 hours): minimum 58 hours of approved coursework, plus 2 hours of final project report.
  - With an art history minor (69 hours): minimum 9 graduate hours of art history seminars in addition to above requirements. (Art history minor must be approved by art history area head.)
- Time limitations: the degree is a three-year program and must be completed within five years. After two years of residency there is no guarantee of financial assistance or studio privileges.
- Course requirements:
  - Core classes (8 hours): VAStu 640 (2), art in theory (ArtHC 500, 505, 510, or VAStu 620) (6).
  - Studio emphasis (38 hours): VAStu 619R (6); 680R (32); 694R (10).
  - Art history (6 hours including 3 hours of contemporary art that may be replaced with 350 or 355 with advisor approval). Electives (6 hours).
  - Final project (2 hours).
- Evaluations: an annual full faculty review is required upon completion of candidate's second semester. After a successful faculty review, student is required to enroll (with their advisor) in one hour of VAStu 694R every semester until completion of final project report is accomplished.
- Oral defense and examination of final project: the candidate must engage his or her committee for the oral defense after installation of the final project and completion of the final project report. Defense must be scheduled at least two weeks prior.
- Final project: to be produced and exhibited in the format of a solo exhibition.
- Final project report: candidates will submit a written final project report.

**FINANCIAL ASSISTANCE**

Financial assistance is available through tuition scholarships, supplemental awards, and teaching assistantships.

**RESOURCES AND OPPORTUNITIES**

**Museum of Art.** BYU’s Museum of Art provides a rich and diverse environment for the presentation and research of art and the various disciplines related to its analysis, theory, history, display, and reception. Whether it is an individual work, a collection, or an entire exhibition, students are encouraged to look, reflect, analyze, challenge, and enjoy.

Faculty and students engage collaboratively with the museum in projects that yield exhibitions, texts, documentaries, and other forms of presentation. Major exhibitions from the museum’s own collection of over 15,000 works and from other important collections are brought to the museum to provoke inquiry and to contribute to the university’s academic discourse. Lectures, conferences, performances, and other educational experiences occur regularly in the museum’s varied and versatile spaces.

**Art Studio Space.** Studio space is provided for graduate students in all emphasis areas.

**Art Resource Center.** The center is an important library resource for graduate study of content, methods of inquiry, and methodology in the visual arts disciplines intrinsic to current art education programs. A wide variety of books, journals, art reproductions, curricula, and other visual materials and aids are available.

**Art History Slide Library.** A major resource for graduate student research and teaching, the slide library houses a collection of 120,000 slide reproductions of paintings, sculptures, architectural structures, and various minor arts. Furthermore, a number of students work in the library on assistantships or internships. A computerized indexing system enables a student to seek and find materials under broad categories of iconographic content—for example, art work dealing with animals, death, or certain kinds of landscapes.
**Course Descriptions**

**Art History and Curatorial Studies**

500. Art in Theory: Spectatorship. (3)  
Prerequisite(s): Graduate status.  
Review and critique of major theoretical approaches in art history, emphasizing the philosophical relationship between viewer and object.

505. Art in Theory: Language. (3)  
Prerequisite(s): Graduate status.  
Review and critique of major theoretical approaches in art history, emphasizing the recent interest in language and semiotics.

510. Art in Theory: Context. (3)  
Prerequisite(s): Graduate status.  
Topics dealing with current educational issues and trends in art education. Seminar topics emphasizing issues and trends in art education. Topics investigated, discussed, and evaluated, depending on student needs.

512R. Studies in Islamic Art. (3)  
Prerequisite(s): graduate status.  
Selected topics in Islamic art.

514R. Studies in Chinese Art. (3)  
Prerequisite(s): graduate status.  
Selected topics in Chinese art.

516R. Studies in Japanese Art. (3)  
Prerequisite(s): graduate status.  
Selected topics in Japanese art.

520R. Studies in Ancient Art. (3)  
Selected topics in Egyptian, Greek, and Roman art.

530R. Studies in Medieval Art. (3)  
Selected topics in early Christian, Byzantine, Romanesque, and Gothic art.

540R. Studies in Renaissance Art. (3)  
Selected topics in Northern and Southern Renaissance art.

550R. Studies in Baroque Art. (3)  
Selected topics in northern and southern baroque art.

560R. Studies in Eighteenth- and Nineteenth-Century Art. (3)  
Selected topics in eighteenth- and nineteenth-century art of Europe and America.

569R. Master’s Thesis. (0.5-6)  
Visual Arts Studio

619R. Studio Methodologies Seminar. (1)  
Prerequisite(s): Graduate status.  
Seminar instruction and individual studio critiques from visiting artists.

621R. Drawing Studio. (3)  
Prerequisite(s): Admission to graduate program.

622R. Figure-Drawing Studio. (3)  
Prerequisite(s): VASTu 621R.

627R. Painting Studio. (3)

640. Graduate Business Practices. (2)  
Prerequisite(s): Graduate status.  
Business practices and theories associated with managing a career in art.

650R. Intaglio Studio. (3)

651R. Lithograph Studio. (3)  
Topics dealing with current educational issues and trends in art education. Seminar topics emphasizing issues and trends in art education. Topics investigated, discussed, and evaluated, depending on student needs.

678R. Art Education Seminar: Issues and Trends. (3)  
Seminar topics emphasizing issues and trends in art education. Topics investigated, discussed, and evaluated, depending on student needs.

**Faculty**

**Adams, Paul,** Assistant Professor.  
MFA, Utah State University, 1996.  
Photography.

**Allen, Von D.,** Associate Professor.  
MFA, Syracuse University, 1983.  
Ceramics.
Andersen, Bethanne, Associate Professor. MFA, Brigham Young University, 1979. Illustration.

Barrett, Robert, Professor. MFA, University of Iowa, 1976. Illustration.

Barsch, Wulf E., Professor. MFA, Brigham Young University, 1972. Painting.

Barton, Garold C., Professor. MFA, Ohio State University, 1994. Printmaking.

Beattie, Donna Kay, Professor. PhD, University of Kansas, 1990. Art Education.

Brinkerhoff, Val, Associate Professor. MFA, Utah State University, 1987. Photography.

Christensen, Brian D., Associate Professor. MFA, Washington University, St. Louis, 1992. Ceramics.

Draper, Bryon, Associate Professor. MFA, Brigham Young University, 1995. Sculpture.

Everett, Peter, Associate Professor. MFA, Pratt Institute, 2000. Painting.

Gillett, Eric, Assistant Professor. MFA, University of Utah, 2003. Graphic Design.


Gray, Sharon R., Associate Professor. EdD, Brigham Young University, 1992. Art Education.

Haltern, Hagen G., Associate Professor. MFA, Kunstakademie, Dusseldorf, Germany, 1976. Painting.


Ostraff, Joseph E., Professor. MFA, University of Washington, 1982. Painting.

Peacock, Martha, Professor. PhD, Ohio State University, 1989. History of Netherlandish Art.
