UNIVERSITY of LOUISVILLE

dare to be great

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Summer 2003—Spring 2005
Graduate Catalog

Revised August 2003

The University of Louisville is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (1866 Southern Lane, Decatur, Georgia 30033–4907; Telephone number (404) 679–4501) to award associate, bachelor, master's, doctoral, and first professional degrees (D.M.D., J.D., M.D.).

The University of Louisville reserves the right to change programs of study, academic policies, academic requirements, fees, schedules of courses, procedures for the confirmation of degrees, or the announced academic calendar without prior notice.

The course descriptions provided herein are for the guidance of students. The University, however, reserves the right to change course descriptions without prior notice.

The provisions of this publication do not constitute an express or implied contract between the University and any member of the student body, faculty, or general public.

The University of Louisville is an equal-opportunity institution and does not discriminate against persons because of race, religion, sex, age, handicap, color, citizenship or national origin.

Inquiries or complaints about illegal discrimination including sexual harrassment or handicap access can be made to the Affirmative Action director (852–6538) if response from the unit staff is unsatisfactory.

The *Redbook* is the official statement of the organizational structure, the rules of governance and procedures and university-wide policies of the University of Louisville. If there is any conflict between the policies, procedures or other statements contained within this catalog, the *Redbook* shall govern. A copy of *The Redbook* is available on the university's web page at www.louisville.edu. Official copies are maintained by all University Libraries, the Student Government Association Office, the student grievance officer, and the vice president for student affairs.

Other policies and information covering students can be found in the Student Handbook.

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Academic Calendar

Calendar for 2003–2004

Fall 2003 Semester

Classes start	August 25	Monday
Last day of registration	August 25	Monday
Labor Day holiday	September 1	Monday
Last day to apply for degree	September 12	Friday
Mid-term break	October 13–14	Monday-Tuesday
Last day to withdraw	October 16	Thursday
Thanksgiving vacation	November 26–28	Wednesday-Friday
End of classes	December 8	Monday
Reading Day	December 9	Tuesday
Final examinations	December 10–16	Wednesday-Tuesday
Degree date	December 16	Tuesday
December Commencement	December 18	Thursday

Spring 2004 Semester

Classes start	January 12	Monday
Last day of registration	January 12	Monday
Martin Luther King Jr. Day holiday	January 19	Monday
Last day to apply for degree	January 30	Friday
Last day to withdraw	March 1	Monday
Spring vacation	March 15–21	Monday-Sunday
End of classes	April 26	Monday
Reading day	April 27, 29-30	Tuesday, Thursday-Friday
Final Exams:	April 28, May 3–8 (Saturday, May 8 is for Saturday classes that do not follow weekend schedule)	Wednesday, Monday-Saturday
Degree date	May 8	Saturday
May Commencement	May 8	Saturday

The university reserves the right to change the announced academic calendar without prior notice.

Institutional and Professional Accreditation and Membership

Institutional Accreditation

The University of Louisville is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (1866 Southern Lane, Decatur, Georgia 30033–4907; Telephone number (404) 679–4501) to award associate, bachelor, master's, doctoral, and first professional degrees (D.M.D., J.D., M.D.).

Professional Accreditation

The University of Louisville is fully accredited by, or is a member of, the following agencies or organizations:

Accreditation Board for Engineering and Technology

Accreditation Council for Graduate Medical Education

American Art Therapy Association

American Assembly of Collegiate Schools of Business

American Association for the Accreditation of Laboratory Animal Care

American Association for Marriage and Family Therapy

American Association of Colleges of Teacher Education

American Association of Dental Schools

American Association of University Women

American Bar Association

American Chemical Association

American Council on Education

American Federation of Arts

American Mathematical Society

American Medical Association

American Musicological Society

American Nurses Association

American Political Science Association

American Psychological Association

American Society for Engineering Education

American Speech-Language-Hearing Association

Association of Academic Health Centers

Association of American Colleges

Association of American Law Schools

Association to Advance Collegiate Schools of Business (AACSB International)

Association of Governing Boards of Universities

Commission on Dental Accreditation of the American Dental Association

Committee on Medical Education-Joint Committee of the Association of American Medical Colleges and the American Medical Association on Liaison

Committee on Urban Program Universities

Computer Science Accreditation Commission (CSAC) of the Computing Sciences Accreditation Board (CSAB)

Council on Collegiate Nursing Education

Conference of Southern Graduate Schools

Council of Graduate Schools

Council on Postsecondary Education, Commonwealth of Kentucky

Council on Medical Education of the American Medical Association

Council on Social Work Education

Department of Education, Commonwealth of Kentucky

Engineering Accreditation Board Commission of the Accreditation Board for Engineering and Technology

Foundation for Interior Design Education Research

Institute of International Education

International Association of Management Education (IAMB)

Interuniversity Communications Council (EDUCOM)

Kentuckiana Metroversity

Kentucky Academy of Sciences

Kentucky Association of Colleges of Teacher Education

National Association of College and University Business Officers

National Association of Schools of Music

National Association of Schools of Public Affairs and Administration

National Association of State Universities and Land Grant Colleges (NASULGC)

National Center for Higher Education Management Systems (NCHEMS)

National Commission for Cooperative Education

National Council for Accreditation of Teacher Education

National Council of University Research Administrators

National League for Nursing

New York Board of Regents

Oak Ridge Associated Universities

Society for College and University Planning

Association of University Technology Managers

Southern Association of College and University Business Officers

Southern University Conference

Sport Management Program Review Council of the National Association for Sport and Physical Education and the North American Society for Sport Management

The University of the State of New York, the State Education Department, Division of Professional Education

General Information

General Information

Welcome

Experience the excitement of discovery. Create new knowledge in your field of study. Learn the practical applications of theory from world-class faculty. At the University of Louisville, we believe a graduate program should change your work...and your life.

U of L is a metropolitan research university with an attractive main campus in Kentucky's largest city and a Health Sciences Center in the downtown medical complex. Enrollment is more than 20,000, with 6,000 students pursuing graduate degrees.

Louisville is an exciting, vibrant city, centrally located within the United States. With lots of charm and much to see and do, from the cultural arts to sports, it is home to almost one million people from across the U.S. and around the world.

Ronald M. Atlas, Ph.D.
Dean of the Graduate School

The Graduate School

The University of Louisville is an urban institution that has had close historical and legal ties with the city of Louisville and Jefferson County (now Louisville-Jefferson County Metro). Founded in 1798 as Jefferson Seminary, later known as Louisville College, in 1846 it became the University of Louisville with an academic department and a medical school. Also in 1846, a School of Law was added, and a charter was obtained from the Commonwealth of Kentucky. Under that charter the University has functioned ever since. Currently, it includes the following units: College of Arts and Sciences, College of Business and Public Administration, College of Education and Human Development, Graduate School, School of Dentistry, Kent School of Social Work, School of Law, School of Medicine, School of Music, School of Nursing, School of Public Health, and Speed Scientific School.

In July of 1970, the University of Louisville officially entered the state university system of the Commonwealth of Kentucky, and thus began a new era of service to community, state, and nation.

Through the Graduate School, the University assumes its responsibility not only to teach but to contribute to the sum of knowledge. It encourages investigation, promotes research, and endeavors to organize the store of human knowledge to serve the needs of present-day life. By fostering the spirit of inquiry and research in the members of its faculties, it not only strengthens undergraduate instruction but also advances knowledge. Through its graduate courses, it furnishes advanced preparation for those who are planning to become investigators or teachers in the social sciences, humanities, and natural sciences. Because of its location in a major metropolitan area, the Graduate School is very much aware of both the research opportunities and the obligations in teaching and public service that such a location presents.

The Graduate School of the University of Louisville was formally established in 1907, although advanced courses were offered by the Schools of Medicine and Law as early as 1856. It is a member of the Council of Graduate Schools.

The legislative functions of the Graduate School are vested in the Graduate Council which consists of elected representatives of the Graduate Faculty. The Council is responsible for establishing policies relating to graduate education and for maintaining a standard of excellence for graduate work within the University. The Dean of the Graduate School serves as chair of this body and of the Graduate Faculty.

The dean and the dean's staff are responsible for the administration of the rules and regulations of the Graduate School and are expected to maintain and safeguard the standards and policies of the school as outlined by the Graduate Faculty and the Graduate Council.

Graduate students participate in the operation and decision-making process of the Graduate School through the Graduate Student Union (to which all Graduate School students belong) and its executive committee, the Graduate Student Council, which consists of one elected representative from each duly constituted graduate student organization. A representative of the Graduate Student Council is a voting member of the Graduate Council. Students are actively sought as members of many of the standing committees of the Graduate School, and they are urged to participate and become involved in the administration of the Graduate School through these channels.

Council on Postsecondary Education Mission Statement for the University of Louisville

The University of Louisville shall serve as Kentucky's urban/metropolitan university. Located in the Commonwealth's largest metropolitan area, it shall serve the specific educational, intellectual, cultural, service and research needs of the greater Louisville region. It has a special obligation to serve the needs of a diverse population, including many ethnic minorities and placebound, part-time, nontraditional students.

Geographic Region. It shall serve as the principal university for instruction, research, and service programs in the Louisville Metropolitan area. In addition, it shall help meet statewide educational, research, and service needs in medicine, dentistry, law, and urban affairs.

Institutional Admissions Standards. The University of Louisville shall admit undergraduate students to its schools and colleges under selective admission standards that exceed the minimum guidelines established by the Council on Postsecondary Education. In addition, U of L shall admit a limited number of undergraduates who shall have an opportunity to remove their academic deficiencies within a limited time according to guidelines established by the Council on Postsecondary Education. Through this approach, the University seeks to provide both broad access and programs of high quality for undergraduates. The University shall admit graduate and professional students using very selective or selective admission standards established by the various graduate and professional schools.

Degree Levels. At the undergraduate level, U of L shall offer selected degree programs closely related to the needs of its urban mission. At the Master's Level, it shall offer a range of programs responding directly to the advanced educational needs of its metropolitan area. At the doctoral level, it shall offer a limited number of rigorous programs that do not unnecessarily duplicate other doctoral programs in Kentucky. It may offer programs at the associate level, but certificate programs shall not be offered unless they are integral to community college programs, linked to degree programs, or well justified by the human resource needs of the Louisville metropolitan area.

Strategic Directions/Program Priorities. The University of Louisville shall place a high priority on programs that have achieved academic excellence. The University shall build on program

strength in business, dentistry, education, engineering, English, environmental studies, law, medicine, music, psychology, and urban affairs. It shall maintain national recognition in selected programs that have already attained such recognition.

These strategic priorities translate into a core of liberal arts baccalaureate programs, in addition to degree program priorities at the baccalaureate (B), master's (M), education specialist (S), doctoral (D), and professional (P) levels that may include the following: - (relevant categories from the Classification of Instructional Programs by degree level are included in brackets): business [B, M - 52]; dentistry [M, D, P - 51]; education [B, M, S, D - 13]; engineering [B, M, D - 14]; English [M, D - 23]; environmental studies [M, D - 26, 40]; law [P - 22]; medicine [M, D, P - 51]; music [B, M, D - 50]; psychology [M, D - 42]; urban affairs [D - 44].

Enhancement of Instruction. The University shall emphasize teaching and educational services to the students admitted to its degree programs. It shall bring the intellectual excitement of research into its instructional programs whenever possible. It shall utilize technology to enhance teaching and increase productivity. It shall adopt teaching methods to serve the needs of students graduated from Kentucky's public schools, a statewide educational system that will change fundamentally as a result of the commonwealth's educational reform efforts.

Research and Service Function. The University of Louisville shall be a research university that places special emphasis on the research and service needs of Kentucky's urban areas. Research shall be encouraged, in particular, as part of doctoral and high-priority programs. Through its research and service efforts, it shall contribute to economic development, educational reform and problem-solving initiatives in the Commonwealth.

Collaborative Ventures. Emphasis shall be placed on cooperative programming with the other state universities. Careful articulation of academic programming at Jefferson Community College and the University shall be developed. The University shall collaborate with the public schools in its service area to further education reform in Kentucky. It shall develop and employ telecommunication resources to communicate with other institutions in the fulfillment of its mission. Undergraduate curriculum development shall emphasize the transfer of credits from other institutions toward degree completion.

Efficiency and Effectiveness. The board of trustees shall promote cost effectiveness in academic programming and institutional management. Strategic planning and budgeting shall focus on reallocation and, where appropriate, restructuring to assure the prudent use of resources in maintaining quality, relevant curricula and responsive programming. Processes to measure and evaluate outcomes in major activities shall be undertaken to assure accountability in the University's use of scarce resources. The elimination of duplicative or unproductive programs is essential, while the development of carefully selected new programs, which are consistent with U of L's mission, shall be appropriate. The university shall strive for continuous improvement of its programs and services.*

* **SOURCE:** *Mission Statements on the Higher Education Institutions of Kentucky Commonwealth of Kentucky Council on Postsecondary Education, July 11, 1994, pp. 18-19*

Structure of the University

In accordance with the statutory authority of the Commonwealth of Kentucky, the Board of Trustees of the University of Louisville shall exercise final jurisdiction over the University. It shall select the President of the University; and upon recommendation of the President, it shall make all appointments of individuals in administrative capacities who serve at the pleasure of the Board. The Board of Trustees shall adopt a budget annually for the ensuing year and grant all degrees conferred by the University.

Administrative Officers of the University

President
James Ramsey, Ph.D.

Executive Vice President and Acting University Provost
Shirley C.Willihnganz, Ph.D.

Executive Vice President and Chancellor for Health Sciences Center
Joel A. Kaplan, M.D.

Executive Vice President for Research
Nancy C. Martin, Ph.D.

Vice President for University Advancement
Joseph S. Beyel, M.S.

Vice President for Athletics
Thomas M. Jurich, B.S.B.A.

Vice President for Finance
Michael J. Curtin, M.B.A.

Vice President for External Affairs
Daniel Hall, J.D.

Vice President for Student Affairs
Denise D. Gifford, Ed.D.

Vice President for Business Affairs
Larry O. Owsley, M.P.A., M.P.P.

Vice President for Information Technology
Ronald L. Moore, J.D.

Deans

James F. Brennan, Ph.D.
College of Arts and Sciences

Allan Attaway, Ph.D., Acting Dean
College of Business and Public Administration

John N. Williams, Jr., D.M.D.
School of Dentistry

Robert D. Felner, Ph.D.
College of Education and Human Development

Ronald M. Atlas, Ph.D
Graduate School

Terry L. Singer, Ph.D.
Kent School of Social Work

Laura Rothstein, J.D.
School of Law

Joel A. Kaplan, M.D.
School of Medicine

Christoper P. Doane, D.M.A.
School of Music

Mary H. Mundt, Ph.D.
School of Nursing

Richard Clover, M.D.
School of Public Health/Health Information Sciences

Thomas R. Hanley, Ph.D.
Speed Scientific School

Hannelore Rader, M.L.S.
University Librarian

Graduate Degree Programs

At the present time the following programs for advanced degrees are available:

Doctor of Audiology (Au.D.)

Cooperative Ph.D. Program

The University of Louisville participates in a cooperative Ph.D. program in education administration with Western Kentucky University. To enroll in this program, a student must be admitted to both institutions. Those who complete the program will receive a diploma that states the degree is awarded by the University of Louisville in cooperation with Western Kentucky University.

Doctor of Philosophy (Ph.D.)
with programs in:

1. Anatomical Sciences & Neurobiology
2. Applied and Industrial Mathematics
3. Art History
4. Biochemistry and Molecular Biology
5. Biology
6. Biostatistics: Decision Science
7. Chemical Engineering
8. Chemistry
9. Civil Engineering
10. Clinical Psychology
11. Computer Science and Engineering
12. Curriculum and Instruction
13. Educational Counseling and Psychology
14. Educational Leadership and Organizational Development
15. Electrical Engineering
16. English Rhetoric and Composition
17. Epidemiology -Clinical Investigation Sciences
18. Experimental Psychology
19. Industrial Engineering
20. Integrated Program in Biomedical Science
21. Mechanical Engineering
22. Microbiology and Immunology
23. Musicology (cooperative degree awarded by the University of Kentucky)
24. Pharmacology and Toxicology
25. Physics (cooperative degree awarded by the University of Kentucky)
26. Physiology and Biophysics
27. Social Work (joint degree awarded by the University of Louisville and University of Kentucky)
28. Urban and Public Affairs

Joint Degrees

Combined Juris Doctor and Master of Arts in Humanities (JD/MA)

Combined Master of Business Administration and Juris Doctor (MBA/JD)

Combined Master of Business Administration and Engineering (MBA/MENG)

Combined Master of Business Administration and Master of Accountancy (MBA/MAC)

Combined Master of Science and Doctor of Dental Medicine (MS/DMD)

Combined Master of Science and Doctor of Medicine (MS/MD)

Combined Master of Science in Social Work and Juris Doctor (MSSW/JD)

Combined Doctor of Medicine and Master of Business Administration (MD/MBA)

Combined Doctor of Philosophy and Doctor of Medicine (MD/PhD)

Master of Accountancy (M.Ac.)

Master of Arts (M.A.)
with majors in:
1. Art Therapy (Expressive Therapies)
2. English
3. Fine Arts with concentrations in: Art History, Critical and Curatorial Studies, and Studio
4. French (Language and Literature)
5. Higher Education (optional concentration in Sport Administration)
6. History
7. Humanities includes concentrations in Civic Leadership, Linguistics and Philosophy
8. Pan African Studies
9. Mathematics
10. Political Science
11. Psychology
12. Sociology includes concentration in Pan-African Studies; minors in Communication and Urban Geography
13. Spanish

Master of Arts in Teaching (M.A.T.)
with majors in:
1. Alternative Certification in Middle School Education and Secondary Education
2. Art Education P-12
3. Early Elementary Education P-5
4. Middle School Education with concentrations in English, mathematics, science, and social studies
5. Music Education P-12
6. Physical Education P-12
7. Secondary Education with concentrations in biology, 5-12 business education, chemistry, earth and space science, English, P-12 French, mathematics, physics, social studies, and P-12 Spanish

Master of Business Administration (M.B.A.)

Master of Education (M.Ed.)
with majors in:
1. Counseling & Personnel Services with concentrations in:
   a. Mental Health Counseling
   b. Counseling Psychology
   c. Elementary School Counseling
   d. Secondary School Counseling
   e. College Student Personnel Services
2. Early Childhood Education (with I.E.C.E. Certification or without certification)
3. Early Elementary Education
4. Educational Administration
5. Instructional Technology
6. Middle School Education (with concentrations in English, mathematics, science and social studies)
7. Physical Education
8. Reading Education with Endorsement in Reading and Writing
9. Secondary Education
10. Special Education with concentrations in:
    a. Learning & Behavior Disorders
    b. Learning Disabilities
    c. Moderate and Severe Disabilities
    d. Behavior Disorders
    e. Visual Impairment

Master of Engineering
with specialization in:
—Chemical Engineering
—Civil Engineering
—Computer Engineering and Computer Science
—Electrical Engineering
—Industrial Engineering

Master of Fine Arts (M.F.A.)
with a major in Theatre Arts (includes a concentration in African-American Theatre)

Master of Music (M.M.):
1. Performance: concentrations in:
   Instrumental Conducting
   Choral Conducting
   Jazz
   Piano Pedagogy
2. Music History and Literature OR Theory and Composition

Master of Music Education (M.M.E.)

Master of Public Administration (M.P.A.)

Master of Public Health (MPH)

Master of Science (M.S.)
with majors in:

1. Anatomical Sciences & Neurobiology
2. Biochemistry
3. Biology
4. Biostatistics- Decision Science
5. Chemical Engineering
6. Chemistry
7. Civil Engineering
8. Communicative Disorders
9. Computer Science
10. Electrical Engineering
11. Epidemiology -Clinical Investigation Sciences
12. Exercise Physiology
13. Human Resource Education
14. Industrial Engineering
15. Justice Administration
16. Mechanical Engineering
17. Microbiology and Immunology
18. Oral Biology
19. Pharmacology and Toxicology
20. Physics
21. Physiology and Biophysics
22. Public Health
23. Sport Administration

Master of Science in Nursing (MSN)

Master of Science in Social Work (MSSW)
—Family Therapy (MSSW-MFT)

Master of Urban Planning (MUP)

Specialist in Education (Ed.S.)
Educational Administration with concentrations in:
1. Principalship
2. Superintendent
3. Supervision

Graduate Certificates
1. Clinical Investigative Sciences
2. Environmental Engineering
3. Pan-African Studies
4. Women's Studies
5. African American Theatre
6. Logistics and Distribution

Interdisciplinary Degrees
It is possible to establish interdisciplinary programs for individual students in the areas not represented by the traditional disciplines at the PhD, and Masters level.

For the New Graduate Student

Overview
The University of Louisville operates on a semester system that includes a Fall Semester, Spring Semester, and Summer semester with multiple terms.

The University has a computerized admissions and registration system. Students are advised to include their social security number on all correspondence with the University to facilitate the identification of admission credentials and requests for information.

Students who do not enroll for the semester for which they apply may be required to reapply and resubmit credentials. The University holds credentials on applicants for a limited time.

Student Responsibility
It is the responsibility of the graduate student to become familiar with and observe all policies and requirements of the Graduate School and of his or her particular degree program and department. Policies, procedures, and requirements are subject to change, and it is the responsibility of the graduate student to keep her/himself apprised of current regulations. All students must respond to official notices issued by administrative offices and instructors, whether these notices be posted on official bulletin boards, are sent through postal, or e-mail.

A student's status is not dependent upon a written notification but is a consequence of circumstances in the admission process and the student's academic performance. Written notification is simply a verification of status.

Graduate Credit
Courses listed in this catalog are offered for graduate credit. To receive graduate credit, a student must register for the course through the Graduate School or through another graduate-level program, such as the Master of Engineering.

Students who take these courses as post-baccalaureate registrants do not receive graduate credit.

Prerequisites
Prerequisites for all courses include graduate status and the consent of the graduate advisor (for registration). Specific course prerequisites are indicated in the course listing in the curriculum listing of this catalog.

Registration
The University of Louisville uses a touch-tone and an on-line web registration system. Upon admission to Graduate School, each student receives a certificate that may be redeemed for a Schedule of Courses. This Schedule is a year-round schedule (information for Summer, Fall and Spring). Spring Courses are not listed in the schedule; they are available on-line at www.louisville.edu. Students must first contact their department advisor to discuss course selections. The service indicator is changed within the department.

If a student is in good standing and admitted UNCONDITIONALLY, he/she may proceed with the registration process. If, however, a student still has conditions on his/her admission or is on academic probation, he/she must contact the Graduate Dean's office for further instructions.

A student must participate in touch-tone or on-line web registration. No in-person registration is permitted. A student may add courses through the touch-tone or on-line system through the first day of classes. One may also drop or withdraw from courses by touch-tone or on-line (for more information consult: www.louisville.edu/student/services/registrar)

Application to the Graduate School

Application Credentials
Each of the credentials listed below should be sent to the Office Graduate School Admissions, University of Louisville, Louisville, KY 40292 at least six weeks prior to the beginning of the semester or

summer session in which the student wishes to enroll; otherwise the application may not be reviewed in time for registration. Six weeks is a general deadline. Any program may have a different deadline and may require additional credentials or higher standards than those described in this General Information Section. Applicants should consult the pertinent departmental section of this bulletin or check directly with the department office.

Application for admission

Application forms may be obtained from the Graduate School Admissions Office or on-line at http://graduate.louisville.edu. The application must be accompanied by a $25.00 non-refundable application fee. Applications are not processed until the application fee is received. Effective November 1, 2003 the application fee will be increased to $50.00.

Transcripts

The minimum requirement for admission is the baccalaureate degree or its equivalent from an accredited institution; however, official transcripts showing all degrees awarded on all undergraduate and all graduate work completed must be furnished.

Recommendations

At least two letters of recommendation from individuals who can speak to the applicant's academic and/or professional capabilities and potential are required. Some departments may require three or more letters.

Examination scores

Except as noted below, each applicant is required to take the General Test Section of the Graduate Record Examination (GRE) www.gre.org and must instruct the Educational Testing Service to forward the results to the Graduate School Admissions Office, Belknap Campus, University of Louisville, Louisville, Kentucky, 40292.

The Subject Test Section may be required at the discretion of a department, and the applicant should consult the pertinent departmental section of this catalog.

Applicants for the Master of Business Administration degree program are exempt from the GRE but must take the Graduate Management Admissions Test (GMAT) prior to consideration for admission. Kent School students in the Master of Science in Social Work program are not required to take the GRE.

Students may substitute the Medical College Admissions Test for the Graduate Record Examination with the approval of the department chair or graduate program advisor.

TOEFL Examination

This examination is required of all foreign students from countries in which English is not the native language. Students holding a baccalaureate or advanced degree from an accredited institution in the United States are exempt from this requirement. Information about the times and places for the examination may be obtained from the Educational Testing Service, TOEFL, Princeton, New Jersey 08540 (www.TOEFL.org). Graduate programs may require higher TOEFL scores than the Graduate School minimum.

Information about the times and places for taking these examinations may be obtained from the University Testing Service, University of Louisville or from the www.ets.org, Princeton, New Jersey, 08540 and the Sylvan Learning Center by appointment located at 7400 LaGrange Road, Louisville, KY (502) 423-0478.

Test of Spoken English

Students whose native language is not an American or British Dialect of English may not be awarded teaching assistantships unless they present an acceptable score on the Test of Spoken English (TSE) or a locally administered teaching competency demonstration. Applications and information about the times and places for the TSE may be obtained from www.ets.org, TSE, Princeton, N.J. 08540. The teaching competency demonstration is administered by the Intensive English as a Second Language Program www.louisville.edu/a-s/iesl/.

Applicants who have not scored 210 or more on the computer-based TOEFL Examination may choose to apply to the Intensive English as a Second Language Program. Successful completion of the Advanced Level of this program will be considered adequate proof of the English proficiency required for course work in the chosen graduate program. Acceptance to the Intensive English Program does not constitute acceptance to the Graduate School. For information and application forms, write to: IESL, University of Louisville, Louisville, Kentucky 40292, U.S.A. www.louisville.edu/a-s/iesl/.

Admission Statuses

Upon evaluation of the application credentials, the department in which the applicant wishes to enroll forwards a recommendation concerning admission to the Graduate School Admissions Office. A recommendation for admission will specify one of the following statuses. The official admission letter will come from the Director of Graduate Admissions.

Degree Status

In order for a student to be recommended unconditionally for admission to degree status, all admission credentials must have been received and evaluated. The applicant must have earned a grade-point average of at least 2.75 on a 4-point scale in either his/her complete undergraduate program or the senior-college years. Each student in this classification is a prospective candidate for an advanced degree and is expected to pursue a program leading to the master's degree, specialist's degree, or doctoral degree. Each applicant should consult the departmental sections of this catalog to determine any additional admissions criteria or any more restrictive requirements for admission to this status.

Degree status - provisional

this status is intended for students who have furnished their application and baccalaureate transcript but whose remaining application materials are incomplete. Students in provisional status must also meet the general academic requirements of their program. Students may not enroll for a second consecutive term in provisional status.

Degree status - special conditions

This status is intended for students' who have furnished ALL their application materials, but whose academic criteria are slightly below the minimum for their program. Students in this status will be expected to meet certain criteria within a specific time-frame outlined by their program.

Degree status - provisional/special conditions

A student who has both missing credential(s) and academic criteria below the minimum will be admitted in this status. Students in this status will be expected to meet certain criteria within a specific time-frame outlined by their program.

A student has one semester to furnish any missing admission credentials and clear any conditions made at the time of admission. Failure to complete the admission process within a semester may result in refusal of permission to register in the next semester.

A student admitted with an undergraduate grade point standing of less than 2.75 may be subject to departmental limitations on the number of hours in which he/she may enroll for each semester. Graduate credits earned prior to achieving good academic standing are not automatically applicable to the degree program.

Probation

Any student admitted with a point standing below 2.75 will be considered "on probation." Students who fail to attain the required 3.0 GPA or other higher GPA required by their program in the first term of enrollment following admission, may be subject to academic dismissal from their program.

No student with a grade-point average of less than 2.50 will be admitted to graduate study. Under unusual circumstances, exceptions to this policy may be made upon specific recommendation and documented justification for admission by the department chairman or graduate program advisor. Such justification must be provided in writing to the Graduate Dean, who must approve or disapprove the recommendation.

Non degree status

Students who do not desire to seek an advanced degree may be permitted to enroll under non-degree status. Application credentials must include the application form and an undergraduate transcript showing the award of a baccalaureate degree. Students may accumulate a maximum of fifteen hours while in non-degree status. The only regular exceptions to this policy are the Rank I and Rank II and certificate programs in the College of Education and Human Development, the Nurse Practitioner program in the School of Nursing and the post-master's certificate program in Family Therapy in the Kent School of Social Work.

Students admitted in this status who wish to become degree candidates must submit all required admission credentials, including a reapplication. Such applicants must meet all general standards for admission to the Graduate School as well as any established by the appropriate department. After admission to degree status, only six hours of course work taken while in non-degree status may be applied to the degree (Any application of hours toward a particular degree is always subject to departmental approval.)

Auditors

Auditing at the graduate level is available only to persons who are enrolled in at least one course for credit, unless permission to audit only is granted by the Dean of the Graduate School. The fee for auditing a course is equal to the tuition for enrolling in the class for credit.

The Graduate School does not require that auditors take examinations, submit papers, or take part in any evaluative activity. However, the instructor, at his or her discretion, may demand or deny the auditor's participation in class to whatever extent is deemed desirable. A "W" (Withdrawn) shall appear on the transcript unless a student attends at least 75% of the classes.

Some departments may not permit auditing at the graduate level. Students wishing to audit courses must obtain permission in writing from the appropriate instructor. Forms are available at the Graduate School.

A graduate student may not satisfy by audit a stated prerequisite for a graduate course or a stated degree requirement.

Visiting Students

University of Louisville graduate students who attend another Graduate School as a visiting student must have the permission of their department chair or adviser before the courses are taken in order to transfer credits earned. Visiting student status may be granted only to a student who is in good standing.

A graduate student from another school may enroll for graduate course work as a "visiting student" at the University of Louisville by submitting an application and providing a statement from the dean of his or her graduate school certifying that the student is in good academic standing and approving the transfer of credits to that school at the end of the semester.

International Students

Students from foreign countries must meet three criteria before they can be granted admission: (1) they must meet the regular admissions standards as applied to all successful applicants, (2) if English is not the student's primary language they must show proficiency in English by scoring 210 or higher on the computer-based TOEFL examination or successfully completing the exit examination for the advanced level of the Intensive English as a Second Language Program at the University of Louisville, and (3) they must present evidence of financial resources adequate to support their educational and living expenses in the United States for the duration of their studies. The award of a University Fellowship or Graduate Assistantship is considered evidence of adequate financial resources.

General Academic Policies and Requirements

The general policies and requirements for advanced degrees are stated below; however, each advanced degree has specific requirements, peculiar to that degree, which are detailed in the following descriptions. Also, individual departments may have requirements peculiar to their advanced degree programs. These requirements are stated in the respective program sections of this catalog and must be consulted, so that the graduate student may be fully apprised of the conditions he/she must meet in order to receive an advanced degree.

The policies and regulations described in this catalog cannot be superseded or invalidated by either oral or written agreement with faculty, staff, or administrators, unless such agreement is confirmed in writing by the Dean of the Graduate School.

Policy on Student Leave of Absence - The Graduate School

A student who has been accepted into a graduate program is expected to remain in continuous enrollment, either full-time or part-time, throughout his/her matriculation. Students who fail to enroll for a period of more than 12 months will be considered to have withdrawn from the program. Once a student enters candidacy, he/she must maintain continuous candidacy (fall, spring, summer) and pay the appropriate candidacy fee.

However, if circumstances arise that may cause an interruption in graduate study, a student may apply for a leave of absence by requesting such a leave from the Dean of the Graduate School. The letter of request must indicate the dates on which the requested leave is expected to start and end. The student's request must be accompanied by a letter of support from the graduate program director or coordinator or from the department chair. A requested leave cannot exceed one year; however, under extreme circumstances, a second, subsequent request may be granted by the Dean of the Graduate School.

If a leave is granted, the student may NOT enroll in any classes, including independent study, seminars, distance learning, thesis research, or dissertation research. A student on official leave of absence is not required to pay tuition, fees, or a candidacy status fee; but is not entitled to any services from the university during the leave, including mentorship from faculty.

If a leave of absence is granted to a doctoral student in candidacy, the time limitation of completing all other requirements within four years after passing the qualifying examination shall be extended by the same time as the length of the leave. The time limit stipulating that credit earned more than six years prior to the completion of the degree may not be counted is NOT automatically waived during a leave of absence. However, an appeal for an extension of this time limit, specifying the exact circumstances, can be included in the request for a leave or submitted in a subsequent letter to the Dean addressing this particular matter at the time of re-enrolling.

No degree will be granted to a student on official leave of absence. The student must re-enroll in the next term following the conclusion of the leave and be enrolled in the term in which a degree is granted. A leave of absence does not relieve a student from adherence to policies regarding residency and candidacy (except that the time limit for candidacy may be extended, as indicated in the previous paragraph).

Student Responsibility

It is the responsibility of the graduate student to become familiar with and observe all policies and requirements of the Graduate School and of his or her particular degree program and department. Policies, procedures, and requirements are subject to change, and it is the responsibility of the graduate student to keep her/himself apprised of current regulations. All students must respond to official notices issued by administrative offices and instructors, whether these notices be posted on official bulletin boards are sent through postal or e-mail.

Credit Requirements

For the master's and doctoral degree programs, a minimum of 24 semester hours of credit must be taken at the University of Louisville. A minimum total of 30 semester hours of graduate credit is required for a master's degree; some require additional hours. Credits that have been applied to a baccalaureate degree may not be applied to a subsequent master's degree. When appropriate, six hours may be applied toward two Master's degrees.

The award of a Doctor of Philosophy degree indicates that a student has attained mastery of a field and has demonstrated the capacity to perform independent scholarly research and to appreciate the importance of that research within the broad context of his or her discipline. Accordingly, no specific minimum number of credit hours has been established for Ph.D. programs. However, it has been customary to consider the equivalent of three years of full-time graduate study as minimal.

Course Loads

Unless otherwise required by a department or program, a larger number of hours for all full-time students, the maximum number of hours that may be taken in a regular semester is 12; or 15 hours if 3 or more hours are research credit. The maximum number of hours that may be taken in the summer session (both terms) is 12, including research hours.

Overloads

Any student who wishes to enroll in more than the maximum number of hours must obtain the permission of the Dean of the Graduate School. Permission to enroll for excess hours is rarely granted.

Full-and Part-Time Study

Full-time study is defined as being 9 hours of credit during a regular semester or 6 hours during the summer term or in candidacy status. To be considered in full-time residency for one year, a student must be registered for 9 hours in each of two consecutive semesters.

Satisfactory Progress

All graduate students are expected to make steady and satisfactory progress toward the completion of degrees. Students who fail to enroll for a period of more than 12 months will be considered to have withdrawn from the program. Students who seek to return after such a period of time are required to apply to their departments for readmission. Based on the request of the department, the Dean of the Graduate School will consider the student for readmission.

Satisfactory progress also involves maintaining the standards of academic and professional integrity expected in a particular discipline or program and, in some disciplines, may include demonstration of the ability to function as a professional practitioner. Failure to maintain these standards or demonstrate such abilities may result in termination of the student's admission to the program.

Full-Time Study for University Fellows and Graduate Assistants

All University Fellows and Graduate Assistants must be enrolled as full time students during the period that they are receiving financial support.

Degree Candidacy

Degree Candidacy is intended to meet the enrollment need of students who have completed all formal course work and thesis/dissertation hours but who are continuing to perform research for the Masters or Doctorate degree. It is the responsibility of the student and his/her mentor to maintain contact throughout the program of study to ensure continuous progress towards the timely completion of the degree.

Doctoral students may not enroll in Degree Candidacy until successful completion of the qualifying exam in addition to completion of the required program of study.

Although all required courses must have been completed before entering Degree Candidacy, students have the option of taking additional specialized courses, e.g. courses offered by visiting or new faculty, while in Degree Candidacy -- in those cases payment of both the candidacy fee and the course tuition will be required.

When necessary, a student may enroll in Degree Candidacy in order to meet the requirement that all students must be enrolled in the Graduate School during the semester in which he/she wishes to graduate, e.g. students in their final semester, who need to be full time students and who have less than nine hours in fall or spring or less than 6 hours in the summer to complete the degree, may enroll in Degree Candidacy.

Enrollment in Degree Candidacy requires the approval of the Graduate School. Once a student is admitted to candidacy, enrollment in Degree Candidacy status must be continuously maintained year round (i.e. Fall, Spring, and Summer) until the degree is awarded. The only exception to this policy of continuous enrollment is if the Graduate Dean has granted the student a formal leave of absence.

Once a student enrolls in Degree Candidacy, the Registrar will automatically enroll the student in Degree Candidacy until the student applies to graduate. Failure to pay the candidacy fee will be cause to cancel a student's Degree Candidacy. In order to restore Degree Candidacy, the student must receive approval of his/her department Chair and that of the Graduate Dean. To re-establish Degree Candidacy, the student will be required to pay the candidacy fee for each semester during which candidacy was voided and/or not maintained.

Microfilming and Copyrighting

The University of Louisville, by action of its graduate faculty, requires that all theses and dissertations be microfilmed. Copyrighting the paper is an optional choice for its author. Candidates for advanced degrees that require theses or dissertations must submit agreements for microfilming and copyright applications on the appropriate forms supplied by the Graduate School Office. A completed application, one extra copy of the abstract, and one extra copy of the title page must accompany the unbound copies of each dissertation or thesis. The extra copies of the abstract and title page are used by University Microfilms in its abstracting journals. A limitation of 350 words is set on the abstracts for doctoral dissertations and 150 words for theses for master's or specialist's degrees.

Application for Degree

Degrees are awarded in August, December, and May. Candidates who expect to receive degrees on a particular award date must submit their completed application for degree to the Office of the Graduate School on or before the dates specified in the University calendar (see Schedule of Courses).

Transfer of Credit

Earned graduate credit may be transferred from accredited institutions that offer advanced degrees. The maximum number of semester hours transferable, upon request, is 6. Up to 6 additional hours may be requested, in a master's program, provided that these additional hours are not credit earned by extension, and provided also that the residency requirement of 24 semester hours is maintained by the addition of University of Louisville credits to the total program.

In unusual circumstances, a lesser residency credit requirement may be considered by the Graduate Council. Requests for such exceptions must be supported by the major department and the program adviser. In no case will a master's degree be awarded to a candidate who has completed fewer than 18 semester hours at the University of Louisville. Final approval rests with the Graduate Council.

Credit earned more than six years prior to the student's application to the Graduate School of the University of Louisville will not normally be considered for transfer; however, the Graduate Council and the Dean may make an exception upon the recommendation of the student's department.

The course work being considered for transfer must have been taken while the student was enrolled in an accredited graduate or professional school and must be evaluated for transfer by the head of the department in which the student is seeking additional graduate work. Six hours may be transferred from previously earned master's degrees toward a second master's degree, subject to the approval of the second degree program. Hours earned toward a culminating experience such as a thesis, practicum, or internship shall not be transferable to the second master's degree. Only courses in which the student earned grades of "B" or better will be considered for transfer. Hours and quality points earned at other institutions are not included in the calculation of a student's GPA.

Courses in which grades of "P" were earned must have the approval of the Graduate Dean in order to be transferred. In case of question regarding the transferability of course work, the Graduate Council is empowered to decide.

Transfers of credit from constituent schools and colleges of the University of Louisville are not subject to the above limitations on transfers but requires the recommendation of the student's department and the approval of the Dean of the Graduate School.

Course Numbering System

Courses with numbers from 500 to 599 may be open to both advanced undergraduate and graduate students and can be taken by graduate students for graduate credit. Those numbered 600 and above are primarily for graduate students.

Graduate students who wish to receive graduate credit for 500-level courses must demonstrate a level of mastery of the course material substantially above that required for undergraduate credit. This mastery must be verified in writing by the instructor if graduate credit is requested after course is completed.

Demonstration of an appropriate degree of mastery may include term papers, independent study, comprehensive examinations, or other more stringent requirements than those applied for undergraduate credit. The nature of the differences between the requirements for graduate credit and those for undergraduate credit must be described in course syllabi.

Only those 500-level courses that appear in this catalog are available for Graduate School credit. The student is advised to consult his/her department for information on any particular 500-level course.

Undergraduates Taking Graduate Courses

Undergraduate students with special permission of their undergraduate dean, the Dean of the Graduate School, and the instructors in the courses involved may register in graduate courses, including those at the 600 level. It is understood that such courses will replace courses in the normal undergraduate curriculum and therefore cannot be used for subsequent graduate credit.

Undergraduate students at the University of Louisville who are within 6 semester hours of completing the baccalaureate requirements may register in graduate courses, including those at the 600 level, with the permission of the undergraduate dean, the Dean of the Graduate School, and the instructors involved. Subsequent graduate credit can be obtained only if these courses have not been used to satisfy part of baccalaureate requirements, and if the recommendation of the chairman of the department involved and the approval of the graduate dean are obtained.

Grades and Grading

University Grade Point Average (GPA)

The GPA appearing on the University transcript at the end of each semester of enrollment will be the official GPA for determining Graduate School academic standing. The GPA will be based upon all courses taken at the undergraduate and graduate level. Courses taken at the 500-level and

above will be counted as graduate courses. The University transcript may only include up to a maximum of 6 credit hours in undergraduate course work. Any undergraduate courses beyond this 6 credit hour limit must be taken pass/fail. While possibly including undergraduate coursework, this transcript will determine the overall Graduate GPA. The post-admission advising office with the Graduate School will monitor this Graduate GPA.

Grading System

The Graduate School has implemented a plus/minus grading system, to be utilized at the discretion of the individual professor. The plus/minus grading system can be used only for graduate students enrolled in courses available for Graduate School credit.

Grade	Quality Points
A+	4.0
A	4.0
A-	3.7
B+	3.3
B	3.0
B-	2.7
C+	2.3
C	2.0
C-	1.7
D+	1.3
D	1.0
D-	0.7
F	0.0

C Grades

The student's academic department may approve six hours of coursework in which a grade of "C+, C, or C-" was received to count toward the completion of degree requirements. Approval of the Graduate Dean must be secured in order to count additional hours with any grade of C in any course required in the degree program.

In no case may more than nine hours of "C" be used to fulfill graduate degree requirements. Some programs may not permit any courses in which a grade of C+, C, or C- has been earned to be used in fulfillment of degree requirements. Although grades below C- will be calculated in the graduate student's grade point average, courses in which these grades have been earned will not be counted towards the fulfillment of degree requirements.

Other Grades

"W" means Withdrew and carries no quality points. No student may withdraw from any course after mid-semester. In exceptional cases, the dean may grant a student's request to withdraw from courses because of illness or conditions beyond the student's control.

"I" means Work in Course Incomplete. If the work is not completed by the end of the next term, regardless of whether the student is enrolled, the "I" automatically becomes an "F".

"X" means course work has not been finished because of the nature of the research or study involved, e.g., thesis work. This grade is reserved for courses that by their nature extend beyond one semester. This grade may not be used for coursework that is confined to a semester but not completed by the student. During the time an "X" grade is carried on the transcript, continuous enrollment is not required.

Graduate students enroll in courses on a term basis. Graduate courses may not be extended beyond the enrollment term, except as noted for open-ended courses eligible for the "X" or deferred grade. An "I" grade does not extend the course, but rather extend the time a student has for completion of work assigned in the course. The "I" must be removed within one semester and the new grade assigned for the term in which the student was originally enrolled or the "I" is changed to an "F".

Pass/Fail Grading Option

Each department has the discretion of extending a Pass/Fail option to any or all of its graduate students and graduate courses.

Because the advisability of such an arrangement varies from department to department, each department, subject to approval of the Graduate Council, works out the arrangement that is most suitable. The student is referred to his/her departmental chair for details.

When using the Pass/Fail option for graduate students enrolled in graduate courses, A+ through C- will be passing grades and D+ through F will be failing grades.

Changes of Grades

No grade changes can be made without a request and explanation on the part of the faculty member giving the grade and the approval of the Dean of the Graduate School.

Missing Grades

All missing grades will be changed to failing grades one year after the completion of the semester in which the course was taken.

Repetition of Courses

A student who has received the grade of "C" (in a course that is a degree requirement), "D" or "F" may repeat that course upon the approval of the graduate program adviser and the graduate dean. When a student repeats a course, the grade point average will be calculated on the basis of the last grade earned, although all previous grades will remain on the transcript.

Graduate Student Honors

Alice Eaves Barns Award

Named in honor of Mrs. Alice Eaves Barns for her many years of outstanding service as a staff member of the Graduate School at the University of Louisville. Mrs. Barns' extraordinary dedication, unwavering eagerness to serve as advocate for the needs of all graduate students and willingness to overcome all obstacles necessary to achieve desired goals, embodies the Spirit of the Graduate School. Given in recognition of outstanding achievement in a Master's Program. Nominations may be sumbitted to the Graduate Dean for the May and December convocations.

Graduate Dean's Citation

Graduate Dean's Citations are awarded at each commencement to students recommended by their departments in recognition of superior accomplishment in their graduate studies. Each school or college may recommend up to 10 percent of its graduate students completing their degrees in August, December, and May of the academic year. Recommendations are to be based on criteria established by the school or college, which must include above-average academic accomplishment and (if appropriate to the discipline) written or creative evidence of superior accomplishment.

Guy Stevenson Award

The Guy Stevenson Award for Excellence in Graduate Studies honors a former dean of the Graduate School.

John Richard Binford Memorial Award

The John Richard Binford Memorial Award honors a former chairman of the Department of Psychology.

John M. Houchens Prize

The John M. Houchens Prize honors a former Registrar of the University. In the spring and fall of each year doctoral dissertations are submitted for consideration. If one is considered to be of special merit, the council may recommend that its author be awarded the Houchens Prize.

Nominations for these awards are submitted to the Graduate Dean for December and May commencement recognition. Those individuals who received their degrees in August must be nominated for consideration during the December Commencement program.

Dissertations to be considered for the Houchens Prize are submitted by the same route. Only those students expected to complete their doctoral degree by the end of the current term (or August in the case of December consideration) are eligible for consideration of this award.

Requirements for Graduate Degrees

Requirements for the Master's Degree

The departmental announcements in this catalog should be consulted in all instances; however, the following rules apply to all master's degree programs.

Course Credit

A minimum total of 30 semester hours of graduate credit is required for the master's degree. At least 15 semester hours must be in courses of the major subject area, and the remaining hours in the program distributed as recommended and approved by the major department. At least one-half of the credits counted toward the degree (exclusive of thesis, practicum and internships) must be in courses open to graduate students only (600 level or above). A grade average of 3.0 or better must be maintained.

There is a time limit imposed, stipulating that credit earned more than six years prior to the completion of the degree may not be counted toward meeting its requirements. This time period may be extended upon recommendation of the student's department head and the approval of the Dean of the Graduate School.

Maintaining Candidacy

Refer to previous section entitled, General Academic Policies and Requirements, see subsection entitled Maintaining Candidacy.

Thesis

Students completing degree programs that include a thesis must submit the thesis to their major professor at least thirty days in advance of graduation (guidelines may be found at www.graduate.louisville.edu).

Acceptance of the thesis shall be at the discretion of a special reading

committee composed of the major professor and two other persons of professorial rank recommended by the department and appointed by the Dean of the Graduate School. One person so appointed shall be from a different department, and all three must be members of the graduate faculty. The committee shall complete its review of the thesis at least one week prior to the final oral examination.

One unbound copy of the accepted thesis, signed by the committee members, must be deposited with the Office of the Graduate School (see Schedule of Courses for due date). Graduate students completing a thesis in an M.S. program offered through the Speed Scientific School are required to submit additional copies. Students should contact the office of the dean of that school for specific information.

The thesis normally carries 6 semester hours of graduate credit, which is in addition to the 15-hour minimum taken within the major department. In certain departments, a professional paper may be required in lieu of a thesis. For procedures in these instances, consult the head of the department.

Final Oral Examination

The final oral examination shall be conducted by a committee of Graduate Faculty members recommended by the head of the major department and appointed by the Dean of the Graduate School in the same manner as the thesis reading committee (see above).

The examination must cover the materials presented in the thesis or professional paper and may include the content of courses taken or other matters pertinent to the candidate's admissibility to the master's degree. At the discretion of the major department, a portion of this examination may be written. The recommendation for the degree shall be determined by a simple majority of the committee members. Recommendation shall be made to the graduate dean at least one week prior to graduation.

In the event of an unfavorable vote, the committee may refuse the candidate's admissibility to the master's degree, or it may recommend another examination with or without additional work.

Programs in Education

Programs in Teaching and Learning:

An increasingly complex society means children and adolescents need new sets of skills and knowledge to succeed in the 21st century. Today's teachers are creating classrooms that are active, engaging and performance-driven. The standards and higher and the stakes are greater. The Department of Teaching and Learning offers programs that blend the latest educational theories with real-world application. They build on the experience and knowledge that students bring to graduate student and prepare educators for advanced roles in their profession.

Alternative Certification Programs - Alternative certification programs are designed for teachers who are not currently certified and who have full-time teaching responsibilities in area public schools. In some cases, school district and grant funding may provide tuition assistance for those who qualify. Students' eligibility is dependent upon employment as a teacher of record and upon meeting the criteria for admission to the alternative certification programs. Alternative Certification is available through the MEd. in Special Education for learning and behavior disorders and for moderate and severe disabilities. Additional alternative certification programs are available through the MAT in middle school (grades 5 - 9) English, mathematics, science, social studies, and in Secondary (grades 8 - 12) biology, chemistry, earth and space science English, mathematics, physics, social studies, (grades 5 - 12) business/marketing (grades P-12 Spanish and French alternative certification programs are pending.)

Curriculum and Instruction - The doctoral program in curriculum and instruction prepares educators for various roles in college and university teaching and research and leadership positions in K-12 schools, public school districts and other educational institutions. Students may chose to specialize in a specific discipline such as elementary, middle grades, secondary or special education, or pursue a generalist degree. Degree offered: Ph.D.

Early Childhood Education (Birth to Age 5) - A nurturing educational experience helps set young children on a course of success in life. Our early childhood education programs guide students toward a holistic understanding of children from birth to age 5. Programs are available for students seeking initial teacher certification and for those who want to work in settings where teacher certification is not required. Degree offered: M.Ed.

Elementary Education (Primary to Grade 5) - A wide-ranging curriculum equips students for excellence as elementary teachers. They learn how to effectively present the subject matter, work with disabled and gifted students and manage the challenges and opportunities of a multicultural classroom. Our master of education program empowers good teachers to be even better classroom instructors and educational leaders. Our master of arts in teaching degree program guides students toward teacher certification and success as an education. Degrees offered: M.A.T., M.Ed, and Ph.D.

Middle Grades Education (Grades 5 to 9) - Our flexible programs allow students to specialize in one or two middle school disciplines, including language arts, mathematics, social sciences, and sciences. Our programs help teachers understand the self-identity issues that surround early adolescence. We also teach the most effective learning strategies for middle school students. Current middle grades teachers can enhance their skills through our master of education degree, while prospective teachers gain certification and the needed skills for a rewarding career as a middle school educator in our master of arts in teaching degree program. Degrees offered: M.A.T., M.Ed., and Ph.D.

Secondary Education (Grades 9 to 12) - Motivated learners are the most teachable students. That's why our programs in secondary education show teachers how to make students active agents in their own learning. Since students bring different needs to the classroom, issues such as learning styles, sociocultural differences and the special needs of disabled and gifted students are given particular attention. In our master of education degree program, experienced secondary teachers hone their existing sills and develop new abilities. Our master of arts in teaching degree program enables prospective teachers to gain teacher certification and develop classroom proficiency. Degrees offered: MAT, M.Ed., and Ph.D.

Special Education - The demanding and rewarding field of special education requires careful preparation. Our program allows students to choose among various special education areas. We offer concentrations in learning and behavior disorders, learning disabilities, mental retardation, moderate and severe disabilities, orientation and mobility, and visual impairment. Options are available for certified teachers and for those seeking teacher certifications. A non-teaching program is designed for people who work in clinics, preschools, institutions, day care centers and other settings where teacher certification is not necessary. Degrees offered: M.Ed. and Ph.D.

Rank Programs for Certified Teachers - Programs for certified teachers that meet Kentucky Rank I and Rank II requirements are available. Rank programs are generally incorporated into other graduate degree programs. Independent Rank I programs are available in elementary education, middle grades education secondary education and special education. An independent Rank II program is available in special education.

Programs in Leadership, Foundations and Human Resource Education

The need for leaders who are change agents, visionaries and problem solvers will accelerate as we advance into the 21st century. The Department of Leadership, Foundations and Human Resource Education offers degrees in administration, higher education, supervision, human resource education and instructional technology. These programs train creative leaders for schools, institutions, nonprofit organizations and corporations. We offer a balance of theory and application and encourage collaborative learning among peers and professors. While practical application is emphasized in our entire master's and doctoral programs, our student also receive a solid grounding n historic and philosophical foundations of education.

Educational Administration - Our programs in administration and higher education help students maximize their existing leadership skills and enable them to develop new ones. They learn to be astute planners, motivators, communicators, and decision makers. And, they use their expertise to achieve success as principals, superintendents and college administrators. Our

programs work in tandem with public school systems and post-secondary institutions to identify and train future administrators. Many of our students participate in Principals for Tomorrow, a program of the Jefferson County Public School System, and Identifying and Developing Educational Administrators for Schools, a program of the Ohio Valley Educational Cooperative. Degrees Offered: M.Ed., Ed.S, and Ph.D.

Higher Education - It takes an informed and creative leader to meet the challenges of higher education today. Our programs in higher education help mold leaders who are forward thinking and ready to face the organizational complexities posed by college and university administrations. We also offer a concentration in sport administration that prepares student for management positions in college athletics. Degrees offered: M.A., Ed.S. and Ph.D.

Human Resource Education - Our program in human resource education prepares professionals who design, develop, deliver and evaluate training programs. Students learn the intricacies of workplace design, organizational culture and employee motivation. They acquire skills that are useful in a variety of training environments, including health care industry, business, the military and public and private service agencies. Students learn the full expanse of employee training programs-from needs assessment to evaluation. Degree offered: M.Ed.

Instructional Technology - Our program in instructional technology offers students considerable flexibility to pursue expanded professional careers in schools as well as training and development for positions in business, industry, health-care agencies, military or civil service and community agencies and organizations. It enables teachers, corporate trainers and others to use technology to design, deliver and support instruction. Degree offered: M.Ed.

Programs in Counseling and Personnel Services

The Department of Educational and Counseling Psychology offers a broad range of programs in counseling and personnel services, each area of student prepares exemplary practitioners and encourages excellence in scholarship and research. Although diverse in focus, all programs seek to train practitioners and researchers who are committed to maximizing human potential.

College Student Personnel - Many student affairs professionals see co-curricular activity as a critical part of the holistic development of students. Our program in college student personnel prepares individuals who guide students through this critical period of life. Our graduates work in student affairs, residence life, student activities, financial aid, admissions career services, academic advising, greek affairs and o other fields. This degree program includes a well-balanced blend of theory, research and field experiences. Degrees offered: M.Ed. and Ph.D.

Community Counseling - This program prepares counselors for work in human service and counseling agencies. Our graduates pursue careers in mental health agencies, family resource and youth serviced centers, hospitals, career placement centers, drug/alcohol facilities, employee assistance programs and residential treatment centers. Students may fulfill the academic preparation required for National Counselor certification or continue with 12 additional hours to fulfill the requirements for credentialing as a Kentucky Certified Professional Counselor. Degree offered: M.Ed.

Counseling Psychology - Counseling psychologists serve in a variety of inpatient and outpatient settings. At the master's level, we offer two options: One is for s students who plan to work in human services in a non-counseling role or who may pursue doctoral studies, and the other is for students who plan to practice psychology under the supervision of a licensed psychology. Degrees offered: M.Ed. and Ph.D.

Expressive Therapies - Currently, the expressive therapies program offers a degree in art therapy. Art therapy provides individuals and groups the means to express and explore feelings, thoughts and problems through art and imagery. As one of the expressive therapies, the art therapy curriculum includes some exposure to the use of drama, music, dance and photography and therapeutic techniques. This therapeutic approach is effective with people of all ages and is helpful for those struggling with a wide range of physical, behavioral and emotional issues. As the home of the nation's first university-based art therapy program, U of L is committed to continuing its leadership role in the field. Degree offered: M.A.

Programs in Exercise Physiology, Physical Education and Sport Administration

People who participate in physical fitness and sports programs benefit both physically and mentally. Studies have shown that students involved in physical activity or sports programs are more alert, perform better in school and understand the concepts of teamwork and cooperation. The Department of Health Promotion, Physical Education and Sport Studies offers programs in exercise physiology, physical education, and sport administration that prepare students to lead people toward healthier lifestyles.

Exercise Physiology - Exercise physiologists work in a variety of settings, and the demand for their services is growing. Our graduates pursue careers in teaching, exercise testing and training, corporate wellness and medical physiology and research. Some pursue doctorates in physiology, biochemistry or medicine. Our curriculum is structured to satisfy the requirements for certification by the American College of Sports Medicine as an exercise technologist or an exercise specialist. Students may select either a thesis or non-thesis option. Degree offered: M.S.

Physical Education - Our master of education program in physical education offers six concentrations: adapted physical activity, fitness/wellness, pedagogy, psychology and motor development, school and community health and sport administration. Graduates find work in schools, fitness centers, community health organizations and athletic/sports organizations. For people seeking initial teacher certification, the master of arts degree in physical education offers teacher certification for elementary, middle and high school teachers. Degrees offered: M.Ed. and M.A.T.

School Counseling - School counselors help students succeed in school and in life. They work at all grade levels, giving appropriate guidance in academic, personal and career matters. We strive to prepare counselors for today's schools by incorporating the profession's most innovative educational standards. Graduates of the program are able to obtain certification by the Kentucky Education Professional Standards Board. Degrees offered: M.Ed. and Ph.D.

Admission to Master Degree Programs in Education

All candidates must meet the general requirements for admission to the Graduate School, as well as the requirements for admission to certain specific programs offered by the College of Education and Human Development. See the general requirements for admission to the Graduate School on page 9 of this catalog. To learn the specific admission requirements for the education program in which you are interested in applying, see the program section of this catalog or contact the Education Advising Center at 502/852-5597. All students applying for a master's program in education must take the Graduate Records Examination (GRE) prior to application for admission. A combined score of 800 on the verbal and quantitative sections of the GRE is required for all master degree programs in the College of Education and Human Development except for the M.A.T. in Physical Education. The M.A.T. in Physical Education requires passing scores on the Praxis II Examinations in Health and Physical Education. In addition, applicants for admission to the exercise physiology program are required to have a combined verbal and quantitative score on the GRE of 900. (Applicants for admission to the exercise physiology program who do not meet this requirement should contact the Department of Health, Promotion, Physical Education, and Sport Studies for assistance.) In certain specific programs, the College of Education and Human Development allows a student to complete only one semester of coursework before GRE scores have been submitted, as the student may not meet the College of Education and Human Development's requirements for admission if GRE scores are below 800. Applicants whose combined GRE scores fall below 800 or whose undergraduate grade point average is below 2.75 should consult the College of Education and Human Development for possible alternatives for conditional admission. However, all applicants seeking admission to an initial teacher certification program must be unconditionally admitted before they will be allowed to enroll in courses in the program. No applicant to a graduate program in education will be admitted if the undergraduate grade point average

is below 2.50. There are four admission statuses: unconditional, provisional, conditional, and denied. All admission credentials must be sent to the Graduate Admissions Office at the following address: Graduate Admissions Office, Houchens Building, University of Louisville, Louisville, KY 40292

Rank II Equivalency and Rank I Programs

Thirty-two hours of work in a planned Rank II Equivalency Program may lead to Rank II salary status and certification renewal for Kentucky educators. A minimum grade point average of a 2.50 is required for admission to a Rank II Equivalency Program. A grade point average of 2.5 or above is required on the course hours submitted for the Rank II Equivalency program. A planned Rank I Program may be pursued by those who have completed a master's degree or the nondegree Rank II Equivalency Program. A Rank II Equivalency program is available in counseling, early childhood education, and special education

Calculation of the grade point average for Rank I programs will include only those courses completed after the Master's degree is awarded or the Rank II Equivalency program is completed. A grade point average of 3.0 is required on the course hours submitted for Rank I. No credit will be accepted for courses carrying a grade lower than C.

Both programs must meet state guidelines. Additional information concerning the Rank II and Rank I programs is available in the Advising Center, or from appropriate faculty advisors in the College of Education and Human Development.

Initial Teacher Preparation Programs

All students seeking initial teacher certification must be admitted to Teacher Education. Contact the College of Education and Human Development for specific admission requirements.

Based on a conceptual framework, "teaching for knowledge, leadership and change: enabling success for all learners" the teacher preparation programs share a common goal of developing reflective educators who view learning as a constructive and life-long experience. Teacher education programs at the University of Louisville prepare teachers as life-long learners who can lead students to success.

The teacher preparation programs emphasize a depth of academic preparation that allows teachers to be knowledgeable about the subjects they teach and to develop the critical thinking and life-long learning skills increasingly important for teachers.

Second, the pre-teacher education courses allow any UofL undergraduate or post-baccalaureate student to explore the profession of teaching from the viewpoint of children and their families, the sociocultural context of modern schooling, and the nature of restructured schools under KERA. Students can then make an informed decision about applying for the program leading to a Master of Arts in Teaching (MAT) degree.

Third, the teacher preparation program emphasizes:

- responding constructively to socio-cultural differences among students
- collaborative leadership to improve schools and young people's lives
- nurturing students as active agents in their own learning
- meeting needs of students with disabilities and gifts
- application of appropriate technologies
- designing and implementing engaging school curricula to support KERA
- advocating for student opportunities in school and community

Fourth, these programs are delivered in concert with practitioners in the schools and community agencies. Courses and experiences with students occur at the schools; teachers, staff, and students participate actively in them; and faculty, staff, and students, in turn, are involved with restructuring initiatives at these schools.

The Master of Arts in Teaching degree is an intensive program that culminates in both the graduate degree and Kentucky teacher certification. It builds upon an undergraduate degree in an academic discipline that includes academic coursework in fields taught in Kentucky schools and an undergraduate core of courses. Teacher preparation is offered in early elementary school education (grades P-5), middle school education (grades 5-9), high school education (grades 8-12), music education (grades P-12), art education (grades P-12), physical education (grades P-12), and foreign language education (grades P-12).

Initial teacher certification in early childhood education (Birth through Primary), Standalone Learning and Behavior Disorders, and Standalone Moderate and Severe Disabilities is offered through the Master of Education.

University of Louisville undergraduates who are interested in a teaching career should complete a four-year bachelor's degree in the College of Arts and Sciences, the College of Business and Public Administration, the School of Music, or the Department of Health Promotion, Physical Education and Sport Studies. They should begin preparing for application to the Teacher Education Programs by taking the prerequisite course(s) in understanding children and families, their sociocultural background, and the structure and function of schools.

Applicants have the option of attending on a full or part- time basis. The preparation program is delivered primarily in school settings and involves the students and teachers in those sites.

Applicants must provide a portfolio composed of evidence of academic and personal preparedness to pursue the master's degree and teacher certification. Students must have earned a bachelor's degree, with a minimum grade point average of 2.75 or higher, and are expected to have a combined score of 800 on the verbal and quantitative sections of the General Test of the Graduate Record Examination. Applicants seeking middle school or secondary teaching fields must also take the appropriate Praxis II specialty examinations. Letters of recommendation from faculty familiar with their academic record must be submitted, be interviewed, have the necessary academic coursework in an area of teaching, and submit evidence about their literacy, academic background, computer skills, physical condition, and reasons for pursuing a career in teaching. A faculty screening committee considers all the information before making an admission recommendation. For specific information, contact the Education Advising Center (852-5597).

Alternative Certification Programs

Alternative certification programs are designed for teachers who are not currently certified and who have full-time teaching responsibilities in area public schools. In some cases, school district and grant funding may provide tuition assistance for those who qualify. Students' eligibility is dependent upon employment as a teacher of record and upon meeting the criteria for admission to the alternative certification programs. Alternative Certification is available through the MEd. in Special Education for learning and behavior disorders and for moderate and severe disabilities. Additional alternative certification programs are available through the MAT in middle school (grades 5 - 9) English, mathematics, science, social studies, and in Secondary (grades 8 - 12) biology, chemistry, earth and space science English, mathematics, physics, social studies, (grades 5 - 12) business/marketing (grades P-12 Spanish and French alternative certification programs are pending.)

These alternative certification programs are designed for teachers who are not currently certified and who have full-time teaching responsibilities in area public schools. In some cases, school district and grant funding may provide tuition assistance for those who qualify. Students' eligibility is dependent upon employment as a teacher of record and upon meeting the criteria for admission to the alternative certification programs. Please contact the Coordinator of Alternative Certification, 852-0596 or the Education Advising Center for detailed program information and admission requirements.

Statement on Student Teaching/Field Experiences

Placement in field experiences is contingent upon the applicant's prospects for success and upon the availability of a qualified supervisor. The faculty reserves the right to evaluate the qualifications and suitability of student applicants and the quality of the student's performance and to make placements and appropriate changes based on the recommendation of the university coordinator and/or the host school or other agency. Evaluation will be based on standards of conduct and performance established by the faculty. Student teachers must abide by all policies, rules, and regulations of the University and the assigned school or other agency. Failure to abide by this policy may result in dismissal from the program.

Specialist in Education Degree

The Specialist in Education (Ed.S.), a 6th year degree program (30-hours beyond the master's degree), is offered in Education

Administration. Selective admission standards restrict this program to the superior graduate student in education.

Admission requirements for the Ed.S. include an appropriate master's degree; a grade point standing of at least 3.3; a combined score of 900 on the Verbal and Quantitative portions of the Graduate Record Examination; admission to the Graduate School; successful, relevant professional experience; a written rationale for pursuing the degree; a successful interview with a Departmental Committee; and any other evidence the applicant wishes to submit that addresses his/her academic and professional strengths.

Complete applications for admission must be submitted by March 15th or October 15th. A Departmental Committee of at least three faculty members will consider the applications and make recommendations about admissions to the Associate Dean by the end of the semester. Potential applicants should confer with the departmental chairperson before filing an application.

There is a time limit imposed stipulating that credit earned more than six years prior to the completion of the degree may not be counted toward meeting its requirements. This time period may be extended upon recommendation of the student's department head and the approval of the graduate dean.

Requirements for the Doctor of Philosophy Degree in Education

For many educators, the decision to pursue a doctorate is a professional turning point.

Some want to earn an Ph.D. in order to assume new levels of responsibility in their organizations. Others seek a doctorate as part of a long term plan to change the course of their lives and careers.

The common thread for most candidates-whether they work in education administration or a corporate training center, a university, a human services agency, or a classroom-is the desire to increase knowledge in their field and develop leadership ability in a critical enterprise of learning and human development.

With the adoption of the Kentucky Education Reform Act in 1990, Kentucky moved to the forefront of national school reform. The University of Louisville College of Education and Human Development has been at the leading edge of that movement. Throughout the nation, doctoral recipients from our programs are:

- Leading change in educational policies and practices
- Participating in groundbreaking research on learning, particularly in urban settings
- Finding creative solutions to the challenges in dynamic business environments
- Making a difference

The Doctor of Philosophy degree in Education is currently under revision. For information about the admission requirements and degree requirements consult the appropriate department in the College of Education and Human Development.

Requirements for the Degree of Doctor of Philosophy

In addition to the particular rules of the various departments as stated in their sections of this catalog, the following general rules apply to all Doctor of Philosophy programs.

Application for the Doctorate

To become an applicant for the doctorate, the student must be admitted to the Graduate School (see previous sections on Admission to the Graduate School and Admission Statuses) and be accepted by the department of specialization. Only students with exceptional scholarship and originality are accepted for work towards the degree of Doctor of Philosophy, and departments are expected to have more restrictive criteria for admission to this program than those for admission to a master's degree program.

The degree is not awarded solely upon completion of a curriculum of prescribed courses, even though the student has done superior work in them; rather, it is awarded in recognition of creative scholarship as demonstrated by a substantial contribution in the candidate's chosen field. Only students who offer promise of meeting this high standard will be accepted by a department to begin work toward this degree. The prospective student should consult in person with the department in which he/she wishes to major.

Program of Study

Each applicant for the doctorate is expected to take such courses as may be required for the advancement of scholarship in general and for training in his/her field of specialization. The major professor shall design a program of study to fit the needs of the individual student subject to approval by the department's graduate program committee and/or department chair. This program may be modified at any time upon the recommendation of the major professor and approval of the department head and the graduate dean. The program will consist of a major field and such minor fields as the major professor and the department head may agree upon.

All courses offered by the University, at any level and in any school, shall be accessible to the doctoral student, subject to approval by the instructors. The student is expected to receive high marks in these courses; grades lower than "B" will usually be regarded as evidence of poor scholarship and may bar the student from admission to candidacy.

Residency

In order that the student may be assured of an opportunity to utilize the educational facilities properly and to participate in the intellectual life and research atmosphere of the University, at least two years of study must be spent at the University of Louisville and at least one must be spent in full-time residency.

To be considered in full-time residency for one year, a student must be registered for 9 or more hours in each of two consecutive semesters.

Foreign Language Requirement

Foreign language proficiency is no longer a general requirement of the Graduate School. However, some departments have established such requirements, which will be specified in their sections of this catalog.

When a proficiency in computer language is expected and no provision has been made by the major department, a graduate student must establish his or her proficiency in computer language by successful completion of ESC 102, FORTRAN, offered by the Speed Scientific School, or by passing an equivalent examination administered by the Speed School.

Qualifying Examination and Candidacy

The applicant for a Doctor of Philosophy degree must pass a qualifying examination, oral or written, or both. Its purpose is to verify that the student has sufficient understanding of and competence in his/her field to become a candidate for the degree. This examination may be referred to as the preliminary, comprehensive, or candidacy examination.

To be eligible for this examination, the student must have satisfactorily completed the major portion of the prescribed course work and must have met the foreign language requirement, according to departmental policy. It is the student's responsibility to be aware of departmental policy on the consequences of failure of all or part of the examination. A student who fails the examination will not be allowed to retake it more than once.

A doctoral degree student must have been admitted to candidacy not later than the end of the ninth month prior to the awarding of the degree, that is:

August graduation: November 30 of preceding year

December graduation:
March 31 of same year

May graduation:
August 31 of preceding year

Although the prescribed course work may have been completed, the candidate must maintain an active registration status until the degree is awarded (see previous section on General Academic Policies and Requirements, subsection Maintaining Candidacy).

Time Limitation

The candidate must complete all other requirements for the degree of Doctor of Philosophy within four calendar years after passing the qualifying examination. In exceptional cases, the Dean of the Graduate School is empowered to grant limited extensions of this four-year period.

Dissertation

A dissertation is required of all candidates for the degree of Doctor of Philosophy. It is to be a scholarly achievement in research, and should demonstrate a thorough understanding of research techniques in the field of inquiry and the ability to conduct independent research (guidelines may be found at www.graduate.louisville.edu).

The dissertation is to be submitted in completed form to the head of the major department at least thirty days before the end of the term in

which the candidate expects to be graduated, and the candidate is not eligible for final examination until the dissertation has been approved.

The dissertation shall be read by a reading committee, chaired by the major professor, and appointed by the Dean of the Graduate School upon the advice of the head of the major department. This committee shall consist of not fewer than three members of the Graduate Faculty and must include one representative of an allied department. The dissertation must be approved by the committee and the head of the major department.

One unbound copy of the dissertation, signed by the dissertation committee, must be deposited with the Office of the Graduate School before graduation. Graduate students completing a dissertation in a Ph.D. program offered through the Speed Scientific School are required to submit additional copies. Students should contact the office of the dean of that school for specific information.

Final Oral Examination

This examination is to be a defense of the dissertation and a demonstration of the candidate's mastery of his/her field. The examination will be given by a committee of Graduate Faculty members appointed by the Dean of the Graduate School upon recommendation of the head of the major department. The Committee will consist of five or more members representing the major department and at least one allied department. The major professor shall be chair and must have Senior status on the Graduate Faculty (forms may be found at www.graduate.louisville.edu).

The Graduate Dean's Office shall notify all members of the Graduate Faculty at least one week in advance that they are invited to participate in the examination, but only members of the committee may vote. At the discretion of the major department, a portion of the examination may be written.

The examination must be taken at least fourteen days (14) before the end of the semester in which the degree is to be granted. To be passed in this examination, the student may not receive more than one abstention or dissenting vote.

Special Facilities and Services

University Libraries

The University offers an extensive library system designed to support undergraduate and graduate teaching, learning and research. The Library system consists of the Main Library, the Fine Arts Library, the Law Library, the Music Library, the Health Sciences Library, the Engineering, Physical Science, and Technology Library and the University Archives and Records Center. Total library holdings number approximately 1.8 million volumes.

The libraries subscribe to 16,028 journals and to over 306 electronic databases, with electronic access to more than 30,000 journals. In addition, the libraries hold over 2 million items in microform.

The University Libraries provide access to electronic resources and databases covering a wide spectrum of subjects for faculty, staff and students. The Interlibrary Loan units of the Ekstrom and Health Sciences libraries provide access to the collections of the Kentuckiana Metroversity member schools, the Kentucky Commonwealth Virtual Library (KCVL), and other libraries throughout the state, nation and the world for materials not owned by the University of Louisville Libraries. The libraries' collections are accessed through the ***Minerva*** online catalog at: http://library.louisville.edu/

Main Library

The William F. Ekstrom Library on Belknap Campus contains over 1,042,319 books and subscribes to 5,127 journals as well as an array of diverse information services and collections. Ekstrom is the largest library facility at the University and houses over half of the entire University Libraries' collections. The library is a depository for United States government publications and receives approximately 70% of titles available from the Government Printing Office. A superb collection of videos relating to race, gender and diversity can be found in the Media Collection on the second floor of the library. The library houses a Collaborative Learning Center with 2 fully networked computer classrooms including 50+ workstations, a state-of-the-art electronic classroom with 25 wireless laptops and a computer laboratory with 31 computer workstations. In addition, wireless laptop computers are available at the Circulation Desk for students to use throughout the library.

The ***Photographic Archives,*** established in 1967, are located in the Ekstrom Library. They contain approximately 1.5 million images, plus manuscripts and other items related to its collection specialties. Holdings contain research-level documentary collections and collections of fine prints to support the University's academic major in photography.

The ***Rare Books*** department houses primary research materials, literary manuscripts, early printed books, first editions and illustrated books. The Bullitt Collection of rare mathematics and astronomy books, the McWhorter Collection of Edgar Rice Burroughs (the largest institutional collection in the world of these materials) and the Kain Collection of the Irish Literary Renaissance can be found here.

More information about the Ekstrom Library can be found on the World Wide Web at: http://library.louisville.edu/ekstrom.

Laura Kersey Library of Engineering, Physical Science and Technology

The 142,624 volume collection in the Kersey Library supports research in the fields of chemical, civil, electrical, industrial, and mechanical engineering; computer science; mathematics; chemistry; physics; engineering management; operations research; and energy. The Kersey Library subscribes to over 1,368 periodicals and holds theses which have resulted from research conducted by students in the physical science and engineering departments. The reference collection contains basic and research materials. Web resources available at the Kersey Library are ***EiVillage (Engineering Village),*** COMPENDEX (Engineering Index), ***MATHSCINET*** (Mathematical Reviews), INSPEC (Electrical and Electronic Abstracts, Computer and Control Abstracts and Physics Abstracts combined), Beilstein's Current Facts in Chemistry and Web of Science. Many journals and course reserve items are available electronically. On-line searching and reference assistance are available by appointment. A 24-workstation computer lab provides access to various software programs and the web. For more information check the Web page at: http:/library.louisville.edu/kersey .

Fine Arts Library

The Margaret M. Bridwell Art Library, located on the main floor of Schneider Hall, contains the University's research collection in art, design and architectural history. Currently housing over 74,000 volumes, the Art Library subscribes to 325 journals and museum bulletins, has a growing collection of videos, and provides access to the major electronic and print indexes. The collection supports the programs of the Fine Arts Department, covering the areas of painting, drawing, sculpture, printmaking, architectural history, interior design, graphic design, art education, pottery, textiles and decorative arts. The Art Library also has a rare book collection for rare and scarce materials.

Art library books circulate only to faculty and to graduate students in the Fine Arts and Expressive Therapies departments. Art library services include: a group study room for watching videos or viewing slides, a scanner for making color copies, and a public-use computer for word processing. More information about the Art Library can be found at: http://library.louisville.edu/art .

Health Sciences Library

The Kornhauser Health Sciences Library, located in the downtown medical center, meets the information needs of the Schools of Dentistry, Medicine, Nursing, as well as local area health practitioners. It is a Regional Resource Library of the National Network of Libraries of Medicine, representing a significant resource for the entire health sciences community of the Louisville metropolitan area and the western half of Kentucky.

Founded in 1837, the Kornhauser library is today a comprehensive health sciences information resource center providing access to the most current information resources available. The library's web site serves as a gateway to the University of Louisville Libraries' online catalog, databases of the biomedical literature, electronic texts and journals, educational tools, and other medical information resources available both on and off campus. The library's collection contains 226,771 cataloged volumes, 3,519 journal subscriptions, and access to 1,500 electronic journal subscriptions, as well as a multimedia collection. The historical collections and medical school archives include numerous items relating to health care in Kentucky and the Trans-Appalachian West. Library services include circulation of materials, reference, instruction, interlibrary loan, and literature searching. Additional information on the Kornhauser library can be found at: http://library.louisville.edu/kornhauser .

Law Library

The library of the Louis D. Brandeis School of Law contains more than 400,000 volumes and microform volume equivalents, emphasizing

primary and secondary resources in United States law. Special collections include the papers and correspondence of U.S. Supreme Court Justices John Marshall Harlan and Louis D. Brandeis. The library is a selective depository for federal government documents, and a hardcopy depository for U.S. Supreme Court records and briefs. For more information on services and the collections check the World Wide Web at http://library.louisville.edu/law.html .

Music Library

The Dwight Anderson Memorial Music Library houses one of the largest academic music collections in the State of Kentucky. Since its founding in 1947, the principal mission of the library has been to provide materials in support of the curriculum of the School of Music and the research of its faculty.

Total holdings exceed 93,000 volumes, and subscriptions are maintained for 300 journals. The Listening Area offers state-of-the-art audio and video equipment, complete with compact disc players, cassette decks, and videocassette players. The sound recording collection now exceeds 16,000 discs.

The library houses several special collections of local and national interest. Of particular importance are: The Traipsin' Woman (Jean Thomas) Collection, the Isidore

Philipp Archive and Memorial Library, and the Hattie Bishop Speed Collection. The collection of sheet music, with its emphasis on Louisville imprints, is the most extensive in the region. The most notable recent acquisition is a collection of over four hundred eighteenth and early nineteenth century prints and manuscripts assembled by the noble Ricasoli family of Tuscany. The library also serves as the repository for materials related to the Grawemeyer Award for Music Composition. More information can be found at: http://library.louisville.edu/music/ .

University Archives and Records Center

The University Archives is a research repository of national significance. It contains primary sources relating to the university, Louisville, and the nation. It attracts students, faculty, and scholars from Louisville, from elsewhere in the U.S., and from other countries. It collects, preserves, and makes available for research, historical manuscripts, oral history interviews, and other primary research materials, and thus serves as a research laboratory for humanists, social scientists and others. Its Urban History Collections include nineteenth and twentieth century records of area businesses, cultural organizations, social service agencies, and churches; and personal papers of politicians, scholars, members of the Jewish and African-American communities, women, and other prominent and representative Louisvillians. Students with class projects, theses, or dissertations on University, local or regional topics are invited to consult this office. Additional information can be found at: http://library.louisville.edu/uarc/ .

Information Technology Services

U of L's Information Technology unit (IT) is responsible for planning, implementation, deployment, and management of information technology services in support of the instructional, research, administrative, and service programs of the University. These IT services include

- Computing services,
- Communications services,
- Printing, publications, and copying services,
- Imaging and television services,
- Instructional technology/ instructional support, and
- Gheens Science Hall and Rauch Planetarium.

Computing Services

The centralized computing systems at U of L are undergoing constant expansion. The University supports office automation, administrative applications, employee and student self-service applications, document imaging, library catalog, statistical analysis and database applications on large centralized systems. The majority of the University's administrative systems operate using PeopleSoft applications running on large IBM AIX (UNIX) systems.

Academic computing, statistical analysis, database, and other computing functions are also supported using IBM Unix-based systems. The University's library catalog and circulation systems are supported by an IBM UNIX server using the Endeavor/Voyager system.

These centralized computing systems, located in the Miller Information Technology Center, are accessed across the University by overalmost 132,000 workstations in offices, user centers and departments, and via dial-up remote access service.

Computer accounts for UNIX systems, E-mail, and GroupWise are available to students, faculty, and staff for university-related educational and administrative purposes.

The University supports Novell NetWare as the standard for print and file services in local area networks. Office automation functions (integrating E-mail and calendars) are supported by Novell GroupWise, and basic E-mail services are available through a Unix E-mail system.

Two large computing user centers on the Belknap campus and one on the Health Sciences campus (along with numerous smaller facilities) are available for access to University networks and computing resources. Public computing laboratories are located in the Miller Information Technology Center and the College of Business and Public Administration on the Belknap Campus, in the Instructional Building B on the Health Sciences campus, and in Burhans Hall on the Shelby Campus. Together, these centers provide over 200 public workstations for access to UofL information resources and the Internet. Additional public workstations in high-traffic locations provide access to E-mail.

IT Information Systems

The IT Information Systems unit is responsible for acquisition, development, implementation, support, and enhancements to the University's administrative applications which support such services as admissions, financial aid, registration, grade reporting, etc. Document imaging and web applications development are provided to University departments on a fee-for-service basis.

IT Operations Center and Data Center Services

The IT Operations Center operates and maintains the University's centralized host systems, local area network file and print servers, and e-mail systems; manages the University's public computing user centers; provides personal computer desktop support; and provides University telephone operator services. IT Data Center Services provides security and account management services, and provides technical support for the University's centralized host and server systems, including the centralized web servers.

Communications Services

The University's wide area network provides access to the Internet and campus computing resources. IT Communications Services is responsible for the installation, operation, and maintenance of the high-speed campus network, and the University's telephone systems. The University's communications networks provide voice, data, and video services to campus locations. The University metropolitan area data network includes 44 miles of fiber optic cable that interconnects the three campuses (Belknap, Health Sciences, and Shelby) and incorporates high-speed fiber optic network between buildings.

Video service is currently provided over broadband cable on campus. Microwave links can be used between campuses. A satellite uplink is used for uplink to Kentucky Educational Television (KET) Star Channels system. The University is licensed for Instructional Television Fixed Service (ITFS) and is member of KET.

Campus telephone service is implemented as a Centrex (central office-based) single line strategy. IP video and voice-over-IP services are being implemented in some campus areas.

The University is host to a high-speed Internet access point used to support the Internet needs of many Postsecondary institutions across the state. This access point is an OC-3 (155Mbps) connection from a major national Internet service provider. The University is also a member of Internet2 and has connectivity through the Internet2 Project Abilene network at 155Mbps (OC-3). There are plans to upgrade these services during 2003.

The University operates a low-cost dial-up Internet service (called UofL.net Remote) for the University's faculty, staff, and students. This service has over 300 ports supporting 56Kbps service.

The University participates as a node of the KTLN (Kentucky Tele-Linking Network) which provided interactive teleconferencing facilities across the state of Kentucky.

Printing, Publications, and Copy Services

UofL.Print offers a full range of printing and publications services, including layout, graphical design, press operations and binding services. Six copy center (CopyIT) locations provide photocopying, high-speed duplicating, and document preparation services with a wide variety of finishing options. The CopyIT centers support preparation and distribution of instructional packets, and provide copyright clearance services.

Imaging, and Television, and New Media

The IT Imaging and Television unit provides visualization technology

and expertise to support instruction, research and service at all University of Louisville campuses.

Photographic service includes medical, clinical and scientific documentation; studio and location photography; digital photography, scanning, imaging and printing, complete film processing and darkroom services.

Graphics services include web site design and maintenance; 3D modeling and animation; medical and scientific illustration; multimedia design; scientific exhibit and research poster design/preparation; image scanning, manipulation and imaging; slide imaging; manuscript illustration, and graphics application consulting and support.

Television services include distance education production and support; digital video encoding, video streaming and DVD authoring; television studio and field production; video recording and editing; video tape duplication; satellite TV and compressed video teleconferencing support including uplink and downlink coordination; instructional design, script writing and media development.

Instructional Technology/Instructional Support

Instructional Technology/Instructional Support (IT/IS) provides instructional media services and consultation on the applications of technology to instruction and research programs. Support services are available through IT/IS offices at the Belknap and Health Sciences campuses and through the University Center for Continuing and Professional Education (UCCPE) on Shelby campus.

Contact IT/IS for: classroom support media equipment scheduling and distribution; projection services for conventions and special programs; technical assistance and classroom design; Medical School and Dental School microscope rental; teleconference and tele-course coordination; planetarium programs; and software training through short courses.

Gheens Science Hall and Rauch Planetarium

The Planetarium serves the University, K-12 education, and the public by providing educational programs and services with an emphasis on astronomy and space sciences, and is one of eight facilities in the world to feature the Spitz Electric Sky Video Panoramic system. A variety of programming is offered by the Planetarium including astronomy programs, laser light shows, and high definition films. The Planetarium is also the site for numerous special events from private parties to corporate events.

Additional information concerning Information Technology services can be found on the UofL web pages at http://www.louisville.edu/it/

University Services

International Center

The International Center is the university-wide clearing house of information and resources for UofL faculty, students, and researchers involved in academic exchanges, overseas "live and learn" opportunities, and academic research. The International Center promotes energetically the internationalization efforts of the University. It provides advice and counsel to UofL faculty, students, and researchers traveling abroad and assistance to international students, faculty, and researchers coming to UofL for study or work.

In fulfillment of this Mission, the International Center:

- Recruits and support faculty and administrators who participate in international teaching, research, or service opportunities through academic exchange, consortia programming, or grants for overseas travel.
- Promotes and assists students participating in education abroad activities, including consortia programs, educational exchanges, internships, service learning programs, and scholarships.
- Serves as the University's designated School Official for INS and as Responsible Officer for the U.S. Department of State's Exchange Visitor Program; coordinates and provides programs and services for internationals students and scholars, including immigration advice; assistance in academic and cross-cultural adaptation; recruitment and retention strategies; and advocacy.
- Works cooperatively with UofL's Institute for International Development by providing services to the University's student studying in its overseas-based programs as appropriate.
- Seeks external funding to promote international programs and activities within the University and the community at large.
- Assists academic units in the development of educational exchange agreements with foreign institutions and serves as the primary recipient for such documents.
- Cooperates actively with the City and Commonwealth's initiatives to foster internationalization. Represents UofL with national and international organizations in matters pertaining to international education.

E-mail: intcent@louisville.edu

Website:
http://www.louisville.edu/student / services/intcent

International Student Coordinator
Located in the International Center, the coordinator provides administrative services and counseling to international students and scholars as they adjust to life in a new culture. Services for international students include assistance with legal and immigration documents; orientation programs for new arrivals; help with language difficulties, housing, and financial arrangements. In addition, the office offers programs and activities which encourage interaction among American and foreign students. Currently 600 students from over 60 nations are studying at the University.

Students from foreign countries must meet three criteria before they can be granted admission:

1. they must meet the regular admissions standards as applied to all successful applicants,
2. they must show proficiency in English by scoring 213 or higher on the computer based TOEFL examination or successfully completing the exit examination for the advanced level of the Intensive English as a Second Language Program at the University of Louisville, and
3. they must present evidence of financial resources adequate to support their educational and living expenses in the United States for the first year of their studies. The award of a University Fellowship or Graduate Assistantship is considered evidence of adequate financial resources.

Residence Facilities

For complete information regarding accommodations and for application forms inquiries should be addressed to the Residence Administration, Belknap Campus, University of Louisville, Louisville, KY 40292.

Student Health and Insurance

The University of Louisville offers a Comprehensive Medical Plan to meet student health care needs. This Comprehensive plan is a major medical and hospitalization plan which has coverage for both inpatient and outpatient services. Similar to an HMO, the Health Services Office serves as the primary care provider and a referral is necessary for most services rendered outside of the Student Health Services. Purchase of the Comprehensive Plan provides coverage for physician visits at the Health Services Office (HSO) which has two clinical locations.

To be eligible for coverage under the Comprehensive Plan, students must be one of the following:

- an undergraduate student taking 6 or more credit hours
- a graduate student taking 3 or more hours or degree candidate,
- GTA, GTS and GRA students receiving a stipend check from the University receive the Comprehensive Plan coverage as a benefit of their employment. If you believe you are eligible for this benefit please check with your department to verify coverage.

Dependents of insured students are eligible for the Comprehensive Medical benefits for an additional premium. Insured spouses are eligible for coverage at the Health Service Office facilities. Children under the age of 18 are not eligible for the Health Services benefit and cannot be seen in the Health Services Office.

The Health Service Offices operate 12 months of the year. The Belknap Office is located on the main Campus, 2207 South Brook Street, in the Student Health & Counseling Building, between the Student Activities Center and the Post Office. The Health Sciences Center (HSC) Office is located at 550 South Jackson Street, Ambulatory Care Building (ACB) 1st Floor.

For more information and appointments, please call the Belknap Office at (502) 852-6479 or the HSC Office at (502) 852-6446. The Insurance Advocate can be reached at (502) 852-6519.

Student Affairs

The mission of the division of Student Affairs is to provide students with effective services and developmental opportunities that augment their academic experience and enhance the quality of their lives while enrolled at the University of Louisville. When coupled with a challenging academic experience, these services and opportunities facilitate the students' total development so that they attain their educational goals as individuals prepared to function successfully as leaders within a diverse, multicultural and international world. In support of this mission, the Division of Student Affairs provides essential services to the faculty and to the academic units.

The Vice President for Student Affairs, located at 203 Grawmeyer Hall, administers and oversees non-academic services and programming for students. The Division of Student Affairs includes:

Student Services
Student Services Administration, Admissions, Orientation, Testing Services, Financial Aid, Registrar, Enrollment Systems, Commencement, Residency, and Student-Athlete Certification.

Student Life
Housing and Residence Life, Intramural and Recreational Sports, Student Activities, Greek Life, Recognized Student Organizations, Student Government Association, ACCESS, Service Learning, Swain Student Activities Center Administration, Student Disciplinary Services, Counseling Center, Career Development Center, and International Service Learning Program.

Other Programs and Services:
Disability Resource Center, Research and Assessment and Technology Services.

Disability Resource Center

The Disability Resource Center coordinates services and programs for students and prospective students with disabilities. Accommodations and support services are individualized, depending on the needs of each student. Services and programs are designed to assure access for qualified students with disabilities to all programs and activities of the university Students are strongly encouraged to make early contact with the Disability Resource Center to assure adequate time to implement support services.

Residency Policy and Fees

13 KAR 2:045. Determination of residency status for admission and tuition assessment purposes.

RELATES TO: KRS Chapter 13B, 164.020, 164.030, 164A.330(6)

STATUTORY AUTHORITY: KRS 164.020(8)

NECESSITY, FUNCTION, AND CONFORMITY: KRS 164.020(8) requires the Council on Postsecondary Education to determine tuition and approve the minimum qualifications for admission to a state-supported postsecondary education institution and authorizes the Council to set different tuition amounts for residents of Kentucky and for nonresidents. This administrative regulation establishes the procedure and guidelines for determining the residency status of a student who is seeking admission to, or who is enrolled at, a state-supported postsecondary education institution.

Section 1. Definitions. (1) "Academic term" means a division of the school year during which a course of studies is offered, and includes a semester, quarter, or single consolidated summer term as defined by the institution.

(2) "Continuous enrollment" means enrollment in a state-supported postsecondary education institution at the same degree level for consecutive terms, excluding summer term, since the beginning of the period for which continuous enrollment is claimed unless a sequence of continuous enrollment is broken due to extenuating circumstances beyond the student's control, including serious personal illness or injury, or illness or death of a parent.

(3) "Degree level" means enrollment in a course or program which could result in the award of a:

(a) Certificate, diploma or other program award at an institution;

(b) Baccalaureate degree or lower including enrollment in a course by a nondegree-seeking postbaccalaureate student;

(c) Graduate degree or graduate certification other than a first-professional degree in law, medicine, dentistry or "Pharm. D"; or

(d) Professional degree in law, medicine, dentistry, or "Pharm. D".

(4) "Demonstration of Kentucky domicile and residency" means the presentation of documented information and evidence sufficient to prove by a preponderance of the evidence that a person is domiciled in Kentucky and is a resident of Kentucky.

(5) "Dependent person" means a person who cannot demonstrate financial independence from parents or persons other than a spouse and who does not meet the criteria established in Section 5 of this administrative regulation.

(6) "Determination of residency status" means the decision of a postsecondary education institution that may include a formal hearing that results in the classification of a person as a Kentucky resident or as a nonresident for admission and tuition assessment purposes.

(7) "Domicile" means a person's true, fixed, and permanent home and is the place where the person intends to remain, and to which the person expects to return if absent without intending to establish a new domicile elsewhere.

(8) "Full-time employment" means continuous employment for at least forty-eight (48) weeks at an average of at least thirty (30) hours per week.

(9) "Independent person" means a person who demonstrates financial independence from parents or persons other than a spouse and who can meet the criteria established in Section 5 of this administrative regulation.

(10) "Institution" means an entity defined in KRS 164.001(11) if the type of institution is not expressly stated and includes the Kentucky Virtual University, the Council on Postsecondary Education, and the Kentucky Higher Education Assistance Authority.

(11) "Kentucky resident" means a determination by an institution that a person is domiciled in and is a resident of Kentucky as determined by this administrative regulation.

(12) "Nonresident" means a person who is domiciled outside of Kentucky or who currently maintains legal residence outside Kentucky or who is not a Kentucky resident within the meaning of this administrative regulation.

(13) "Parent" means one (1) of the following:

(a) A person's father or mother; or

(b) A court-appointed legal guardian if:

1. The guardianship is recognized by an appropriate court within the United States;

2. There was a relinquishment of the rights of the parents; and

3. The guardianship was not established primarily to confer Kentucky residency on the person.

(14) "Preponderance of the evidence" means the greater weight of evidence, or evidence which is more credible and convincing to the mind.

(15) "Residence" means the place of abode of a person and the place where the person is physically present most of the time for a noneducational purpose in accordance with Section 3 of this administrative regulation.

(16) "Student financial aid" means all forms of payments to a student if one (1) condition of receiving the payment is the enrollment of the student at an institution.

(17) "Sustenance" means living expenses including room, board, maintenance, transportation, and also may include educational expenses including tuition, fees, books, and supplies.

Section 2. Scope. (1) State-supported postsecondary education institutions were established and are maintained by the Commonwealth of Kentucky primarily for the benefit of qualified residents of Kentucky. The substantial commitment of public resources to postsecondary education is predicated on the proposition that the state benefits significantly from the existence of an educated citizenry. As a matter of policy, access to postsecondary education shall be provided so far as feasible at reasonable cost to an individual who is domiciled in Kentucky and who is a resident of Kentucky.

(2) The Council on Postsecondary Education may require a student who is neither domiciled in nor a resident of Kentucky to meet higher admission standards and to pay a higher level of tuition than resident students.

(3) This administrative regulation applies to all student residency determinations regardless of circumstances, including residency determinations made by the state-supported institutions for prospective and currently-enrolled students; the Southern Regional Education Board contract spaces; reciprocity agreements, where appropriate; the Kentucky Virtual University; academic common market programs; the Kentucky Educational Excellence Scholarship Program; and other state student financial aid programs, as appropriate.

Section 3. Determination of Residency Status; General Rules. (1) A determination of residency shall include:

(a) An initial determination of residency status by an institution during the admission process or upon enrollment in an institution for a specific academic term or for admission into a specific academic program;

(b) A reconsideration of a determination of residency status by an institution based upon a changed circumstance; and

(c) A formal hearing conducted by

an institution upon request of a student after other administrative procedures have been completed.

(2) An initial determination of residency status shall be based upon:

(a) The facts in existence when the credentials established by an institution for admission for a specific academic term have been received and during the period of review by the institution;

(b) Information derived from admissions materials;

(c) Other materials required by an institution and which are consistent with this administrative regulation; or

(d) Other information available to the institution from any source.

(3) An individual seeking a determination of Kentucky residency status shall demonstrate that status by a preponderance of the evidence.

(4) A determination of residency status shall be based upon verifiable circumstances or actions.

(5) Evidence and information cited as the basis for Kentucky domicile and residency shall accompany the application for a determination of residency status.

(6) A student classified as a nonresident shall retain that status until the student is officially reclassified by an institution.

(7) A student may apply for a review of a determination of residency status once for each academic term.

(8) If an institution has information that a student's residency status may be incorrect, the institution shall review and determine the student's correct residency status.

(9) If the Council on Postsecondary Education has information that an institution's determination of residency status for a student may be incorrect, it may require the institution to review the circumstances and report the results of that review.

(10) An institution shall impose a penalty or sanction against a student who gives incorrect or misleading information to an institutional official, including payment of nonresident tuition for each academic term for which resident tuition was assessed based on an improper determination of residency status. The penalty may also include:

(a) Student discipline by the institution through a policy written and disseminated to students; or

(b) Criminal prosecution.

Section 4. Presumptions Regarding Residency Status. (1) In making a determination of residency status, it shall be presumed that a person is a nonresident if:

(a) A person is, or seeks to be, an undergraduate student and admissions records show the student to be a graduate of an out-of-state high school within five (5) years prior to a request for a determination of residency status;

(b) A person's admissions records indicate the student's residence to be outside of Kentucky at the time of application for admission;

(c) A person moves to Kentucky primarily for the purpose of enrollment in an institution;

(d) A person moves to Kentucky and within twelve (12) months enrolls at an institution more than half time; or

(e) A person has a continuous absence of one (1) year from Kentucky.

(2) A presumption arising from subsection (1) of this section shall be overcome by presentation of evidence that is sufficient to demonstrate that a person is domiciled in and is a resident of Kentucky.

Section 5. Determination of Whether a Student is Dependent or Independent. (1) In a determination of residency status, an institution shall first determine whether a student is dependent or independent. This provision is predicated on the assumption that a dependent person lacks the financial ability to live independently of the person upon whom the student is dependent and therefore lacks the ability to form the requisite intent to establish domicile.

(2) In determining the dependent or independent status of a person, the following information shall be considered as well as other relevant information available at the time the determination is made:

(a)1. Whether the person has been claimed as a dependent on the federal or state tax returns of a parent or other person for the year preceding the date of application for a determination of residency status; or

2. Whether the person is no longer claimed by a parent or other person as a dependent or as an exemption for federal and state tax purposes; and

(b) Whether the person has financial earnings and resources independent of a person other than an independent spouse necessary to provide for the person's own sustenance.

(3) An individual who enrolls at an institution immediately following graduation from high school and remains enrolled shall be presumed to be a dependent person unless the contrary is evident from the information submitted.

(4) Domicile may be inferred from the student's permanent address, parent's mailing address, or location of high school of graduation.

(5) Marriage to an independent person domiciled in and who is a resident of Kentucky shall be a factor considered by an institution in determining whether a student is dependent or independent.

(6) Financial assistance from or a loan made by a parent or family member other than an independent spouse, if used for sustenance of the student:

(a) Shall not be considered in establishing a student as independent; and

(b) Shall be a factor in establishing that a student is dependent.

Section 6. Effect of a Determination of Dependent Status on a Determination of Residency Status. (1) The effect of a determination that a person is dependent shall be:

(a) The domicile and residency of a dependent person shall be the same as either parent. The domicile and residency of the parent shall be determined in the same manner as the domicile and residency of an independent person.

(b) The domicile and residency of a dependent person whose parents are divorced, separated, or otherwise living apart shall be Kentucky if either parent is domiciled in and is a resident of Kentucky regardless of which parent has legal custody or is entitled to claim that person as a dependent pursuant to federal or Kentucky income tax provisions.

(2)(a) If the parent or parents of a dependent person are Kentucky residents and are domiciled in Kentucky but subsequently move from the state, the dependent person shall be considered a resident of Kentucky while in continuous enrollment at the degree level in which currently enrolled.

(b) If continuous enrollment is broken or the current degree level is completed, the dependent person's residency status shall be reassessed when the circumstances detailed in subparagraph 1 of this paragraph are present.

Section 7. Member of Armed Forces of the United States, Spouse and Dependents; Effect on a Determination of Residency Status. (1) A member, spouse, or dependent of a member whose domicile and residency was Kentucky at the time of induction into the Armed Forces of the United States, and who maintains Kentucky as home of record and permanent address, shall be entitled to Kentucky residency status:

(a) During the time of active service; or

(b) If the member, spouse, or dependent returns to this state within six (6) months of the date of the member's discharge from active duty.

(2)(a) A member, spouse or dependent of a member of the Armed Forces of the United States stationed in Kentucky on active military orders shall be considered a Kentucky resident while the member is on active duty in this state pursuant to those orders if the member is not:

1. Stationed in Kentucky for the purpose of enrollment at an institution; ***or***
2. On temporary assignment of less than one (1) year.

(b) A member, spouse or dependent of a member, shall not lose Kentucky residency status if the member is thereafter transferred on military orders while the member, spouse or dependent requesting the status is in continuous enrollment at the degree level in which currently enrolled.

(3) Membership in the National Guard or civilian employment at a military base alone shall not qualify a person for Kentucky residency status under the provisions of subsections (1) and (2) of this section.

(4) A person's residency status established pursuant to this section shall be reassessed if the qualifying condition is terminated.

Section 8. Status of Nonresident Aliens; Visas and Immigration. (1)(a) A person holding a permanent residency visa or classified as a political refugee shall establish domicile and residency in the same manner as another person.

(b) Time spent in Kentucky and progress made in fulfilling the conditions of domicile and residency prior to obtaining permanent residency status shall be considered

in establishing Kentucky domicile and residency.

(2) A person holding a nonimmigrant visa with designation A, E, G, H-1, H-4 if accompanying a person with an H-1 visa, I, K, L, N, R, shall establish domicile and residency the same as another person.

(3)(a) An independent person holding a nonimmigrant visa with designation B, C, D, F, H-2, H-3, H-4 if accompanying a person with an H-2 or H-3 visa, J, M, O, P, Q, S, TD or TN shall not be classified as a Kentucky resident, because that person does not have the capacity to remain in Kentucky indefinitely and therefore cannot form the requisite intent necessary to establish domicile within the meaning of this administrative regulation.

(b) A dependent person holding a visa as described in paragraph (a) of this subsection, but who is a dependent of a parent holding a visa as described in subsection (2) of this section, shall be considered as holding the visa of the parent.

(c) A dependent person holding a visa described in subsection (2) of this section or paragraph (a) of this subsection, if a parent is a citizen of the United States and is a resident of and domiciled in Kentucky, shall be a resident of Kentucky for the purposes of this administrative regulation.

(4) A person shall be a Kentucky resident for the purpose of this administrative regulation if the person graduated from a Kentucky high school and:

(a) Is an undocumented alien;

(b) Holds a visa listed in subsections (2) or (3)(a) of this section; or

(c) Is a dependent of a person who holds a visa listed in subsections (2) or (3)(a) of this section.

(5)(a) Except as provided in paragraph (b) of this subsection, a person who has petitioned the federal government to reclassify visa status shall continue to be ineligible until the petition has been decided by the federal government.

(b) A person who has petitioned the federal government to reclassify visa status based on a marriage to a Kentucky resident and who can demonstrate that the petition has been filed and acknowledged by the federal government, may establish Kentucky domicile and residency at that time.

Section 9. Beneficiaries of a Kentucky Educational Savings Plan Trust. A beneficiary of a Kentucky Educational Savings Plan Trust shall be granted residency status if the beneficiary meets the requirements of KRS 164A.330(6).

Section 10. Criteria Used in a Determination of Residency Status. (1) A determination of Kentucky domicile and residency shall be based upon verifiable circumstances or actions. A single fact shall not be paramount, and each situation shall be evaluated to identify those facts essential to the determination of domicile and residency.

(2) The following facts, although not conclusive, shall have probative value in their entirety and shall be individually weighted, appropriate to the facts and circumstances in each determination of residency:

(a) Acceptance of an offer of full-time employment or transfer to an employer in Kentucky or contiguous area while maintaining residence and domicile in Kentucky;

(b) Continuous physical presence in Kentucky while in a nonstudent status for the twelve (12) months immediately preceding the start of the academic term for which a classification of Kentucky residency is sought;

(c)1. Filing of Kentucky resident income tax return for the calendar year preceding the date of application for a change in residency status; or

2. Payment of Kentucky withholding taxes while employed during the calendar year for which a change in classification is sought;

(d) Full-time employment of at least one (1) year while living in Kentucky;

(e) Attendance as a full-time, nonresident student at an out-of-state institution based on a determination by that school that the person is a resident of Kentucky;

(f) Abandonment of a former domicile or residence and establishing domicile and residency in Kentucky with application to or attendance at an institution following and incidental to the change in domicile and residency;

(g) Obtaining licensing or certification for a professional and occupational purpose in Kentucky;

(h) Payment of real property taxes in Kentucky;

(i) Ownership of real property in Kentucky, if the property was used by the student as a residence preceding the date of application for a determination of residency status;

(j) Long-term lease of at least twelve (12) consecutive months of noncollegiate housing;

(k) Marriage of an independent student to a person who was domiciled in and a resident of Kentucky prior to the marriage;

(l) Continued presence in Kentucky during academic breaks; and

(m) The extent to which a student is dependent on student financial aid in order to provide basic sustenance.

(3) Except as provided in subsection (4) of this section, the following facts, because of the ease and convenience in completing them, shall have limited probative value in a determination that a person is domiciled in and is a resident of Kentucky:

(a) Kentucky automobile registration;

(b) Kentucky driver's license; and

(c) Registration as a Kentucky voter.

(4) The absence of a fact contained in subsection (3) of this section shall have significant probative value in determining that a student is not domiciled in or is not a resident of Kentucky.

(5) A person shall not be determined to be a Kentucky resident by the performance of an act which is incidental to fulfilling an educational purpose or by an act performed as a matter of convenience. Mere physical presence in Kentucky, including living with a relative or friend, shall not be sufficient evidence of domicile and residency. A person shall respond to all information requested by an institution.

Section 11. Effect of a Change in Circumstances on Residency Status. (1) If a person becomes independent or if the residency status of a parent or parents of a dependent person changes, an institution shall reassess residency either upon a request by the student or a review initiated by the institution.

(2) Upon transfer to a Kentucky institution, a student's residency status shall be assessed by the receiving institution.

(3) A reconsideration of a determination of residency status for a dependent person shall be subject to the provisions for continuous enrollment, if applicable.

Section 12. Student Responsibilities. (1) A student shall report under the proper residency classification which includes the following actions:

(a) Raising a question in a timely manner concerning residency classification;

(b) Making application for change of residency classification in a timely manner with the designated office or person at the institution; and

(c) Notifying the designated office or person at the institution immediately upon a change in residency.

(2) If a student fails to notify an institutional official of a change in residency, an institutional official may investigate and evaluate the student's residency status.

(3)(a) If a student fails to provide, by the date specified by the institution, information required by an institution in a determination of residency status, the student shall be notified by the institution that the review has been canceled and that a determination has been made.

(b) Notification shall be made by registered mail, return receipt requested.

(c) Notification shall be made within ten (10) calendar days after the deadline for receipt of materials has passed.

(4) A student shall not be entitled to appeal a determination of residency status if the determination made by an institution is because a student has failed to meet published deadlines for the submission of information as set forth in subsection (3) of this section. A student may request a review of a determination of residency status in a subsequent academic term.

Section 13. Institutional Responsibilities. Each institution shall:

(1) Provide for an administrative appeals process that includes a residency appeals officer to consider student appeals of an initial residency determination and which shall include a provision of fourteen (14) days for the student to appeal the residency appeals officer's determination;

(2) Establish a residency review committee to consider appeals of residency determinations by the residency appeals officer. The residency review committee shall make a determination of student residency status and notify the student in writing within forty-five (45) days after receipt of the student appeal;

(3) Establish a formal hearing process as described in Section 14 of this administrative regulation; and

(4) Establish written policies and procedures for administering the responsibilities established in subsections (1), (2), and (3) of this section and that are:

(a) Approved by the institution's governing board;

(b) Made available to all students; and

(c) Filed with the council.

Section 14. Formal Institutional Hearing. (1) A student who appeals a determination of residency by a residency review committee shall be granted a formal hearing by an institution if the request is made by a student in writing within fourteen (14) calendar days after notification of a determination by a residency review committee.

(2) If a request for a formal hearing is received, an institution shall appoint a hearing officer to conduct a formal hearing. The hearing officer:

(a) Shall be a person not involved in determinations of residency at an institution except for formal hearings; and

(b) Shall not be an employee in the same organizational unit as the residency appeals officer.

(3) An institution shall have written procedures for the conduct of a formal hearing that have been adopted by the board of trustees or regents, as appropriate, and that provide for:

(a) A hearing officer to make a recommendation on a residency appeal;

(b) Guarantees of due process to a student that include:

1. The right of a student to be represented by legal counsel; and

2. The right of a student to present information and to present testimony and information in support of a claim of Kentucky residency; and

(c) A recommendation to be issued by the hearing officer.

(4) An institution's formal hearing procedures shall be filed with the Council on Postsecondary Education and shall be available to a student requesting a formal hearing.

Section 15. Cost of Formal Hearings. (1) An institution shall pay the cost for all residency determinations including the cost of a formal hearing.

(2) A student shall pay for the cost of all legal representation in support of the student's claim of residency. (17 Ky.R. 2557; eff. 4-5-91; Am. 22 Ky.R. 1656; 1988; eff. 5-16-96; 23 Ky.R. 3380; 3797; 4099; eff. 6-16-97; 24 Ky.R. 2136; 2705; 25 Ky.R. 51; eff. 7-13-98; 25 Ky.R. 2177; 2577; 2827; eff. 6-7-99; 749; 1238; eff. 11-12-2002.)

Deadline for Filing Residency Appeals

An application for a review of a determination of residency status shall be filed in the Office of Student Services no later than 30 days after the first day of classes of the term for which a determination of residency status is requested. Academic calendars are available in the Schedule of Courses, the University web site, and Offices of Admission. Pursuant to 13 KAR 2:045, Determination of Residency Status for Admission and Tuition Assessment Purposes, an institution may set other deadlines for submission of other information required by the Institution in a determination of residency status.

For specific information regarding the filing of an application, please refer to the Council on Postsecondary Education document 13 KAR 2:045, Determination of Residency Status for Admission and Tuition Assessment Purposes. Copies of the policy document are available in the Office of Student Services and Offices of Admission.

Submit the completed, signed, and notarized affidavit/application and ALL accompanying documentation to:

Office of Student Services
Houchens Building, Rm 160
University of Louisville
Louisville, KY 40292
Ph (502) 852-5813/6528
Fax 502) 852-3146

Tuition and Fees

For fee purposes, determination of "undergraduate" and "graduate " status is based on the school or enrollment unit to which a student is admitted; not on the level of courses taken (except for distance education courses, which are based on the level of the courses).

2003-2004 Tuition

	Resident	Non-Resident
Graduate Students, per semester, full-time: (9 or more hours)	$2,421.00	$6,669.00
Hourly rate for Graduate students:	$269.00	$741.00

Distance Education Courses

Distance Education provides learning that is independent of time and location. Rather than gathering in a classroom, students and instructors interact in several ways. Most courses with sections 50,51,52,53, and 54 are Distance Education courses. All graduate distance education courses are charged 125% of the graduate in-state tuition rate regardless of whether or not you are a full-time student. All undergraduate distance education courses are charged 125% of the undergraduate in-state tuition rate regardless of whether or not you are a full-time student.

Fall 2003/Spring 2004 Undergraduate Course @ credit hour…… ……$231.25
Fall 2003/Spring 2004 Graduate Course @ credit hour…….....$336.25

Graduate Business Courses
Fall 2003/Spring 2004 Graduate Course @ credit hour (resident)…….....$309.00
Graduate Business Courses
Fall 2003/Spring 2004 Graduate Course @ credit hour (nonresident)…….....$852.00

NOTE: University tuition charges are subject to approval of the Board of Trustees and may be changed without prior notice. You may check the most current information on the web at: www.louisville.edu, CURRENT STUDENTS, BURSAR'S OFFICE, STUDENT INFORMATION, TUITION.

Degree Application Fees

Each master's degree applicant will be charged a fee of $25.00.
Each PH.D. applicant is charged a fee of $35.00

If an applicant does not receive the degree the charge will be adjusted to $10.00. *The candidate must reapply for the degree to be granted at a later time and pay the full application fee at that time.*

E-Mail Notification

THE REGISTRAR'S OFFICE WILL USE THE E-MAIL SYSTEM TO REMIND STUDENTS OF SOME ACADEMIC AND FINANCIAL DEADLINES AS WELL AS NOTIFICATION OF CANCELLED COURSES. PLEASE PLAN TO CHECK YOUR CAMPUS E-MAIL ACCOUNT REGULARLY, ESPECIALLY THE WEEK PRIOR TO THE BEGINNING OF CLASSES AND THE FIRST SEVERAL WEEKS OF EACH SEMESTER.

Registration and Financial Settlement

CONTINUING REGISTRATION - Tuition and fees are due on, or before, the designated due date for the semester. Payment may be made by cash, check, money order, charge card (MasterCard, Visa), or financial aid credit. Payments may be made by mail, by use of the deposit box located in the front entrance of the Houchens Building, or at the Office of the Bursar.

Failure to receive a Statement of Account will not relieve the student of the responsibility for making financial settlement by the designated due date. Continuing registrations which are not financially settled by the designated due date may have their course registration cancelled and/or be assessed financial penalties. The Continuing Registration designated due dates are listed in the current Schedule of Courses and on the Bursar's web site at: **www.louisville.edu,** Current Students, Bursar's Office, Student Information.

REGULAR REGISTRATION - Students who register after Continuing Registration should be prepared to fully settle financial obligations by the last day to drop/add for the semester. Failure to fully settle financial obligations may result in course cancellation and/or financial penalties.

FINANCIAL PENALTIES - Students whose accounts are not paid by established semester deadlines may be subject to course cancellation. Students with unpaid account balances will be placed on Financial Hold by the Bursar's Office. Students placed on Financial Hold become ineligible for further registration and transcripts will not be released until the student account is paid in full. A late payment fee of $50.00 may be assessed when student accounts are not paid by the last day to drop/add.

A student whose payment is not honored by the bank on which it was drawn may be assessed a return payment fee. If restitution is not made within 10 days of notification, the student may be subject to course cancellation and/or legal action.

Debtors who do not make satisfactory payment arrangements on their past due accounts may have their accounts placed with a collection agency. It is the policy of the University that unpaid accounts will be assessed the costs and expenses of collection, including attorney fees.

WITHDRAWAL POLICY - The effective withdrawal date is the date on which the withdrawal is processed in the Student Records System. This date is used in calculating any applicable tuition reduction.

TUITION REDUCTIONS - When a student officially withdraws from the University or from any course, or courses, for which hourly tuition rates apply, tuition and student activity fee charges will be adjusted according to the TUITION REDUCTION SCHEDULE printed in the Schedule of Courses. The full amount of tuition/fee charges for the semester will be due unless the withdrawal occurs during the TUITION REDUCTION period. The TUITION REDUCTION SCHEDULE for each semester is available on the Bursar's web site at: www.louisville.edu, Current Students, Bursar's Office, Student Information, Tuition.

This policy applies to all tuition and student activity fees except for non-refundable deposits. Course fees, special fees, and laboratory fees are reduced only with the 100% adjustment.

FINANCIAL AID RECIPIENTS - Determinations regarding refunds of resulting credit balances will be based on regulations governing the financial aid awarded to the student.

Federal regulations mandate that students have the right to cancel all or a portion of an EFT loan disbursement and have the loan proceeds returned to the lender. To request cancellation of all or a portion of your loan, contact the Financial Aid Office in writing. (Financial Aid Office, University of Louisville, Louisville KY 40292)

Financial Settlement Options

Due dates, payment information, and payment plan options for specific semesters is updated regularly on the Bursar's web site at: **www.louisville.edu,** Current Students, Bursar's Office, Student Information.

Payment plan forms are available on the web at: www.louisville.edu, Current Students, Bursar's Office, Student Information, Payment Options.Any questions may be directed to the Bursar's Office (502-852-6503). You may also address your questions to the Bursar's Office by email and receive an email response (bursar@louisville.edu).

Financial Aid

If federal financial assistance is required, the Free Application for Federal Student Aid (FAFSA) may be obtained on the web at ***www.fafsa.ed.gov***, by calling the Federal Student Aid Information Center at 1–800-433-3243, or in U of L's Financial Aid Office. The formal application period for financial assistance for the following academic year is January 1 to March 15. Applications submitted after March 15 will be evaluated subject to the availability of funds. Applications and information are available from the Student Financial Aid Office, Belknap Campus, University of Louisville, Louisville, KY 40292 or visit our website www.louisville.edu/student/services/fin-aid.

Financial Aid Recipients

Determination regarding refunds of credit balances will be based on regulations governing the financial aid awarded to the student.

Withdrawal

Withdrawal Policy

The effective withdrawal date is the date on which the Registrar's Office, or its designated representatives during evening hours and at external campus offices, receives the appropriately signed drop form, or the date the drop/withdrawal is processed through the touch-tone system. This date is used in calculating any refund or tuition reduction due if withdrawal deadlines are met.

The last day to withdraw for each semester is published in the Schedule of Courses, and for normal duration courses, is set in the eighth week of the semester.

A grade of "W" will be reflected on students' official transcripts for all courses officially dropped after the end of late registration.

Students who make a complete withdrawal from all courses for a particular semester must process this in accordance with the procedures established by their academic unit.

Tuition-Fee Reduction

When a student officially withdraws (see definition of effective withdrawal date above) from the University or from any course, or courses, for which hourly rates apply, tuition and student activity fee charges and credits will be adjusted in the following manner:

	Semester Tuition	Charge Credit
Withdrawal through the first week of semester	0%	100%
Withdrawal during second or third week of semester	50%	50%
Withdrawal during fourth week of semester	75%	25%
Withdrawal after fourth week of semester	100%	0%

Summer terms and some regular semester courses vary in length and the percentages of refunds are modified. Effective dates are printed for special terms and courses in the Schedule of Courses or are available from the Registar's Office.

Special course fees are refundable only with 100% adjustment.

Graduate Training Assistantships

Graduate teaching, research, and service assistantships are available to qualified students in most graduate programs. These assistantships provide tuition remission, health insurance, and a stipend that is adequate to cover basic living expenses.

Applicants who are interested in being considered for assistantships, should write to the chair or graduate advisor of the department to which they are applying for admission, stating their desire to be appointed as a graduate assistant. The award of an assistantship is competitive; students who hope to be considered should present credentials that are well above the minimum required for admission.

The purpose of a graduate assistantship is to provide experience and training that augment a student's academic program. The department chair or graduate advisor will attempt to place a student in an assistantship believed to best serve the career training objective of the student. Although a student is free to make known a preference for a particular placement, the final decision is the prerogative of the department in which the student is enrolled.

The distribution of assistantships across departments may differ from year to year. Moreover, some departmental policies require that a student complete 9-18 graduate credit hours in the program before being eligible for an assistantship.

Resigning Appointments

As a member of the Council of Graduate Schools in the United States, the University of Louisville subscribes to the Resolution Regarding Scholars, Fellows, Trainees, and Graduate Assistants:

Acceptance of an offer of financial support (such as a graduate scholarship, fellowship, traineeship, or assistantship) for the next academic year by a prospective or enrolled graduate student

completes an agreement that both student and graduate school expect to honor. In that context, the conditions affecting such offers and their acceptance must be defined carefully and understood by all parties.

Students are under no obligation to respond to offers of financial support prior to April 15; earlier deadlines for acceptance of such offers violate the intent of this Resolution. In those instances in which a student accepts an offer before April 15, and subsequently desires to withdraw that acceptance, the student may submit in writing a resignation of the appointment at any time through April 15. However, an acceptance given or left in force after April 15 commits the student not to accept another appointment without first obtaining a written release from any previously accepted offer. It is further agreed by the institutions and organizations subscribing to the above Resolution that a copy of the Resolution should accompany every scholarship, fellowship, traineeship, and assistantship offer.

Scholarships and Fellowships

University Fellowships
A limited number of University fellowships may be awarded to outstanding students in the doctoral programs. These carry a generous stipend, health insurance, and full tuition remission. Nominations are made each spring to the Dean of the Graduate School by the chairs of departments granting the doctorates. Students who wish to be considered for fellowships should submit all credentials by February 1.

The Allen R. Hite Scholarships
Ten thousand dollars annually is awarded for partial- and full-tuition scholarships to qualified graduate and undergraduate students majoring in creative art or in art history. Full-time and part-time students will be considered for these awards. A Hite Scholarship application and the Kentucky Financial Aid Form must be submitted by all candidates to the Director of the Allen R. Hite Art Institute. In addition, entering students are required to include examples of their work, at least two letters of recommendation, and transcripts of all courses, college level and above. All applications and supporting materials must be received before March 15.

Scottish Rite Foundation Fellowships
This is a fellowship program for new applicants and currently enrolled student in the Educational Administration doctoral program. Recommendations of potential fellows to the Foundation will be made the first week of April and the successful candidate(s) will be notified before Fall registration. Applications are available in the Department of Leadership, Foundations and Human Resource Education at the College of Education and Human Development.

Gerhard Herz Scholarship in Music History
The scholarship is awarded annually for graduate study in Music History at the University of Louisville to a student with a degree in music (B.M., B.A., B.M.Ed.) with preference given to a graduating senior in the School of Music or Division of Humanities. Qualifications for consideration include a grade point average of 3.5 and a combined score of 1000 on two segments (verbal plus either quantitative or advanced music) of the Graduate Record Examination.

The Alfred and Iva Homberger Memorial Fellowships in the Department of Biochemistry
These are fellowships in the Department of Biochemistry, in the School of Medicine, for students who have graduated from an accredited college with a major in chemistry or who are graduates of an accredited medical school.

Moritz von Bomhard Fellowship in Music Composition
A two-year award to a student working for a Master of Music degree with an emphasis in operatic composition. To be considered candidates must have an earned undergraduate degree in music composition and a portfolio of work demonstrating inclination and ability to compose for a human voice. One-year stipend and tuition waiver renewable for a second year.

Warren Babb Award in Music Composition

Financial Aid

Students who wish to explore or inquire about additional forms of financial assistance should contact the Student Financial Aid Office, University of Louisville, Louisville, Kentucky 40292 or visit the Financial Aid Home Page at www.louisville.edu/student/services/fin-aid.
Phone: (502) 852-5511.

University Policies and Procedures

Academic Grievance Procedure

The Graduate School follows the procedures for academic grievance as published in The Redbook, Chapter 6, Article 8. This policy is stated below. Any student considering filing such a grievance is advised to consult with the Graduate School Grievance Officer for advice and information. The Graduate School Grievance Committee is the committee of original jurisdiction for issues involving graduate students enrolled for graduate credit.

Section 1: Introduction
This procedure is designed to provide fair means of dealing with student complaints regarding a specific action or decision made by the faculty or a faculty member. "Students who believe they have been treated unfairly, discriminated against, or have had their rights abridged may initiate a grievance" (The Redbook, Section 6.8.1).

The Unit Academic Grievance Committee has the power to hear all grievances involving academic matters other than substantive grade appeals. "Academic matters are defined as those concerning instructional activities, research activities, activities closely related to either of these functions, or decisions involving instruction or affecting academic freedom" (The Redbook, Section 6.8.3). The Unit Academic Grievance Committee may review allegations that a course grade has resulted from an unfair procedure. However, the committee should not substitute its judgment on their merits as an evaluation of academic performance. Where the dean concurs that procedural irregularities have occurred, the dean shall consult with an appropriate faculty committee as to the grade to be recorded in the student's official transcript. To assist the student, a Student Grievance Officer is provided, who is responsible for "informing students of their rights and obligations under the grievance procedure and especially the deadlines that have been established. The Student Grievance Officer shall seek to resolve informally as many grievances as possible" (The Redbook, Section 6.8.2). Students are encouraged to seek the assistance of the Student Grievance Officer at any stage of the grievance process.

Each unit shall establish an Academic Grievance Committee to carry out the procedures described below.

Section 2: Preliminary Steps
To pursue a grievance concerning academic matters within the academic unit, the following steps of the grievance procedure should be observed:

1. The student should first discuss the matter with the person involved and attempt to resolve the grievance through informal discussion.
2. If there is no resolution, the student should discuss the matter with that person's supervisor or the person to whom such person reports, who should attempt to mediate a resolution.
3. If the student has not been able to obtain a resolution, he or she may request the Student Grievance Officer (S. G. O.) to attempt informal mediation of the problem.
4. If the matter has not been satisfactorily resolved through the informal process, the student shall submit a written statement of the grievance to the Unit Academic Grievance Committee through the Office of the Dean. The statement shall contain:
   a. A brief narrative of the condition giving rise to the grievance;
   b. designation of the parties involved; and
   c. statement of the remedy requested.

Section 3: Committee Action
Upon receipt of the written statement, the Unit Academic Grievance Committee, or its representatives, shall:

1. Contact the student and the Student Grievance Officer to obtain assurance that all steps of the above informal process were completed and that those issues in the statement were discussed at all levels.
2. Notify the parties named in the statement of the grievance naming them; and send a copy of the statement to the named parties and to all committee members.
3. Notify the grievant and the respondent of the right to challenge committee members for cause, and request early notification of challenge(s) to expedite the grievance procedure. Included in this notification will be a list of the names of all current, regular committee members.
4. Meet within twenty working days after receiving the written statement of any grievance and recommend to the dean of the unit whether sufficient grounds exist to accept a case for hearing. The committee shall hear the case when the dean concurs. The committee shall notify, in writing, all persons directly involved as to the reasons for its recommendation.
5. The action of the grievance committee as to whether to grant a hearing when accepted by the dean of the unit shall be final and binding on all parties except when subject to

the condition of appeal.

6. If a hearing will be held, notify in writing all the parties involved, including any witnesses, of the date, time and place of the hearing at least ten days prior to the hearing date (which shall be within 30 working days of receipt of the written grievance).
7. Request in writing from all parties involved any pertinent material deemed necessary for review by the committee prior to the hearing. These materials, and any additional materials either party chooses to submit, must be submitted to the committee not later than four days prior to the hearing. Any person named in a grievance may submit a written statement to the committee outlining issues from that person's perspective.
8. Maintain confidentiality throughout the entire grievance process.

   All communications among the committee, the grievant(s), and the person(s) named in the statement of grievance will be confidential.

Section 4: Hearing Process

All hearings conducted by the Unit Academic Grievance Committee shall be conducted confidentially in the following manner:

1. The grievant(s) and the respondent(s) must be present during the information-gathering portion of the hearing. Witnesses will be available and will be called when needed. The committee reserves the right to allow the presence of a secretary or a technical assistant.
2. All statements during the information-exchange phase of the hearing will be tape-recorded. This record will be preserved in the University Archives for a minimum of five years and shall be confidential.
3. Any committee member may question any of the participants at the hearing.
4. The grievant will present his or her statements and/or witnesses to the committee.
5. The respondent will have the opportunity to question the grievant(s) and the witnesses about their statements.
6. The respondent will present his or her statements and/or witnesses to the committee.
7. The grievant will have the opportunity to question the respondent(s) about their statements.
8. After all information is exchanged, all persons except the committee members and the recording secretary will leave the committee room. The grievant(s), the respondent(s), and the witnesses will continue to be available to the committee should further information be needed.
9. The committee will meet in closed session to decide upon its recommendation(s) to the dean.
10. The committee shall submit its report with recommendation(s) and reasons for the recommendation(s), to the grievant(s), the respondent(s), and the dean. If the grievance directly involves the dean, the report and recommendation(s) of the Unit Academic Grievance Committee shall be referred for decision to the appropriate academic vice-president (now referred to as the University Provost).
11. The student's grievance will not be included as part of the student's record, unless it results in a change in student status or the student voluntarily inserts the information.
12. Until the grievance is resolved, the student may continue the natural academic progression through the academic unit, subject to the requirements of Article 6.6, "Academic Review, Advancement, Probation, and Dismissal of Students," and Article 6.7, "Nonacademic Disciplinary Procedures," of The Redbook.

Section 5: Decision

The dean shall approve or reject the committee's recommendation(s) within 28 days after receiving it (them). If the decision of the dean is not in accord with the committee's recommendation(s), the dean shall state the reasons for that decision, in writing, to all persons directly involved in the grievance and to the committee. The dean shall then take appropriate action to implement his or her decision after the time for appeal has elapsed.

Section 6: Rehearing

A grievance committee, within 21 days after delivery of its report, may be petitioned to reconsider its decision upon the basis of evidence of misrepresentation of materials, facts, or upon the basis of newly discovered evidence clearly not available at the original hearing.

Section 7: Appeal

Any party to the grievance may appeal to the University Student Grievance Committee within 21 days from the date of the final decision of the dean if the dean's decision does not concur with the recommendation of the grievance committee.

Student Grievance Officer

The University of Louisville Student Grievance Officer is a tenured faculty member who is responsible for informing students of their rights and obligations under the University Student Grievance procedure and especially the deadlines that have been established.

The Grievance Officer will assist the student in efforts to achieve informal resolution in as many academic or non-academic complaints possible. One of the main goals of the Student Grievance Officer is to establish an understanding among students, faculty, staff and administration when there is conflict.

Problems pertaining to grades, financial aid, University parking, housing, food services, registration, etc., may all be discussed with the Student Grievance Officer as a means of seeking direction for the pursuit of a resolution. Any aspect of the University that creates a problem for students is a matter of concern for the Student Grievance Officer.

This service is available to all students. Voice mail is available (852–6102) but e-mail (***joe.Steffen@louisville.edu***) is the preferred method of contact.

Code of Student Conduct

The Code of Student Conduct is the University's policy regarding non-academic misconduct and discipline of students. The primary purpose for the imposition of non-academic discipline in the University campus setting is to preserve and protect a quality educational environment. The Code of Student Conduct is published in the Student Handbook and is also available on the worldwide web at http://www.louisville.edu/student code-conduct.html and through the Student Life Office, Student Activities Center, Room W302. If you have any questions or would like information pertaining to reporting an alleged incident of non-academic misconduct, please contact the Associate Director of Student Life at 852–5787.

Code of Student Rights and Responsibilities

Section 1. Purpose

The Code of Student Rights and Responsibilities is set forth in writing in order to give students general notice of certain of their rights and responsibilities at the University of Louisville. Further rights and responsibilities are set forth in other University rules and policies, including the Code of Student Conduct, Residence Hall contracts, and academic unit bulletins. It is the students' responsibility to be aware of all University rules and policies; students should check with the office of the Assistant Vice President for Student Life and with their academic units if they have any questions about the purposes or intent of these policies.

The University is a public educational institution for adults rather than a custodial institution. Consistent with the role of the University to educate its students and to stimulate student autonomy and independence, University regulation and supervision of student life on and off campus is limited. The University does not assume responsibility or liability for the conduct of its students; responsibility and liability for student conduct rests with the student as inherent attributes of his or her adult status, concurrently with the student's freedom of choice regarding his or her presence at the University and his or her own conduct and associations.

Section 2. Definitions

When used in this Code:

1. The term "academic dishonesty" means obtaining or seeking to obtain an unfair academic advantage for oneself or for any other student; it includes lying, cheating, stealing, or engaging in otherwise dishonest conduct in the course of or related to any academic exercise.
2. The term "academic exercise" means a test, quiz, examination, speech, presentation, paper, field or laboratory work, or any other academic activity on which a student is evaluated.
3. The term "group" means a number of persons who are associated with each other and who have not complied with the University requirements for recognition as an organization.
4. The term "organization" means a number of persons who are associated with each other and who have complied with the University requirements for recognition.
5. The term "student" means any person taking courses at the University, either full time or part time, pursuing undergraduate, graduate or extension studies on a regular quarter, semester, or summer-term basis.
6. The term "student broadcast" means oral material published on a student operated radio or television station.
7. The term "student press" means either a student publication or a student broadcast.
8. The term "student publication" means written material published by a student organization.
9. The term "teacher" means any person hired by the University to conduct classroom activities. In certain situations, a person may be both "student" and "teacher." Determination of the person's status in a particular situation shall be determined by the surrounding circumstances.
10. The term "University" means the University of Louisville and, collectively, those responsible for its control and operation.

Section 3. Admission and Financial Aid

All applicants for admission and financial aid to the University shall be considered without regard for race, color, national origin, religion, sex, handicap not affecting qualification, or political beliefs.

Section 4. Classroom Rights and Responsibilities

1. A student shall be evaluated on demonstrated knowledge and academic performance, and not on the basis of personal or political beliefs or on the basis of race, color, national origin, religion, sex, age, or handicap not affecting academic performance.
2. A student has freedom of inquiry, of legitimate classroom discussion, and of free expression of his or her opinion, subject to the teacher's responsibilities to maintain order and to complete the course requirements.
3. A student is responsible for fulfilling the stated requirements of all courses in which he or she is enrolled.
4. A student has the right:
   a. To be informed in reasonable detail at the first or second class meeting about the nature of the course and to expect the course to correspond generally to its description in the appropriate University catalog or bulletin;
   b. to be informed in writing and in reasonable detail at the first or second class meeting of course requirements and assignments;
   c. to be informed in writing and in reasonable detail at the first or second class meeting of standards and methods used in evaluating the student's academic performance;
   d. to be informed in writing of any necessary changes in assignments, requirements, or methods of grading during the semester with the reasons for such changes.
5. A student has the right to confidentiality in the student/teacher relationship regarding the student's personal or political beliefs. Disclosures of a student's personal or political beliefs, expressed in writing or in private conversation, shall not be made public without explicit permission of the student.

   Charges of violations of these classroom rights and responsibilities shall be handled through the appropriate academic unit level procedures.

Section 5. Academic Dishonesty

Academic dishonesty is prohibited at the University of Louisville and all of its programs. It is a serious offense because it diminishes the quality of scholarship, makes accurate evaluation of student progress impossible, and defrauds those in society who must ultimately depend upon the knowledge and integrity of the institution and its students and faculty.

Academic dishonesty includes, but is not limited to, the following:

1. Cheating:
   a. Using or attempting to use books, notes, study aids, calculators, or any other documents, devices, or information in any academic exercise without prior authorization by the teacher.
   b. Copying or attempting to copy from another person's paper, report, laboratory work, computer program, or other work material in any academic exercise.
   c. Procuring or using tests or examinations, or any other information regarding the content of a test or examination, before the scheduled exercise without prior authorization by the teacher.
   d. Unauthorized communication during any academic exercise.
   e. Discussing the contents of tests or examinations with students who have not yet taken the tests or examinations if the instructor has forbidden such discussion.
   f. Sending a substitute to take one's examination, test, or quiz, or to perform one's field or laboratory work; acting as a substitute for another student at any examination, test, or quiz, or at a field or laboratory work assignment.
   g. Conducting research or preparing work for another student, or allowing others to conduct one's research or prepare one's work, without prior authorization by the teacher.

   Except when otherwise explicitly stated by the teacher, examination questions shall become public after they have been given.

2. Fabrication:
Inventing or making up data, research results, information, or procedures, such as:
   a. Inventing or making up data, research results, information, or procedures.
   b. Inventing a record of any portion thereof regarding internship, clinical, or practicum experience.

3. Falsification:
Altering or falsifying information, such as:
   a. Changing grade reports or other academic records.
   b. Altering the record of experimental procedures, data, or results.
   c. Altering the record of or reporting false information about internship, clinical, or practicum experiences.
   d. Forging someone's signature or identification on an academic record.
   e. Altering a returned examination paper in order to claim that the examination was graded erroneously.
   f. Falsely citing a source of information.

4. Multiple Submission:
The submission of substantial portions of the same academic work, including oral reports, for credit more than once without prior authorization by the teacher involved.

5. Plagiarism:
Representing the words or ideas of someone else as one's own in any academic exercise, such as:
   a. Submitting as one's own a paper written by another person or by a commercial "ghost writing" service.
   b. Exactly reproducing someone else's words without identifying the words with quotation marks or by appropriate indentation, or without properly citing the quotation in a footnote or reference.
   c. Paraphrasing or summarizing someone else's work without acknowledging the source with a footnote or reference.
   d. Using facts, data, graphs, charts, or other information without acknowledging the source with a footnote or reference.

   Borrowed facts or information obtained in one's research or reading must be acknowledged unless they are "common knowledge". Clear examples of "common knowledge" include the names of leaders of prominent nations, basic scientific laws, and the meaning of fundamental concepts and principles in a discipline. The specific audience for which a paper is written may determine what can be viewed as "common knowledge": for example, the facts commonly known by a group of chemists will differ radically from those known by a more general audience. Students should check with their teachers regarding what can be viewed as "common knowledge" within a specific field or assignment, but often the student will have to make the final judgment. When in doubt, footnotes or references should be used.

6. Complicity in Academic Dishonesty:
Helping or attempting to commit an academically dishonest act.

The academic units may have additional guidelines regarding academic dishonesty. It is the student's responsibility to check with their teachers and academic units to obtain those guidelines.

Section 6. Discipline Procedures for Academic Dishonesty

Charges of academic dishonesty shall be handled through the appropriate academic unit level procedures.

An academic unit that determines that a student is guilty of academic dishonesty may impose any academic punishment on the student that it sees fit, including suspension or expulsion from the academic unit. A student has no right to appeal the final decision of an academic unit. However, a student who believes that he or she has been treated unfairly, has been discriminated against, or has had his or her rights abridged by the academic unit may file a grievance with the Unit Academic Grievance Committee, pursuant to the provisions of the Student Academic Grievance Procedure; the Unit Academic Grievance Committee may not substitute its judgment on the merits for the judgment of the academic unit.

An academic unit that suspends or expels a student from the academic unit because the student has been found guilty of academic dishonesty may recommend to the University Provost in writing that the student also be suspended or expelled from all other programs and academic units of the University. Within four weeks of receiving such a recommendation, the Provost shall issue a written decision. Neither the student nor the academic unit shall have the right to appeal the Provost's decision. However, a student who believes that he or she has been treated unfairly, has been discriminated against, or has had his or her rights abridged by the issuance of a decision by the Provost may file a grievance with the University Student Grievance Committee, pursuant to the provisions of the Student Academic Grievance Procedure; the University Student Academic Grievance Committee may not substitute its judgment on the merits for the judgment of the Provost.

Section 7. Campus Expression

1. Students have the right of freedom of expression to the extent allowed by law.
2. Students may picket or demonstrate for a cause, subject to the following conditions:
   a. The students must act in an orderly and peaceful manner.
   b. The students must not in any way interfere with the proper functioning of the University.
   c. Where students demonstrate in an area not traditionally used as an open public forum, the University reserves the right to make reasonable restrictions as to time, place, and manner of the student demonstrations.
3. Students may distribute written material on campus without prior approval, providing such distribution does not disrupt the operations of the University or violate University rules.
4. Students may invite to campus and hear on campus speakers of their choice on subjects of their choice; approval will not be withheld by any University official for the purpose of censorship.

Section 8. The Student Press

1. The student press is free to deal openly, fearlessly, and responsibly with issues of interest and importance to the academic community. There shall be no prior approval of student press content by the University.
2. The student press is responsible for adhering to the canons of responsible journalism and for complying with the law. Student publications and broadcasts shall not publish libelous or slanderous matter, or any other content that violates the law.
3. All student publications and broadcasts shall explicitly state that the opinions expressed are not necessarily those of the University or its student body.
4. Students may not be disciplined by the University for their participation with the student press except for violations of University rules that are not inconsistent with the guarantees contained herein.

Section 9. University Facilities

Appropriate University facilities shall be available to organizations within the University community for regular business meetings, for social programs, and for programs open to the public.

1. Reasonable conditions may be imposed to regulate the timeliness of requests, to determine the appropriateness of the space assigned, to regulate time and use, and to insure proper maintenance.
2. Preference may be given to programs designed for audiences consisting primarily of members of the University community.
3. Allocation of space shall be made based on priority of requests and the demonstrated needs of the organization.
4. Charges may be imposed for any unusual costs for use of facilities.
5. Physical abuse of assigned facilities may result in reasonable limitations on future allocation of space to offending parties and will require restitution of damages.
6. The organization requesting space must inform the University of the general purpose of any meeting open to persons other than members and the names of outside speakers.

Section 10. Use of University Name and Insignia

No individual, group, or organization may use the University name or insignia without the express authorization of the University except to identify the University affiliation. University approval or disapproval of any policy or issue may not be stated or implied by any individual, group, or organization.

Section 11. Campus Residence Facilities

Students have the right of privacy in campus residence facilities.

1. Nothing in the University relationship or residence hall contract may expressly or impliedly give the institution or residence hall officials authority to consent to search of a student's room or residence by police or other law enforcement officials unless they have obtained a search warrant.
2. The University reserves the right to enter a student's room in a residence hall or a student's apartment in a campus residence:
   a. in emergencies where imminent danger to life, safety, health, or property is reasonably feared;
   b. to make necessary repairs, improvements, or alterations in the facility;
   c. to provide necessary pest control services;
   d. to inspect the facility as deemed necessary by the University.

Section 12. Student Records

The privacy and confidentiality of all student records shall be preserved in accordance with applicable laws. The University shall establish and adhere to a clear and definitive records policy.

Section 13. Campus Organizations

Organizations and groups may be established within the University for any legal purpose. Affiliation with an extramural organization shall not, in itself, disqualify the University branch or chapter from University privileges. A group shall become a formally recognized organization through procedures established by the Student Government Association, upon approval of the Vice President for Student Affairs.

1. Groups of a continuing nature must institute proceedings for formal recognition if they are to receive benefits from the University.
2. Recognition of an organization by the University infers neither approval nor disapproval of the aims, objectives, and policies of the organization, nor liability for the actions of the organization.
3. Membership in all University-related organizations shall be open to any member of the University community who is willing to subscribe to the stated aims and meet the stated obligations of the organization, provided such aims and obligations are lawful.
4. Membership lists are confidential and solely for the use of the organization, except that names and addresses of current organization officers shall be reported to the University as a condition of continuing University recognition.
5. Any organization that engages in activities either on or off campus that are illegal or contrary to any University policy may have sanctions imposed against it, including withdrawal of University recognition.

Section 14. Promulgation of University Rules Affecting Students

Rules and Policies affecting students shall be published in the Student Handbook, in the appropriate University catalogs, or in any other appropriate publication prior to their enforcement. Included in the Student Handbook are the following: Academic Grievance Procedure, Code of Student Conduct, Code of Student Rights and Responsibilities, Policy on Consumption of Alcoholic Beverages for Recognized Student Organizations, Hazing and Initiation Activities Policy, Non-academic Grievance Policy and the Sexual Harassment Policy. Copies of the Student Handbook are available from the Office of Student Life.

Privacy of Student Records

The University of Louisville hereby notifies students concerning the Family Educational Rights and Privacy Act of 1974. This Act, with which the institution intends to comply fully, was designed to protect the privacy of educational records, to establish the right of students to inspect and review their education records, and to provide guidelines for the correction of inaccurate or misleading information. Students also have the right to file complaints with the Family Educational Rights and Privacy Act Office, Department of Education, concerning alleged failures by the institution to comply with the Act.

The University has adopted a policy which explains in detail the procedures to be used by the University for compliance with the provisions of the Act and the regulations adopted pursuant thereto. Copies of the policy can be obtained from the University Archives and Records Center, Ekstrom Library. Questions concerning the Family Educational Rights and Privacy Act may be referred to the Director, University Archives and Records Center or visit the Website at **http://library.louisville.edu/uarc/stupriv.htm.**

Drug-Free Schools and Communities Act Amendments of 1989

On December 12, 1989, President Bush signed into law the Drug-Free Schools and Communities Act Amendments of 1989. These Amendments require that higher education institutions receiving any federal funding must notify each student and employee annually of its program to prevent the illicit use of drugs and the abuse of alcohol by students and employees.

We at the University of Louisville have begun programs in the past few years to combat the misuse and abuse of alcohol and other chemical substances. We realize; however, that only through a concerted effort by all, can we make any major strides in preventing substance abuse. The following is the University of Louisville's Drug-Free Schools Notice:

Drug-Free Schools Notice

As required by the Federal Drug-Free Schools and Communities Act Amendments of 1989, you are hereby notified by the University of Louisville that on University premises or at University-sponsored activities the following acts are prohibited:

1. distribution, possession, or use of any illegal drug or controlled substance without legal authorization;
2. providing alcoholic beverages to individuals under 21 years of age, or possession of alcoholic beverages by individuals under 21 years of age; or
3. illegal possession of an open container of an alcoholic beverage, public intoxication, driving while intoxicated, and drinking alcoholic beverages in an unlicensed public place.

In addition to imposition of disciplinary sanctions under University procedures including suspension or separation from the University for such acts, students or employees may face prosecution and imprisonment under Federal and Kentucky laws which make such acts felony and misdemeanor crimes.

The Code of Student Conduct lists details of offenses and disciplines for students. Staff may be disciplined under Section 11.1 of the Staff Handbook. Faculty may be disciplined by Deans per Redbook Sections 4.5.3 or 3.2.2 with review per 4.4 for sanctions less than dismissal or suspension for one year.

The health risks associated with the misuse and abuse of mind-altering drugs, including controlled substances and alcohol, include but are not limited to: physical and psychological dependence; damage to the brain, pancreas, kidneys and lungs; high blood pressure, heart attacks, and strokes; ulcers; birth defects; a diminished immune system; and, death.

The Counseling Center and Student Health Services provide assessment and referral services to University students, as well as serving as an alcohol and other drug information/education resource. For further information, call 852-6585. Service for faculty and staff are available through the Faculty/Staff Assistance Program. For further information call 852-6543.

Americans with Disabilities Act

ADA Policy Statement University of Louisville

The University of Louisville is committed to providing equal opportunity for persons with disabilities in full compliance with the Americans with Disabilities Act of 1990 (ADA), and Section 504 of the Rehabilitation Act of 1973 (504). The University's 504/ADA Coordinator is responsible for all campus activities relevant to Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990. The University Affirmative Action Officer will monitor compliance and assist all unit heads in meeting their equal opportunity obligations. The University Disability Resource Center staff will assist the university community in fulfilling its responsibility by serving as an information resource center and coordinating support services for students with disabilities.

ADA and 504 Grievance Procedures University of Louisville

The following grievance procedure is being recommended to provide prompt and equitable resolution of complaints concerning ADA and Section 504 of the Rehabilitation Act of 1973.

The University of Louisville ADA Grievance Procedure is an internal grievance procedure providing for prompt and equitable resolution of complaints alleging any action prohibited by the U.S. Department of Justice regulations implementing Title II of the Americans with Disabilities Act. Title II states, in part, that "no otherwise qualified individual with a disability shall, solely by reason of such disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination" in programs or activities sponsored by an agency.

General information regarding ADA or 504 can be addressed to:

Director
Disability Resource Center
Robbins Hall Room 101,
852-6938

Complaints should be addressed to the person who has been designated to coordinate ADA compliance efforts:

Director
Affirmative Action Office
Personnel Services Building,
852-6538

1. A complaint should be filed in writing, contain the name and address of the person filing it, and briefly describe the alleged violation. Upon receipt of the written notice of complaint, the Director of Affirmative Action/Employee Relations or his/her designee shall acknowledge receipt within five workdays.
2. A complaint should be filed within 180 days after the complainant becomes aware of the alleged violation.
3. An investigation, as may be appropriate, shall follow a filing of complaint. The investigation shall be conducted by the Affirmative Action Office. This internal Complaint procedure contemplates an informal but thorough investigation, affording all interested persons and their representatives, if any, an opportunity to submit evidence relevant to a complaint.
4. A written determination regarding the investigation of the complaint and a description of the resolution, if any, shall be issued by the Affirmative Action Office and a copy forwarded to the complainant no later than 60 days after its filing.
5. The Affirmative Action Office shall maintain the files and records relating to the complaints filed.
6. The complainants may request a reconsideration of the case in instances where he or she is dissatisfied with the resolution. The request for reconsideration should be made within 15 work days after receipt of the determination to the Affirmative Action Office.
7. The right of a person to a prompt and equitable resolution of the complaint filed hereunder shall not be impaired by the person's pursuit of other remedies such as the filing of an ADA complaint with the responsible federal department or agency. Use of this grievance procedure is not a prerequisite to the pursuit of other remedies.
8. These rules shall be construed to protect the substantive rights of interested persons to meet appropriate due process standards, and to assure that the University complies with the ADA and implementing regulations.

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Accountancy (ACCT)

www.louisville.edu/academicprograms/accountancy.htm

Departmental Faculty

Director
Julia N. Karcher, Associate Professor

Professors
Sidney J. Baxendale
Betty C. Brown
Richard E. Coppage
Alan S. Levitan
Richard M. Walter

Associate Professors
Alan Attaway, Acting Dean, College of Business and Public Administration
Archie W. Faircloth
Benjamin P. Foster
Wyatt McDowell

Master of Accountancy

Major: ACCY
Degree: MAC
Unit: GB

Mission of the School of Accountancy

To meet the needs of our constituents:

- The faculty provides varied learning experiences to enable our students to succeed in their careers.
- The faculty produces scholarly works that disseminate knowledge to the business and academic communities and that enrich the learning experiences of our students.
- The faculty uses its expertise to serve the community, the university, and the accounting profession.

Objectives

The objective of the Masters of Accountancy (MAC) Program is to provide candidates with the necessary skills and knowledge to begin successful careers as certified public accountants.

General Information

The degree program is available to qualified individuals possessing a bachelor's degree from an accredited college or university.

No specific undergraduate major is required. An applicant whose curriculum did not include the appropriate course work may be admitted on conditional status while completing the undergraduate prerequisites and later enroll in the MAC program.

The MAC program is primarily an evening program. A student can enroll as either a part-time or full-time student (9 hours for full-time). During the Fall and Spring semesters, courses are typically offered Monday through Thursday, one evening a week, from 5:30 until 8:15 p.m. During the summer semester, there are two successive five-week sessions and classes meet three evenings a week-- Monday, Tuesday, and Thursday, 5:30-8:15 p.m.

All required courses are offered on a rotating basis in the Fall and Spring semesters, along with a variety of elective courses. A smaller selection of courses is offered during the two summer sessions.

Admission Procedures

Admission into the MAC program is competitive. The procedures for admission into the MAC program are as follows:

1. Submit a completed graduate application to the University of Louisville Admissions Office. There is a $50 application fee (on-line at www.graduate.louisville.edu). Program candidates are admitted in the Fall semester (which begins in late August), and in the Spring semester (which begins in mid-January). The application deadline (and submission of all application materials) for both of these terms is 120 days prior to the beginning of the semester. If circumstances prevent an applicant from meeting the deadline, the applicant needs to contact the MAC counselor.
2. Official transcripts verifying the receipt of a baccalaureate degree from an accredited institution must be submitted to the Admissions Office.
3. The Graduate Management Admission Test (GMAT) is required. Designed to measure general aptitude for graduate study in business administration, it does not test knowledge in specific business subjects. An admission decision will not be made without the GMAT scores. See web (www.gmat.com) or call 1-800-GMAT-NOW.
4. A written personal statement is highly recommended for the applicant who has either a marginal GMAT score, undergraduate grade point average, or both. The statement should demonstrate the applicant's motivation and desire to earn an advanced degree as evidenced by professional achievements, community involvement, etc.
5. Two letters of recommendation need to be from individuals familiar with the applicant's academic performance. Professional letters from employers are acceptable when substantial time has elapsed since the applicant has attended an academic institution.
6. International applicants are required to take the TOEFL examination if English is not the native language. Applicants who have not scored 550 or higher on the TOEFL may choose to apply to the Intensive English as a Second Language (IESL) Program. Successful completion of this program or passing the Exit Examination in the advanced level of IESL will be considered adequate proof of the English proficiency required for course work in the MAC program. Acceptance to the Intensive English Program does not constitute acceptance to the MAC program. For information and application forms, write to IESL, University of Louisville, Louisville, KY 40292.

Academic Policies

The following standards apply to all MAC degree candidates:

1. A faculty member teaching a graduate-level course may assign a grade with either a plus (e.g., B+) or minus (e.g., B-). See section on Academic Policies and Requirements (Grading System).
2. Upon admission to the program, a 3.0 grade point average must be maintained. The calculations exclude transfer work.
3. Grades of "A", "B", or "C" are the only grades to be considered as passing. However, a "D" or an "F" will be used in calculating the grade point average (in terms of academic standing).
4. A maximum of six hours in 600-level courses with a grade of "C" may count toward the completion of degree requirements.
5. A student who has received a grade of "C", "D", or "F" may repeat the course upon approval of the Graduate Dean and the MAC counselor. When a student repeats a course, the grade point average will be calculated on the basis of the last grade attempted, although all previous grades will remain on the transcript.
6. A 3.0 grade point average must be maintained by all graduate students or the student will be placed on probation. If the student does not restore the grade point average to a 3.0 by the end of the next semester of enrollment, the student will be dismissed from the program. .
7. An academically dismissed student is required to discontinue course enrollment for a minimum of one semester. After the semester of dismissal, the student may submit a written petition to the MAC counselor requesting re-admission. Such a request must be submitted at least 40 days prior to the semester in which enrollment is requested. The Graduate Dean must approve any readmission to the program.
8. Students are restricted to no more than 3-hours of independent study.

Visiting Students

A student visiting from another university may take the MAC course work on a space-available basis. Visiting students must also meet Graduate School requirements stated in the General Section of this catalogue.

A U of L MAC student who wishes to be a visiting student at another academic institution for a particular semester must obtain permission from the MAC counselor. Visiting student status is not allowed to a student who is on academic probation. Only grades of "A" and "B" can be transferred back to the University of Louisville and quality points are not transferred. No more than 6 credit hours can be taken from a non-AACSB accredited school.

Curriculum Requirements

The following curriculum requirements apply to all MAC degree students:

- Strict compliance with prerequisites is required. Check course descriptions which are listed in this catalogue.
- Six hours of graduate courses may be taken in non-business, non-economic areas. Business Education courses are not accepted unless special permission has been given by the MAC counselor. NO BUSINESS COURSE MAY BE TAKEN PASS/FAIL.
- All graduate students are expected to make steady and satisfactory progress toward their degrees. Students who fail to maintain enrollment for a period of more than 24 months will be considered to have withdrawn from the program. Students who seek to return after such a period of time (or longer) are required to contact the MAC counselor for re-admission. Based on the request of the School, the Graduate Dean will consider the student for re-admission.

Transfer Credit

A student may be allowed to transfer up to six semester hours of graduate academic credit from another accredited institution(s) that offers advanced degrees. Only courses in which the student earned a grade of "B" or better will be considered for transfer. The hours will be transferred; not the quality points. A transfer of credits is possible only after earning six hours from the University of Louisville College of Business and Public Administration. Students wishing to transfer credit should make a request to the MAC counselor. Final approval of the transfer of credit must come from the Graduate School.

Honors

Students who complete the MAC program with a grade point average of 3.75 or higher will graduate "With Distinction." Any graduate with a 3.9 standing will also be nominated for the Phi Kappa Phi Honorary Society and the Graduate Dean's Citation.

Degree Requirements

Candidates for the MAC degree must:

- Earn a minimum of twenty-four of the thirty graduate credits in residence at the University of Louisville.
- Complete degree course requirements within six years of the semester admitted to the MAC degree program.
- Make steady and satisfactory progress towards their degrees. Students who fail to maintain enrollment for a period of more than 24 months will be considered to have withdrawn from the program. Students who seek to return after such a period of time (or longer) are required to contact the MAC counselor for re-admission. Based on the request of the School, the Graduate Dean will consider the student for re-admission.

Master of Accountancy Foundation Content

The foundation coverage must be completed prior to actual admission. The course numbers shown after the descriptions of the U of L courses would meet that foundation requirement.

Content	Equivalent U of L Courses
Taxation Overview of federal taxation, tax terminology, income tax formulas, tax accounting methods, gross income, deductions and losses, significant coverage of property transactions, introduction to tax research, tax problems relating to all aspects of corporate and partnership taxation.	ACCT 315 and ACCT 415
Auditing and Systems Accounting transaction processing cycles, systems development, system documentation, database systems, evaluation of internal control structures, assessment of control risks.	CIS 300 and ACCT 310 with ACCT 411CIS 300 and ACCT 310 with ACCT 411
Managerial Cost Accounting Cost accounting concepts and terms, job costing and process costing, activity-based costing, budgeting, variable costing, C-V-P analysis, differential/relevant cost and revenue analysis, standard costing and variance analysis.	ACCT 320
Financial Accounting The range of topics covered in the Intermediate accounting sequences. For some undergraduate programs, this is a two-course sequence; for others it is a three-course sequence.	Intermediate Accounting Sequence

The foundation coverage must be completed prior to actual admission to the MAC program.

Master of Accountancy Course Requirements

The Master of Accountancy program consists of 21 graduate hours in accounting courses, 3 graduate hours in commercial law and 6 graduate hours of electives.

	Semester Hours	Total
ACCT 611 Cost & Operations Mgmt	3	
ACCT 615 Advanced Financial and Governmental Accounting	3	
ACCT 631 Federal Taxation	3	
ACCT 641 Financial Accounting & Professionalism	3	
ACCT 651 Auditing & Systems	6	
ACCT 655 Special Topic in Accounting	3	
CLAW 610 Commercial Law for Professional Accountants	3	
Professional Interest Area Electives	6	
Total Credit Hours		**30**

Electives may be chosen from any 600-level course offered by the CBPA. Electives outside the college may be taken with permission of the Director of the School of Accountancy.

Anatomical Sciences and Neurobiology (ASNB)

www.louisville.edu/medschool/anatomy

Departmental Faculty

Chairman

Fred J. Roisen, Professor - Trophic factors; adult olfactory-derived progenitor cells, spinal cord regeneration, neuronal development and neuroplasticity in vitro.

Professors

Kunwar P. Bhatnagar - Pineal gland ultrastructure, organs of special senses, biology of bats; human development, olfactory and accessory olfactory systems; brain development and function.

Ferrell R. Campbell - Ultrastructural studies of hemopoietic tissues.

Nigel G.F. Cooper - Neurobiology of development of sensory systems, somatosensory and visual systems.

George D. Mower - Development and plasticity of the visual system; anatomy and physiology; neurotransmitter systems; molecular genetics.

G. Stephen Nettleton - Chemistry of biological stains; histochemistry; gross anatomy; editing.

Laura F. Schweitzer - Developmental neurobiology; anatomy of the mammalian auditory and gustatory systems.

Michael T. Tseng - Photodynamic therapy, experimental chemotherapy; hypoxic and ischemic insults.

Associate Professors

Martha E. Bickford - Synaptic circuitry of visual thalamus; anatomy and physiology.

Rita Colella - Proteinases and their inhibitors: muscle protein degradation, cancer metastasis.

Kathleen M. Klueber (Director of Graduate Studies) - Muscle biology, neuromuscular relationships in diabetes, spinal cord regeneration.

Nobuyuki Kuwabara - Cellular and functional organization of the central auditory system.

Matthew Qiu - Spinal cord development; molecular and genetic control of motor neuron and oligodendrocyte differentiation and regeneration; embryonic stem cells.

Brett R. Schofield - Functional organization of auditory circuits.

Assistant Professors

Charles H. Hubscher - Electrophysiology and neuroanatomy of spinal cord and brainstem neurons mediating the control of reproductive organs; normal mechanisms and changes following spinal cord injury.

Robin F. Krimm - Neurotrophin growth factors influence sensory end organ and neuron development.

Chantal Prewitt - Teach Medical and Dental Gross Anatomy, Medical Neurosciences; summer semester Gross Anatomy course.

Guillermo W. Rougier - Comparative anatomy and embryology.

Joint Appointments

Professors

Barbara J. McLaughlin - Associate Dean for Research. Ultrastructure, freeze-fracture, and cytochemistry of developing retina; epithelial photoreceptors; corneal wound healing; human corneal dystrophies.

Scott Whittemore - Molecular and cellular biological approaches (gene therapy, stem cells, and transplantation) to restore function in the injured spinal cords.

Associate Professors

Michael Gruenthal - Interim Dean Neurology. Neurobiology of epilepsy.

David Magnuson - Identification and characterization of spinal cord interneurons involved in motorneuron activity.

Xiao-Ming Xu - Effects of cell transplantation, neurotrophins, and gene therapy in the protection and regeneration of the injured spinal cord.

Assistant Professors
J. Patrick Moore - Pituitary differentiation and maturation.
Stephen M. Onifer - Development of cellular and molecular strategies for functionally repair of both acutely and chronically severed sensory and motor pathways after cervical spinal cord injury.

Associate Appointments

Professors
Robert Acland, M.B.B.S., F.R.C.S., Department of Surgery
James F. Brennan, Ph.D., Dean of College of Arts and Sciences, Department of Psychological and Brain Science
Allan G. Farman, B.D.S., Ph.D., Department of Maxillofacial Surgery
Charles P. McGraw, Ph.D., Department of Neurological Surgery
William N. Olson, M.D., Department of Neurology
Christopher Shields, M.D., Chairman, Department of Neurological Surgery
Gordon R. Tobin, II, M.D., Department of Surgery

Associate Professors
John H. Barker, M.D., Department of Surgery
John R. Johnson, M.D., Department of Orthopedic Surgery
Marcia Jumblatt, Ph.D., Department of Ophthalmology and Visual Sciences
Michael J. Voor, Ph.D., Department of Orthopedic Surgery

Assistant Professors
Welby Winstead, M.D., Department of Surgery, Otolaryngology

Emeritus/Emerita Professors
James B. Longley - Histochemical aspects of kidney structure and function.
Kenneth H. Reid - Electrophysiology, CNS response to hypoxia, hypoglycemia, and abnormal ionic conditions.
Richard D. Rink - Causes and effects of blunt force injury.
Frank J. Swartz - Somatic polyploidization; nuclear differentiation of pancreatic B cells and hepatocytes.
Richard H. Swigart - Chronic hypoxia with emphasis on the cardiovascular system.
Charles E. Wagner - Gross anatomy.

Adjunct Assistant Professor
Claire Meena-Leist, M.D.
David Porta, Ph.D.
Mark Wiegand, Ph.D.

Programs

The Department of Anatomical Sciences and Neurobiology offers programs of study and investigation leading to the degrees of Master of Science and Doctor of Philosophy. Applicants must satisfy all of the general requirements of the Graduate School. Applicants are expected to have a thorough background in general biology, chemistry, and physics. Students may be accepted with minor deficiencies in these areas if their academic records show superior performance in other germane subjects. Applicants should have a baccalaureate degree from an accredited college with a grade average of "B" (3.0) or higher to be considered for non-probationary admission. Applicants are required to take the Graduate Record Examination to be eligible for admission.

The members of the Department represent most major fields of specialization in anatomical sciences and neurobiology. An informal atmosphere, moderate department size, and close contact between staff and students foster the common aims of students and faculty in original research and advanced study.

Anatomical Sciences and Neurobiology is essential to any student interested in medicine, dentistry, allied health, nursing, teaching science or sophisticated biomedical research.

The training program for Ph.D. or M.S. degree is built around research. Teaching also is a priority for many graduate trainees. A Ph.D. degree opens doors at universities, research institutes, and corporate research labs or for teaching science at the university and postgraduate levels. A M.S. degree often is required for a supervisory position in a research lab or for teaching science at the high school or college level.

The following departmental rules apply in addition to the general rules of the Graduate School.

Doctor of Philosophy in Anatomical Sciences and Neurobiology

Major: ASNB
Degree: PHD
Unit: GM

Doctoral students are required to take two (2) courses in the core curriculum (ASNB 601, 604, 615, 671, 672, and 673) as well as 606, Anatomy Seminar. Registration in the seminar course is required each semester of the second year. Additional formal course work is arranged, according to the needs and interests of the individual student in cooperation with his/her advisor. Students are required to complete six hours of course work outside the Department and an additional six credit hours of departmental electives. To prepare adequately for an academic career, each doctoral student is required to assist in one major anatomy course (601, 604 or 615) and to present a limited number of lectures. In addition, each student must complete two laboratory rotations (ASNB 616) in the Department holding at least six credit hours.

The Department of Anatomical Sciences and Neurobiology does not have a foreign language proficiency requirement. Applicants should recognize, however, that specific areas of intended research might demand such proficiency.

Students are required to write a research proposal describing the thesis research and to defend it in an oral exam in order to qualify for candidacy. After successfully defending their oral exam, students must complete and defend their research dissertation.

Master of Science in Anatomical Sciences and Neurobiology

Major: ASNB
Degree: MS
Unit: GM

Master's applicants are required to take two of the core curriculum courses offered by the Department (ASNB 601, 604, 615, 671, 672, and 673). Registration in the Anatomy Seminar course, ASNB 606 is required throughout the students' enrollment. Students must complete six hours of Master's Thesis (ASNB 620), complete a research project of appropriate scope, and defend their research thesis.

Anthropology (ANTH)

www.louisville.edu/a-s/anthro

Graduate Program Faculty
Chair
Julie Peteet, Associate Professor

Professors
Joseph E. Granger
Edwin S. Segal

Associate Professor
Yvonne V. Jones

The Department of Anthropology offers neither a graduate degree program nor a graduate certificate program. However, courses offered by the department may be applied toward graduate degrees in other areas. Students must obtain their program advisor's permission before enrolling in these courses. Students who are interested in these courses should contact the Chair of the department.

AUDIOLOGY (AUDI)

http://www.louisville.edu/medschool/surgery/com-disorders/audiology/

Departmental Faculty

Professor
David R. Cunningham

Associate Professor
Ian M. Windmill, Director

Assistant Professor
Jill E. Preminger

Application Deadline
Except under unusual circumstances, students will be admitted for Fall semester only. Deadline for applications is January 1.

Program
The Doctor of Audiology Degree (Au.D.) is a four-year post bachelor's degree program leading to a professional degree conferred by the Graduate School and School of Medicine. The program is physically located within the Louisville Medical Center and the University of Louisville Health Sciences Campus and administratively located in the Division of Communicative Disorders in the Department of Surgery. The faculty are committed to the clinical focus of the Au.D. degree and endeavor to bring real-world experiences to bear on the teaching environment. The faculty and staff of the Audiology Section actively participate in the provision of clinical services in both hospital and private practice arenas.

Students benefit by working side by side with the faculty and staff in an active and dynamic medical environment. Students will be able to interact with faculty, residents and medical students from other disciplines such as otolaryngology, speech pathology and pediatrics, not only in the provision of clinical services, but also in teaching and research endeavors.

Admission to the Doctoral Program
Admission to the program will be for Fall term only, and applications must be received by January 1 of the application year. Applicants should submit all undergraduate transcripts, GRE scores and 3 letters of recommendation. Admission to the program is based on a favorable review of application material and an interview with the admissions committee.

Applications can be requested through the Audiology Program at (502) 852-5274.

Doctor of Audiology

Major: AUDI
Degree: AuD.
Unit: GM

Curriculum
The Doctor of Audiology degree program has been designed to meet the content and experience guidelines developed over the past decade by numerous professional organizations and associations. Curricular content areas and competencies are outlined on the following pages.

The curriculum begins with the student spending a significant amount of time in the classroom with a minimum amount of time in the clinical environment. Over the course of the four years, the ratio of classroom to clinic time reverses, so that the last year consists of virtually full-time clinical experience. During the fourth year, students will be given options for practical experiences in a variety of sites around the country.

Affiliated Hospitals and Clinical Services
Audiology students are exposed to broad-based clinical environments and patient populations during their training. Practicum experiences include the faculty private practice, four hospitals, and affiliated practicum sites located throughout the Louisville area. University Audiology Associates and HearCare Associates are the private practices of the faculty and afford the student an opportunity to learn the business aspects of audiology in addition to provision of a full range of audiologic services. Kosair Children's Hospital is the only comprehensive children's hospital and pediatric trauma center in the state of Kentucky. It functions as the main teaching hospital for the Department of Pediatrics. The faculty manage and staff the audiology services at Kosair Children's Hospital and provide hearing and auditory system evaluations for infants and children, central auditory processing evaluations, and comprehensive audiologic monitoring for children at high risk for hearing loss. The University of Louisville Hospital is the main teaching hospital for the University of Louisville. A variety of audiologic services are performed including audiologic evaluations, and worker' compensation evaluations. Located approximately three miles from the Medical Center, the Veteran's Administration Medical Center is a 444-bed facility that recently added a clinical addition that includes new space for the audiology service. Hearing aid dispensing, audiologic evaluations and vestibular evaluations are conducted in the audiology service at the VA. The Kentucky Institute of Balance is a comprehensive program staffed by audiologists providing students the opportunity for a comprehensive experience in the assessment and management of vestibular disorders.

Degree Requirements
Students must successfully pass all required and elective courses with a final GPA of greater than 3.0. Students are expected to maintain a GPA of greater than 3.0 during their course of study. Practical experiences must be successfully completed to graduate. Students whose performance is less than expected may be dismissed from the program.

Biochemistry and Molecular Biology (BIOC)

www.louisville.edu/medschool/biochemistry/

Departmental Faculty

Chair
Kenneth S. Ramos, Professor and Distinguished University Scholar – Redox-regulated transcriptional control; gene-environment interactions; genomics.

Professors
Mark D. Brennan - Developmental regulation of gene expression; human genetics.
William L. Dean - Structure and function of membrane proteins.
Richard C. Feldhoff - Developmental regulation of complement component C9; purification and characterization of salamander courtship pheromones.
Robert D. Gray - Design and application of metalloproteinase inhibitors in pathological conditions.
Nancy C. Martin - Molecular biology of mitochondrial biogenesis and protein transport; RNA processing.
Russell A. Prough - Regulation of enzymes involved in foreign compound metabolism; biochemical mechanisms of toxicity and carcinogenesis.
James L. Wittliff - Characteristics and biological role of steroid and peptide hormone receptors in target tissues; endocrine regulation of gene expression in cancer.

Associate Professors
Barbara J. Clark - Regulation of steroid hormone biosynthesis by trophic hormones.
Jaydev N. Dholakia - Translation control of gene expression during differentiation, development, fertilization, and viral infection.
Steven R. Ellis - Translational regulation of yeast cell growth and differentiation.
Pamela W. Feldhoff - Molecular mechanisms of complement component C9 mediated reactions, utilizing cell culture/cytokines and a hypoxia neonatal rat model.
Thomas E. Geoghegan - Biochemistry of gene expression in eukaryotes; carcinogenesis and DNA repair.
Carolyn M. Klinge - Estrogen regulation of gene expression
Thomas J. Wheeler - Membrane transport proteins, focusing on glucose transport in heart and other tissues.

Assistant Professors
Keith Cameron Falkner - Gene regulation of drug metabolizing enzymes.
Ronald Gregg - Function of the subunits of voltage-gated calcium channels in muscle contraction and central nervous systems function using gene targeting in mice.

Joint Professors
Aruni Bhatnagar - (Primary Appointment: Department of Medicine-Cardiology) Reactive oxygen species in cardiovascular disease.

Jon B. Klein - (Primary Appointment: Department of Medicine-Nephrology) Applications of proteomics.
Kenneth R. McLeish - (Primary Appointment: Department of Medicine-Nephrology) Regulation of chemoattractant receptor-G protein interactions; role of mitogen-activated protein kinases in neutrophil function.
Donald M. Miller - (Primary Appointment: Department of Medicine, Division of Internal Medicine and Hematology/Oncology) Molecular and clinical oncology; modulation of oncogene expression; triplex DNA based gene therapy, treatment of melanoma.
Ch. Venkatesware Rao - (Primary Appointment: Department of Obstetrics and Gynecology) Molecular reproductive biology.
Richard N. Redinger - (Primary Appointment: Department of Medicine-Gastroenterology) Metabolism and secretion of bile acids.
Arno F. Spatola - (Primary Appointment: Department of Chemistry) Peptide chemistry, peptide mimetics and molecular diversity; drug design.
Roland Valdes – (Primary Appointment: Department of Pathology) Endogenous drug-like factors and sodium pump isoforms; pharmacogenetics.
Stephen J. Winters - (Primary Appointment: Department of Medicine-Division of Endocrinology and Metabolism). PACAP and gonadotropin secretion; monkey pituitary cells to study male infertility.
William W. Young - (Primary Appointment: Department of Biological & Biophysical Sciences) Gycolipid metabolism and trafficking.

Joint Associate Professor
Douglas D. Darling - (Primary Appointment: Department of Biological & Biophysical Sciences) Molecular mechanism of action of thyroid/steroid hormone receptors; regulation of gene expression during development.
Sven-Ulrich Gorr - (Primary Appointment: Department of Biological & Biophysical Sciences) Endocrine, neuronal and exocrine cells that store peptide hormones, neuropeptides and digestive proteins at high concentrations in secretory granules.
Sham Kakar - (Primary Appointment: Department of Medicine). Molecular mechanism of causation and prevention of hormone related cancers.

Joint Assistant Professors
Paula Jane Bates - (Primary Appointment: Department of Medicine, Division of Hematology/Oncology) Oligonucleotides as antiproliferative and anti-HIV agents.
H. Leighton Grimes - Primary Appointment: Department of Surgery-Division of Cellular Therapeutics) Molecular immunology and transplantation biology.
John O. Trent - (Primary Appointment: Department of Medicine, Division of Hematology/Oncology) Structural biology of DNA (duplex, triplex & Quadruplex), DNA -ligand complexes, and DNA interacting proteins.

Associates

John Arthur
Douglas C. Borchman
William D. Ehringer
Y. James Kang
Cicek Gercel-Taylor
Zhenmin Lei
Si-Qi Liu
Douglas Lutz
Joseph M. Steffen

Emeritus/Emerita Professors
John W. Brown
R. Duncan Dallam
Margaret L. Fonda
Mary A. Hilton
Jerald L. Hoffman
Calvin A. Lang
Robert S. Levy

Adjunct Faculty
Walter M. Mastropaolo
Betty Jane Mills

Programs
The Department of Biochemistry and Molecular Biology in the School of Medicine offers programs of study and investigation leading to the award of Master of Science and Doctor of Philosophy degrees.

Admission
Applicants must have attained the B.A. or B.S. degree with a "B" (3.0 on a 4-point scale) average in all course work. The minimum science requirements include chemistry through two semesters of organic chemistry, one year of biological sciences, mathematics through integral calculus, and one year of physics. A limited number of deficiencies may be removed during the first year of graduate study. The results of the Graduate Record Examination, a transcript of course work, and two letters of recommendation are required. Prospective students also should arrange for a personal interview with members of the department.

Thesis and Dissertation Committees
The Director of the Graduate Executive Committee in Biochemistry will serve as the first-year advisor to each incoming graduate student until a research program is selected. After completion of laboratory rotations, a student will select a major professor with the approval of the Graduate Executive Committee. At the same time a Dissertation or Thesis Committee will be formulated, subject to approval by the Dean of the Graduate School, which will serve as the Reading Committee and Examining Committee. This Committee will ordinarily convene at least once a year.

Financial Support
Financial support for graduate study is currently being provided by the Alfred and Iva Homberger Memorial Fund of the Department of Biochemistry and Molecular Biology, by University and School of Medicine doctoral fellowships and by department teaching and research assistantships.

Doctor of Philosophy in Biochemistry and Molecular Biology

Major: BIOC
Degree: PHD
Unit: GM

Requirements for the Ph.D. Degree in Biochemistry
1. Students entering the Ph.D. program must have satisfactorily completed at least two (2) semesters of organic chemistry.
2. Course requirements are 24 credit hours of classroom interaction of which 17 credit hours must be in BIOC courses. The requirements can be met by choosing from BIOC 611, 641, 645, 647, 660, 668, 670, or 675. Cell Biology (MBIO 667) and/or other approved electives.
3. Attendance at seminars and research conferences is required.
4. BIOC 606 (Seminar) is required on an annual basis each year of residence for a total of three seminars. Grades are received for the first two semesters.
5 All Ph.D. students are required to assist in teaching for one semester during their 2nd or 3rd years.
6. There is no foreign language requirement.
7. Students are expected to maintain a 3.0 average in their course work. Students who do not will be subject to dismissal from the program.
8. Written Proposal and Oral Examination. A written proposal on a topic different from the student's dissertation research will be given in May/June to students who have completed the core courses and attained a 3.0 or better GPA. The purpose of this exam is to evaluate the student's knowledge of biochemistry and ability to interpret literature and integrate material from the graduate curriculum into a clearly written research proposal. Students who pass this exam will be admitted into PhD candidacy.
9. Preliminary Research Proposal. By the end of the third quarter of the second year the student will provide his/her Ph.D. Committee with a short, informal write-up of research proposed for the Ph.D. dissertation. The student will meet with the Ph.D. Committee to give an oral presentation and discuss the proposed research.
10. Written Proposal and Oral Examination. A formal written proposal of the student's dissertation work and an oral defense that must be completed by December of the student's third year. The proposal will not exceed one (1) page for specific aims, two (2) pages for background (significance), three (3) pages of preliminary results, three (3) pages for proposed experimental plans including major equipment required. The student is responsible for the literature work and specific experimental design. Committee members must be provided with the proposal two (2) weeks prior to the date of the oral examination. The written proposal should be approved by each Committee member one (1) week prior to the oral examination. At the Oral Examination, the student will present a formal research conference open to everyone. This will be followed by an oral defense before the student's committee, chaired by the dissertation advisor. A written report stating the outcome of the examination and signed by each examiner will become a part of the student's record.

Dissertation

Students, with the consent of their committee, may choose between a traditional research thesis/dissertation format or a thesis/dissertation in which the methods and results sections are replaced by manuscripts ready for submission for publication in a refereed journal. In either case, the dissertation must conform to the Graduate School's Standards for Preparation of Theses and Dissertations.

Master of Science in Biochemistry

Major: BIOC
Degree: MS
Unit: GM

Requirements for the MS Degree in Biochemistry (thesis option)

1. MS students entering the program must have satisfactorily completed at least two (2) semesters of organic chemistry.
2. Course work will consist of BIOC 611, 645, and 647. In addition, the MS student must take six additional hours of classroom instruction of which at least 4 be in BIOC courses.
3. One semester of BIOC 606 (Seminar) is required during the second year.
4. Students are required to attend seminars and research conferences.
5. Students are expected to maintain a 3.0 average in their course work. Students who do not will be subject to dismissal from the program.
6. There are no foreign language requirements for the MS degree in Biochemistry.
7. Students must present a 1-2 page research proposal for their thesis committee and orally defend that proposal.

Thesis

A MS research thesis is required for the thesis option. Students, with the consent of their committee's, may choose between a traditional research thesis format or a thesis in which the methods and results sections are replaced by manuscripts ready for submission for publication in a refereed journal. In either case, the thesis must conform to the Graduate School's Standards for Preparation of Theses and Dissertations.

Biology (BIOL)

www.louisville.edu/a-s/biology

Departmental Faculty

Chair
Ronald D. Fell, Professor

Professors
Ronald M. Atlas
Gary A. Cobbs
Charles V. Covell, Jr
Paul W. Ewald
Michael H. Perlin
William D. Pearson

Associate Professors
Paul A. Bukaveckas
Margaret M. Carreiro
Lee A. Dugatkin
Perri K. Eason
Arnold J. Karpoff
Joseph M. Steffen

Assistant Professors
Cynthia C. Gulledge
Jay M. Gulledge
Jeffrey D. Jack
Martin G. Klotz
David J. Schultz
Eric V. Wong

Emeritus Professors
William S. Davis
Roger G. Lambert
Frederick H. Whittaker
Varley E. Wiedeman

Programs

The Department of Biology, in the College of Arts and Sciences, offers work leading to the degrees of Master of Science in Biology (thesis and non-thesis) and Doctor of Philosophy in Biology. Programs generally include a broad base of fundamentals in biology, and each student has the opportunity for direction by specialists in aquatic ecology, behavioral ecology, cellular biology, ecology, entomology, genetics, ichthyology, invertebrate ecology, microbiology, molecular biology, ornithology, plant physiology, plant anatomy, systematics and evolution of plants and animals, and vertebrate physiology.

Because of the widening divergence of specialties and the development of new areas of biological and related sciences, the Department of Biology will assist those students who wish to include interdisciplinary objectives in their Masters or Ph.D. programs.

To be admitted for an advanced degree in biology, the applicant must meet the requirements for admission to the Graduate School, must present an acceptable undergraduate major or sufficient background, and meet the minimum grade point average and GRE General Examination scores required by the Department.

Applications for admission and additional information may be requested from the Office of Graduate Admissions, the Director of Graduate Studies of the Department of Biology, or accessed at the Department webpage. The general requirements for the master's and doctoral degrees are stated in the General Information section of this catalogue. There is no formal language requirement for graduate students seeking the degree of Master of Science or Doctor of Philosophy.

A cooperative Ph.D. program is sponsored jointly by the Departments of Biology at Murray State University and the University of Louisville. Inquiries concerning the program should be addressed to the Chair of the Department of Biology either at the University of Louisville, or at Murray State University (Murray, Kentucky 42071). All applications for these cooperative programs should be obtained from the University of Louisville.

Doctor of Philosophy in Biology

Major: BIO
Degree: PhD
Unit: GA

Requirements for the PhD degree in Biology

	Semester Hours	Total
I. **Foundation Core:** Two courses to be selected by the student's graduate committee, one from each of the following categories.		
1. Biostatistics	4	
2. Evolutionary Biology	4	8
II. **Area of Focus:** Two courses to be selected from within either of the following two areas of focus.		
1. Ecology, Evolution and Behavioral (EEB) Biology Focus Area:		
a. Population and Community Ecology	4	
b. Ecosystem Ecology or Behavior	4	16
2. Molecular, Cellular and Developmental (MCD) Biology Focus Area:		
a. Genetics/Cellular	4	
b. Physiology	4	16
III. **Advanced Biology Electives**	16	32*
IV. **Dissertation Research**	9	41

* Post-baccalaureate education, including transferable hours from an accredited Master's program.

Master of Science in Biology

Major: BIOL
Degree: MS
Unit: GA

The Department of Biology offers Master's degrees with programs of study tailored to the needs and interests of a diverse student population. Students may enroll on a full or part-time basis. A Master's degree in Biology prepares a student for further graduate study (Ph.D. or M.D. programs) or careers in teaching, research, business or government. Students have up to six years to complete the Master's degree. The Department of Biology offers both thesis and non-thesis options.

The thesis option is generally chosen by students with career goals which include a research emphasis. Students choosing this option take course work and carry out an intensive independent research project under the supervision of a member of the Graduate Faculty, culminating in a written thesis based upon the research project. The non-thesis option usually chosen by those who wish to advance their knowledge of Biology but are not sure of a specific career goal or do not anticipate a research emphasis in their future.

General Background Courses (500 or 600 level)
One course to be selected by student's committee from each of two (thesis) or three (non-thesis option) of the following categories:

	Thesis	Non-Thesis
Cellular/Physiology	3-4	3-4
Subcellular/Genetics	3-4	3-4
Evolution or Systematics	3-4	3-4
Population, Community, or Ecosystem Ecology	3-4	3-4
Total	**6-8**	**9-12**

Other courses

Statistics (Biology 650)	4	4
Electives	11-14	13-17
Thesis Research (600 level)	6	0
Research Experience (Biology 516, 608, 664 or 691)	0	3-4
Minimum Total	**30**	**33**

Note:
A minimum of 12 (thesis option) or 17 (non-thesis option) semester hours, exclusive of thesis credit, must be in courses at the 600 level. Students intending to seek a Ph.D. degree later are advised to take as many of their courses as possible at the 600 level or above.

Accelerated BA-BS/MS in Biology

Major: BIOL
Degree: BA-BS/MS
Unit: GA

Students who wish to pursue an accelerated non-thesis Master's Degree will be allowed to apply to the baccalaureate degree up to nine (9) hours of coursework taken for graduate credit. An additional twenty-four (24) hours of graduate coursework taken in addition will constitute the minimum number of credit hours for obtaining the non-thesis Master's in the accelerated program. The guidelines for this accelerated program are as follows:

1. Students must: A) apply for admission to this program no later than the end of the Junior year [a total of 90 degree applicable hours], and B) must have completed Biology 240/241, 242/243, 329, 301/302, and 330/331 with grades of "B" or better. Application forms are available from the Department of Biology office (139 LF) or the Director of Graduate Studies (210 LF). It is suggested that one of the recommendations to be submitted by the applicant be from the student's undergraduate advisor in their major department.
2. The application will be reviewed by the Graduate Committee of the Department of Biology. A 3.35 grade point average and acceptable test scores [500 or greater in each of the three sections in the Graduate Record Exam, scores of eight (8) or greater in each of the three sections of the Medical College Admission Test, or scores of 17 or greater in the four sections of the Dental Admissions Test] will be required for admission to the program.
3. The student may take a maximum of nine (9) hours for graduate credit, which will also apply to the requirements for the baccalaureate degree in Biology. These nine hours must consist of coursework designed to fulfill the 'General Background Courses' category of coursework in the Graduate curriculum.
4. Students who enroll in the accelerated program will be non-thesis students and must adhere to all policies pertaining to Graduate Students in the Department of Biology Graduate Student Regimen.
5. At the discretion of the student's advisory committee, Honors Research projects mentored by departmental faculty will be accepted for the 'Research Experience" required in the non-thesis track.

Business Administration (BA)

http://cbpa.louisville.edu

Departmental Faculty

Professors
Arthur J. Adams
Sidney J. Baxendale
Betty C. Brown
Jay T. Brandi
Paul A. Coomes
Richard E. Coppage
Bryan L. Dos Santos
Kathleen Drummond, Emerita
James O. Fiet
John I. Gilderbloom
Stephen F. Gohmann
Hazel J. Johnson
Steven Koven
Frank E. Kuzmits
Raymond W. LaForge
Alan Levitan
Subash C. Lonial
Thomas S. Lyons
Peter B. Meyer
Hokey Min
Babu Nahata
John P. Nelson
P. S. Raju
J. Russell Ray
Harold V. Savitch
S. Srinivasan
Lyle Sussman
Robert L. Taylor, Dean Emeritus
Richard M. Walter
Randall L. Wells

Associate Professors
Alan N. Attaway, Acting Dean, College of Business and Public Administration
Lynn H. Boyd
Reginald A. Bruce
Nan-Ting Chou
Van G. H. Clouse
Carrie G. Donald
Archie W. Faircloth
Benjamin P. Foster
Jian Guan
Mahesh C. Gupta
Terence M. Hancock
Alexci Izyumov
Julia S. Karcher
Bruce H. Kemelgor
Audrey D. Kline, Associate Dean
James R. McCabe
Robert C. Myers
Diana C. Preece
Frederick W. Siegel
John Vahaly, Jr.
Joseph M. Zurada

Assistant Professor
Karen Bishop
David Simpson
Andrew L. Wright

General Information

The mission of the University of Louisville College of Business and Public Administration (CBPA) is to develop the minds and imaginations of our students, faculty, and metropolitan community through innovative learning and scholarship that provide understanding and skills for the global entrepreneurial marketplace of the 21st century.

The University of Louisville's program objective is to help its student develop the advanced business and entrepreneurial skills they need to be successful in the global market place. The University of Louisville's MBA program is accredited by the American Assembly of Collegiate Schools of Business (AACSB), the International Association of Management Education (IAME) in addition to the University's regional accreditation of the Southern Association of College and Schools (SACS).

The MBA degree program is available to qualified individuals possessing a bachelor's degree from a regionally accredited college or university. No specific undergraduate major is required. Applicants with undergraduate degrees in Business Administration need 36 hours of 600-level MBA courses to fulfill the degree requirements. Applicants whose undergraduate curriculum did not include courses in Business Administration must successfully complete a set of 500-level foundations courses, normally 12 hours, or equivalent undergraduate courses, normally 18 hours, before enrolling in the 36 hour MBA curriculum.

The MBA program is primarily an evening program in which an individual can enroll as either a part-time or full-time student. During the Fall and Spring semesters, courses are typically offered Monday through Thursday, one evening a week, from 5:30 until 8:15 p.m. During the summer semester, there are three successive terms, a three week term with classes meeting 5 nights a week, followed by a five week term with classes meeting three nights a week. Occasionally classes may be offered that span two terms or meet during the day.

All core 600-level courses are offered in the Fall and Spring semesters, along with a variety of elective courses. A smaller selection of 600-level courses is offered during the summer session.

Admission Procedures

Admission into the MBA program is competitive. Entering MBA candidates at the University of Louisville are in the top third of all entering MBA candidates nationwide. The procedures for admission into the U of L MBA program are listed below: You may apply on-line at http://cbpa.louisville.edu/.

- Submit a completed graduate application (on-line at http://graduate.louisville.edu) to the University of Louisville Admissions Office with a $50 application fee. Program candidates are admitted in the Fall (August), Spring (January) and Summer (May) sessions. Priority deadline for submitting applications and all application materials is May 1 for Fall, October 1 for Spring, and February 1 for Summer.
- Official transcripts verifying the receipt of a baccalaureate degree from a regionally accredited institution must be submitted to the Admissions Office by the application deadline.
- The Graduate Management Admissions Test (GMAT) is required. It is designed to measure general aptitude for graduate study in business administration. It does not test knowledge in specific business subjects. An admission decision will not be made without the GMAT results. See web www.gmat.com or call 1-800-GMAT-NOW.
- A current resume is required.
- A one page written personal statement is required. The statement should demonstrate the applicant's motivation and desire to earn an advanced degree. Professional achievements, community involvement, etc. may be noted here.
- Two letters of recommendation from individuals familiar with the applicant's academic performance. Professional letters from employers are acceptable when substantial time has elapsed since the applicant has attended an academic institution.
- International applicants are required to take the TOEFL examination if English is not the native language. Applicants who do not score at least 213 on the TOEFL may choose to apply to the Intensive English as a Second Language Program (IESL). Successful completion of this program or passing the Exit Examination in the advanced level of IESL will be considered adequate proof of the English proficiency required for course work in the MBA program. Acceptance to the (IESL) does not constitute acceptance to the MBA program. For information and application forms, write to IESL, University of Louisville, Louisville, KY, 40292, U.S.A.

Academic Policies

The following standards apply to all MBA degree candidates:

- A 3.0 grade point average must be maintained or the student will be placed on probation. If the student does not restore the grade point average to a 3.0 by the end of the next enrolled semester, the student will be dismissed from the program.
- An academically dismissed student is required to discontinue course enrollment. After dismissal, the student may submit a written petition to the MBA Counselor requesting re-admission. The Graduate Dean must approve any re-admission of an academically dismissed student.
- A faculty member teaching a graduate level course may assign a grade with either a plus (e.g., B+) or a minus (e.g., B-). See the section on Academic Policies and Requirements for the point value of plus and minus grades.
- Grades of "A", "B", or "C" are the only grades considered as passing. However, a "D" or an "F" will be used in calculating the grade point average.
- A maximum of six hours with 600-level courses with a grade of "C" may count toward the completion of degree requirements.
- A 3.0 grade point average must be maintained in the program. These calculations exclude transfer work. If a 3.0 GPA is not maintained the student will be placed on probation. Continuation in the program will be dependent upon the student's subsequent performance and evaluation by the designated college academic officer.
- Students are restricted to no more than one independent study from any single faculty member in the degree program. It is possible to earn a maximum of 3 credit hours of independent study per semester and maximum of six hours in the program.
- A student who has received a grade of "C", "D", or "F" may repeat the course upon approval of the Graduate Dean and the MBA Counselor. When a student repeats a course, the grade point average will be calculated on the basis of the last grade attempted, although all previous grades will remain on the transcript.

Visiting Students

A student visiting from another university may take MBA course work on a space-available basis. Visiting students must also meet Graduate School requirements stated in the General Section of this catalogue.

A U of L MBA student who wishes to be a visiting student at another academic institution for a particular semester must obtain permission from the MBA Counselor. Visiting student status is not allowed to a student who is on academic probation. Only grades of "A" and "B" can be transferred back to the University of Louisville and quality points are not transferred. No more than 6 credit hours can be taken from a non-accredited AACSB school.

Quantitative and Computer Skills Requirements

MBA candidates are expected to be academically proficient in quantitative skills on entry to the MBA core curriculum. Prior academic work may be used as evidence of proficiency. Proficiency must be attained before enrolling in any MBA core courses. The skills consist of:

- Computer literacy: student must have access to a computer and validate literacy in business software (Word Processing, Spreadsheets, data base analysis), web access and e-mail. The University offers free e-mail and web accounts at a modest cost. Students lacking skills in business software can take CIS 100 to gain familiarity with the software.
- Mathematics: Three or more semester credit hours of prior undergraduate course work in mathematics comparable to MATH 111, College Algebra, passed with a grade of "C" or higher. Students lacking prior course work can take MATH 111 to satisfy the requirement.

Curriculum Requirements

The following curriculum requirements apply to all MBA degree students:

- Students must complete all prerequisite courses before enrolling in MBA level courses. Failure to do so puts the student at risk for unsatisfactory performance. A written petition for an exception to this requirement must be submitted to the MBA advisor.
- A 500-level business course cannot be used as an elective.
- For students seeking an MBA concentration, the twelve hours of electives are specified. All the concentrations are cross-disciplinary in nature. Concentrations currently available are: Communications, e-Business, and Entreprenuership.
- Students not seeking a concentration satisfy the Breadth requirement across disciplines by taking no more than six of the twelve hours of electives in any one discipline (marketing, management, finance, accounting, economics, and computer and information systems). Exceptions may be discussed with the MBA counselor.

- Students must make steady and satisfactory progress toward their degree. Students who fail to maintain enrollment for a period of more than 24 months will be administratively withdrawn from the program.
- Students who seek to return after such a period of non-enrollment are required to apply for admission to the MBA program.

Transfer Credit

A student may be allowed to transfer up to six semester hours of graduate business academic credit from another regional accredited institution(s) that offers advanced degrees. An additional six semester hours of graduate business credit may be transferred from an AACSB accredited MBA program provided the student earns 24 semester hours of residency at the University of Louisville. Only courses in which the student earned a grade of "B" or better will be considered for transfer. The hours will be transferred; not the quality points. Students wishing to transfer credit should make a request to the MBA Counselor. Final approval for the transfer of credit must come from the Graduate School.

Honors

Students who complete the MBA program with a grade-point average of 3.75 or higher will be graduated "With Distinction." Any graduate with a 4.0 standing will also be nominated for the Phi Kappa Phi Honorary Society.

Master of Business Administration

Major: BA
Degree: MBA
Unit: GB

Degree Requirements

Candidates for the MBA degree must:

- Earn a minimum of 24 of the 36 hours of post- foundations graduate credit in residence at the University of Louisville.
- Complete degree course requirements within six years of the semester admitted to the MBA program.
- Earn a minimum of 3.0 grade point average.

Foundations

The undergraduate and 500-level courses provide students with the academic common body of knowledge necessary for undertaking the MBA core requirements. The 500-level courses are restricted to students who have been admitted to the Graduate School.

Upon admission to the MBA program, the student must demonstrate proficiency in the business foundation courses. They may do this by submitting evidence of equivalent undergraduate courses with a minimum grade of "C", completing 500-level courses or the specified undergraduate courses or passing a proficiency exam.

	Semester Hours
Acct 500, Fundamentals of Accounting	
or 6 hours of Principles of Accounting ACCT 201-202	3.0
ECON 500, Economics	
or 6 hours of Micro and Macro Economics ECON 201-202	3.0
FIN 500, Business Finance	
or 3 hours of Corporate Finance (FIN 301)	3.0
MGMT 501, Managerial Statistics	
or 3 hours of Statistics, e.g., MGMT 201	3.0

Additionally, it is assumed that the students have completed a minimum of 3 hours of mathematics at the level of MATH 111, College Algebra or higher and is proficient in the use of e-mail, web access, word processing, and spreadsheet software. Students not meeting these requirements must complete MATH 111 and/or CIS 100 or equivalent courses.

The MBA Core Curriculum

The MBA Core is structured into four sequential phases. The courses in each phase have as prerequisites the courses in the prior phases. Strict compliance with the prerequisites is necessary to insure satisfactory performance in the MBA core.

I. Managing in the New Economy

This initial sequence introduces students to the critical skills in a dynamic global environment where information and technology are continually changing the way organizations do business. While the focus is on the "New Economy", there are basic theories and constructs of education that stand the test of time. Core units of study include:

- ECON 600 Managerial Economics
- CIS 675 Managing Information Technology
- MGMT 600 Advanced Organization Behavior

II. Managing the Value Chain

In all economies, organizations produce, market, and deliver goods and services to customers. This must be done in a way that is competitive and profitable. This phase focuses on the identification and measurement of value in production and distribution. Core units of study include:

- ACCT 600 Managerial Accounting
- MGMT 610 Operations Management
- MKT 600 Marketing Management

III. Managing Opportunity, Risk, and Reward

Organizations must invest in new assets and processes to sustain the continuous improvement and discontinuous innovation necessary to compete in today's changing product markets. With competitive pressures to reduce costs, investing to transform the firm and failing to invest each involve risks. The focus here is on value creation, tools for measuring it, opportunity recognition and analysis, risk management and decision making to enhance firm value. The core unit of study is:

- FIN 600, Financial Management

IV. Understanding the Global Market

The integrating unit for the MBA core brings together elements from all the aforementioned phases, adding a strategic perspective that transcends geographical boundaries. Here, the focus is on comprehensive case analysis incorporating prior work with a unifying theme. The core unit of study is:

- MGMT 690, Corporate Entrpreneurship and Global Strategy

The Specialized Curriculum

A minimum of 12 hours of elective coursework beyond the core curriculum completes the MBA program. Normally these are taken as two courses in each of the third and fourth phases of the program; however, students may choose to take electives earlier in their program if they have the appropriate prerequisites.

No more than six hours of elective courses in a single discipline may be counted toward these twelve hours in order to provide breadth to the student's MBA studies. However, students may instead select a concentration offered in the MBA program. Courses in the concentrations typically encompass elements from two or more business disciplines and thus meet the MBA breadth objective. Concentrations available include communications, e-Business, and entrepreneurship.

MBA/JD Program

The MBA/JD program is offered jointly by the College of Business and Public Administration and the School of Law. The purpose of the program is to combine the two-year Master of Business Administration (MBA) program and the three-year Juris Doctor (JD) program into one four-year, full-time program. Upon successful completion of the program, the student is awarded both the MBA and the JD degrees.

This program is open to all students who have successfully completed a baccalaureate degree at an accredited college or university. To be admitted into the program, the student is required to apply to and be accepted by both the College of Business and Public Administration and the School of Law. Such a procedure requires the student to meet the admission requirements of both schools.

Students seeking admission into this program need to submit a letter to the admissions office of the school in which they first intend to take courses, or in which they are currently taking courses, and forward a copy of such letter to the admissions office of the other school. Applicants will receive written notification regarding whether their admission request is approved or disapproved.

Candidates in the joint MBA/JD program must accumulate 27 directed hours in the MBA curriculum (in lieu of the normal 36 hours) and 81 directed hours in the JD curriculum (in lieu of the normal 90 hours). Nine hours from each program can be counted as electives in the other program to give the student the requisite hours for both the MBA and the JD degrees.

While enrolled in the College of Business and Public Administration, the MBA/JD students are subject to all academic policies and procedures that MBA students are expected to follow.

Integrative MBA Program

The integrative MBA program departs from the traditional three-credit hour, fifteen week format and uses an integrative, interactive approach that more closely resembles the natural business environment. Students apply the fundamentals of group dynamics when they participate as team members and will gain hands-on experience with the practical application of information technology. Courses are offered as modules and are frequently team-taught by faculty across disciplines.

Each student is required to have access to a personal computer seven days a week, 24 hours a day. Students communicate via e-mail with team members, faculty, and establish links with team members at other universities, nationally and internationally. Although this program offers some exciting alternatives to the traditional MBA program, it significantly reduces flexibility available in scheduling classes and completing requirements. Each class of students go through the module sequence together.

Prospective students interested in more information on this program should contact the Advising Center, College of Business and Public Administration, 852-7439.

MEng/MBA Program

The College of Business and Public Administration in conjunction with the Speed Scientific School offers a program where a student may simultaneously work toward a Master of Engineering degree and Master of Business Administration degree. Speed School students interested in declaring this degree may seek admission to the MBA program in their junior year. Admitted students may begin taking the MBA foundations courses as early as the summer after their junior year. Upon completion of the MEng, students may count up to twelve hours of graduate Speed courses toward the thirty-six-hour MBA Core. Students in the MEng/MBA also have the option of seeking a concentration in entrepreneurship. For more information, contact the MEng/MBA program coordinator.

MBA/MAC Program

Joint Program Curriculum Requirements

MBA Requirements	**MAC Requirements**
ACCT 611, Cost and Operations Management (3)	
CIS 675, Magement Information Systems (3)	ACCT 615, Not-for-Profit and Governmental Accounting (2)
ECON 600, Managerial Economics (3)	ACCT 621, Mergers and Consolidations (1)
FIN 600, Financial Management (3)	ACCT 631, Federal Taxation (3)
MGMT 600, Advanced Organizational Behavior (3)	ACCT 641, Financial Accounting and Professionalism (3)
MGMT 610, Production/Operations Management (3)	ACCT 651, Auditing & Systems (6)
MKT 600, Marketing Management (3)	ACCT 655, Special Topics in Accounting (3)
MGMT 690, Corporate Entrepreneurship and Global Strategy (3)	CLAW 610, Commercial Law for Professional Accountants

Electives: The MBA program requires 12 hours of electives. Students must enroll in the joint MBA/MAC program will substitute 12 hours of required MAC courses for the MBA electives. Electives: The MAC program requires 6 hours of electives. Students enrolled in the joint MBA/MAC program will substitute 6 hours of required MBA courses for the MAC electives.

Additional Requirements

Students must complete the necessary prerequisites before admission to the program is granted.

All academic and admission policies for both programs described in the Graduate Catalogue will be followed.

Overseas Program

The College of Business and Public Administration offers its MBA degree at selected overseas sites. At present these sites include Athens, Panama City, and Singapore. University of Louisville faculty travel to these locations to present the courses for the programs. The overseas programs are designed to serve students residing outside the U.S. The programs have separate admission and registration processes, different time schedules and tuition rates, and are fixed-length, lock-step programs which do not allow electives. For information on the overseas programs, contact the faculty coordinator or the particular program of interest.

Course Descriptions

Accounting
Business Education
Economics Finance
Health Care Administration
Management
Marketing
Commercial Law
Computer Information Systems

Chemical Engineering (CHE)

www.louisville.edu/speed/chemical

Departmental Faculty

Chair
Thomas L. Starr, Professor and Acting Graduate Student Advisor

Professors
Dermot J. Collins
Pradeep B. Deshpande
Thomas R. Hanley, Dean, Speed Scientific School
Dean O. Harper
Walden L. S. Laukhuf
Patricia A. Ralston
James C. Watters, Undergraduate Student Advisor

Associate Professors
Kyung A. Kang
Mahendra Sunkara

Assistant Professor
Gregory Rutkowski

Associates
Lawrence Gettleman
Elias Klein

Emeritus/Emerita
Marvin Fleischman
Earl R. Gerhard, Dean, Emeritus
Charles A. Plank
Hugh T. Spencer
Richard A. Ward

Programs

The Department of Chemical Engineering of the Speed Scientific School, the school of engineering and applied science of the University of Louisville, offers programs of study leading to the degrees of Master of Science and Doctor of Philosophy. It also offers an integrated five-year program with a cooperative education component leading to the professional degree of Master of Engineering (described in the University's Undergraduate Catalogue).

Admission Requirements

The admission requirements for the Ph.D. and M.S. programs are essentially the same as those of the Graduate School. For unconditional admission a minimum score of 1100 (Verbal & Quantitative) on the GRE and a minimum 3.0 on a 4.0 scale undergraduate GPA is expected. Remedial work may be specified for those applicants who, in the opinion of the faculty, do not have a sufficient background in chemical engineering, e.g., B.S. Chemists, biologists (approximately one year of undergraduate courses may be required.)

Doctor of Philosophy Program in Chemical Engineering

Major: CHE
Degree: PHD
Unit: GS

This program is intended for persons having an accredited masters and/or baccalaureate degree in chemical engineering from U of L or another institution, but is available to those with other backgrounds. Students interested in the Ph.D. degree program should consult the Graduate Student Advisor in the

Department of Chemical Engineering.

The general requirements of the Doctor of Philosophy program are the same as those of the Graduate School. Other specific guidelines for the Ph.D. degree in chemical engineering are these:*

	Semester Hours	Total
Minimum course hours beyond baccalaureate degree in Chemical Engineering	30	
Seminar	6	
Research	36	
Minimum Total		**72**

* (includes course, research and thesis hours for M.S. or M.Eng.).

Master of Science in Chemical Engineering

Major: CHE
Degree: MS
Unit: GS

This program is intended for persons having an accredited baccalaureate degree in chemical engineering from another institution, but is available to those with other backgrounds. Students interested in the Master of Science degree program should consult the Graduate Student Advisor in the Department of Chemical Engineering.

The general requirements of the Master of Science program are the same as those of the Graduate School. Other specific requirements for the M.S. degree in chemical engineering are these:

	Semester Hours	Total
CHE 610, Advanced Thermodynamics	3	
CHE 620, Transport Phenomena	3	
CHE 641, Advanced Reactor Design	3	
CHE 686, Chemical Engineering Analysis	3	12
CHE 695, Chemical Engineering Seminar	2	2
Other 500-600 level courses (at least one course outside chemical engineering)	12	12
CHE 690, M.S. Thesis in Chemical Engineering	6	6
Minimum Total		**32**

Master of Science in Chemical Engineering – Non Thesis Option

Implementation: Permit substitution of engineering electives (6 hours) for thesis (6 hours). All other courses are the same as for the Master of Science in Chemical Engineering above

The degree will now require 30 semester hours of course work and two semester hours of ChE 695 – Chemical Engineering Seminar.

Advantage: In general, the non-thesis option would make graduate study more attractive to students who wish to receive advanced training in chemical engineering but do not qualify for the Ph.D. degree and to students pursuing a Ph.D. who wish to receive a Master's degree "in-passing." Students wishing only advanced training (local engineers or non U of L BS graduates who do not plan a career in research) would be attracted to the non-thesis MS program for their terminal degree. Research oriented, Ph.D. seeking students would have the added value of an MS degree without writing two theses.

Master of Engineering in Chemical Engineering

Major: CHE
Degree: MEN
Unit: SS

This program is the fifth year of the integrated five-year program with a cooperative education component leading to the professional degree of Master of Engineering, which is described in the University's Undergraduate Catalogue. This degree is accredited by the Accrediting Board for Engineering and Technology.

Higher Studies Divison[1]

	Semester Hours	Total
CHE 562, 595, 610, 620, 641, 686, xxx[2], xxx[2], xxx[2], xxx[2´3]	26	
Thesis Alternative - CHE 697*		
OR		
Course Work and Project Alternative (Non Thesis Option) - CHE 698, 699**	6	
Minimum Total		**32****

[1] A student entering the Division of Higher Studies will be required to select either the thesis alternative path or the course work and project alternative path (non thesis option) for the degree program.

[2] A student specializing in CHE is required to select four approved electives (500 or 600 level) totaling at least twelve (12) semester hours. By proper choice of these electives, a student may develop specific strengths in areas such as computer aided engineering, catalysis and chemical reactions, process simulation and design, polymer processing, materials, process control, thermodynamics, mass transfer and separations, pollution prevention , or bioengineering. However, depending on faculty availability and other departmental needs, sufficient courses may not be offered in any one or two year period to allow a student to specialize in some of these areas. These electives need not necessarily be Chemical Engineering courses, but the student's research advisor and academic advisor must approve non-chemical Engineering courses.

[3] To insure that all students have a sufficient engineering design component in their program of study, these electives must be taken in a manner to obtain at least three (3) credit hours of design.

* A regularly enrolled student selecting the thesis alternative is required to select both an approved M.Eng. thesis topic and the members of the thesis committee during the first term of the graduate/professional year. Six (6) semester hours of CHE 697 are required to satisfy the minimum M. Eng. thesis requirements.

** A student selecting the non-thesis option or the course work and project alternative option, the two three semester hour courses, ChE 698 and ChE 699, are substituted for the six semester hours of M.Eng. Thesis, ChE 697.

*** The five-year total for the M.Eng. degree is 170 semester hours.

Master of Engineering in Chemical Engineering - Non Thesis Option

Implementation: Permit substitution of ChE 698 and ChE 699 (6 hours) for thesis (6 hours).

All other degree requirements remain the same as the Master of Engineering in Chemical Engineering with thesis option.

Advantage: In general, the non-thesis option would make graduate study more attractive to students who wish to who wish to receive advanced training in chemical engineering but do not qualify for M.S. degree. Students wishing only advanced training (local chemical engineers who are U of L BS graduates who do not plan a career in research) would be attracted to the non-thesis M.Eng program for their terminal degree.

Chemistry (CHEM)

www.louisville.edu/a-s/chemistry

Departmental Faculty

Chair
George R. Pack, Professor

Professors
Richard P. Baldwin
Robert M. Buchanan
Donald B. DuPré
Dorothy H. Gibson
Mark E. Noble
K. Grant Taylor
Charles A. Trapp
Richard J. Wittebort
John L. Wong
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Associate Professors
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Craig A. Grapperhaus
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Muriel C. Maurer
Francis P. Zamborini

Emeritus/Emerita
John W. Brown
Thomas H. Crawford
N. Thornton Lipscomb
Gradus L. Shoemaker
Donald E. Williams

Programs

The Department of Chemistry, in the College of Arts and Sciences, offers graduate programs leading to the M.S. and Ph.D. degrees in chemistry with options in analytical chemistry, biochemistry, biomolecular structure and engineering, inorganic chemistry, organic chemistry, physical chemistry, and chemical physics.

The general requirements for admission to the Graduate School, for admission to candidacy, and for the master's and doctoral degrees are stated in the General Information section of this catalogue. The following additional provisions apply to the programs leading to the Master of Science in Chemistry and Doctor of Philosophy in Chemistry.

Admission

Students seeking a graduate degree in chemistry should meet the following requirements:

1. A B.A. or B.S. degree in chemistry or in a related field such as physics, engineering, or mathematics. It is expected that students will have obtained a background in chemistry equivalent to 36 hours of undergraduate coursework. Students planning to pursue graduate study work in chemical physics may substitute some of the chemistry hours with advanced courses in physics or mathematics beyond those required for a B.A. or B.S. in chemistry. Students with inadequate preparation will be required to register for specific courses in the area of deficiency. Some of these courses, subject to approval by the department, may be accepted for graduate credit. Admission to graduate study in chemical physics is made on the recommendation of the entrance committee for that option.
2. A minimum quality point standing of 3.0/4.0.
3. Submission of Graduate Record Examination scores (totaling at least 1,200 on two of the three sections of the General Test).

In individual cases, the conditional admission of a student who does not satisfactorily meet the above requirements may be recommended by the department to the Graduate School. If admission is granted, that student will be subject to those conditions specified by the department or Graduate School as being necessary to remedy the conditional admission.

Doctor of Philosophy in Chemistry

Major: CHEM
Degree: PHD
Unit: GA

The requirements for the Doctor of Philosophy degree in chemistry are as follows:

1. The general requirements as stated in the General Information section of this catalogue.
2. Completion of a core course curriculum to assure breadth of knowledge. This requirement is satisfied by the completion of four (4) advanced (core) courses selected from at least four of the following six areas:
   —Analytical Chemistry (CHEM 620, 621, 622, or 625)
   —Biochemistry (CHEM 645 or 647)
   —Inorganic Chemistry (CHEM 653 or 654)
   —Organic Chemistry (CHEM 678 or 679)
   —Physical Chemistry (CHEM 661 or PHYS 621), (CHEM 662 or PHYS 622 or CHEM 683, 684)
   —Physics (PHYS 605 or 611)
   Ph.D Students will complete two additional advanced courses in the area selected for research work.
3. Students with a native language other than English must show a proficiency in English. This requirement may be met with a grade of "B" in Eng. 101 (or equivalent) or an acceptable score on a standardized test (such as the TOEFL or Michigan test).
4. Satisfactory performance on a written comprehensive exam based upon an original research proposal and upon in-depth knowledge of the applicant's area(s) of specialization. The written comprehensive exam demands a mastery of fundamentals, course work, and recent literature. Successful completion of the written exam is required within two years of entering the doctoral program.
5. Acceptable presentation of two seminars. The literature seminar must be presented no later than the fifth semester of graduate studies and is based on a topic of current chemical interest. The research seminar is based on the results of student's research and must be presented about a year prior to the final defense of the degree.

Master of Science in Chemistry

Major: CHEM
Degree: MS
Unit: GA

Degree Requirements

The general requirements for the Master of Science Degree in Chemistry are those given in the General Information section of this catalogue.

At the beginning of the semester during which a student expects to fulfill the requirements for a degree, an application for that degree must be presented to the Dean of the Graduate School. Departmental approval of the student's admission to candidacy is shown on the degree application. Approval will not be granted unless all of the general and departmental requirements for candidacy have been met.

The requirements for the Master of Science Degree in chemistry are as follows:

1. The general requirements as stated in the General Information section of this catalogue.
2. Completion of a core course curriculum as described in the section on Candidacy for the Ph.D. degree.
3. Students with a native language other than English must show a proficiency in English. This requirement may be met with a grade of "B" in Eng. 101 (or equivalent) or an acceptable score on a standardized test (such as the TOEFL or Michigan test).
4. Acceptable presentation of a one-hour literature seminar on a topic of current chemical interest. This seminar must be presented no later than the fifth semester of graduate studies.

Civil and Environmental Engineering (CEE)

www.louisville.edu/speed/civil

Departmental Faculty

Chair
Louis F. Cohn, Professor

Professors
N. R. Bhaskar
Michael A. Cassaro
Mark French
D. Joseph Hagerty
R. A. Harris
Thomas Holloman
C. Eugene Miller, Emeritus
Arthur C. Parola
Mario Paz
Charles R. Ullrich

Associate Professors
Jafar P. Mohsen
Terence Alan Weigel
Adjunct Professor
Hans Gesund

Programs

The Department of Civil and Environmental Engineering of the Speed Scientific School, the school of engineering and applied science of the University of Louisville, offers programs of study leading to the degrees of Master of Science and Doctor of Philosophy in Civil Engineering. It also offers an integrated five-year program of cooperative education leading to the professional degree of Master of Engineering (described in the University's Undergraduate Catalogue).

Admission Requirements

The admission requirements for the M.S. and Ph.D. programs are essentially the same as the general requirements of the Graduate School. Remedial work may be specified for those applicants who, in the opinion of the faculty, do not have a sufficient background in civil engineering.

Doctor of Philosophy in Civil Engineering

Major: CE
Degree: PHD
Unit: GS

The general requirements for the Doctor of Philosophy program are the same as those of the Graduate School. Other specific requirements for the PhD in Civil Engineering are:

	Semester Hours	Total
CEE 699, CE PhD Research	18	
CEE 698, CE PhD Seminar	3	
In-Discipline Program Courses and Electives*	27	
Total		**48**

*May include up to 6 hours credit in approved mathematics

Master of Science in Civil Engineering

Major: CE
Degree: MS
Unit: GS

Master of Science Program

General requirements of the Master of Science Program are the same as those of the Graduate School. Other, specific requirements for the M.S. degree in civil engineering are these:

	Semester Hours	Total
Civil Engineering Courses (at least 9 hours at the 600 level)	12	
Other 500-600 level courses (at least two courses outside civil engineering)	12	
Thesis for M.S.	6	
Minimum Total		**30**

A minimum of 12 hours must be at the 600-level, exclusive of thesis hours.

Master of Science in Civil Engineering--NON-THESIS OPTION

Requirements: The Department of Civil and Environmental Engineering will begin an overseas (Panama) graduate study program for a Master of Science degree. The development of the overseas (Panama) Master of Science degree program makes a non-thesis option a necessity. The program will be identical to the Master of Science degree program. Each applicant must submit a Graduate School admission application to the U of L Graduate Admissions office or the Program Director for the overseas Master of Science degree program.

The non-thesis option will be open to any student enrolled in the Civil Engineering Master of Science degree program with no restrictions. The program utilizes existing courses and administrative infrastructure while the overseas degree program will be self-supporting from program fees and tuition.

The program will require a minimum of 30 credit hours of graduate courses, with a minimum of 15 credits at the 600-level. The specific courses will be selected in consultation with the student's academic advisor.

Master of Engineering in Civil Engineering

Major: CE
Degree: MEN
Unit: SS

Higher Studies Division

CEE 680, 697[1](9)

In addition, at least 21 semester hours of course work must be completed in one of the following specialty areas[2]:

Facilities Engineering (including courses in geotechnical/structural)
CEE 520, 522, 550, 552, 604, 620, 621, 625, 652, 653, 654 (21 hours)

Public Works Engineering (includes courses in geotechnical/transportation/water resources)
CEE 550, 552, 560, 570, 571, 572, 604, 652, 653, 654, 660, 662, 665, 670, 673, 674 (21 hours)

At the discretion of the student's advisor, the following Environmental courses may be selected to fulfill program elective requirements for either Facilities Engineering or Public Works Engineering.

CEE 509, 534, 535, 561, 573, 675, 694

Minimum Total = ...30[3]

Notes:
[1] A regularly enrolled full-time student is required to select an approved M.Eng. thesis topic and the members of the thesis committee during the first term of the graduate/professional year.
[2] Both specialty areas meet the engineering topics criteria of the EAC/ABET.
[3] The five-year total for the M.Eng. degree is 162 semester hours.

Certificate in Environmental Engineering

Major: CECS, CEE, CHE, ECE, IE, ME
Certificate: CENV
Unit: GS

Certificate Program only. Not a degree program. Awarded only with completion of a graduate degree program (M. Eng., M.S., Ph.D.) at Speed Scientific School.

Admission Requirements:

1. Admission to the Speed Scientific School Division of Higher Studies (M.Eng.) or the Graduate School (M.S. or Ph.D) in Engineering.
2. Approval of an Application for the Environmental Engineering Certificate Program

	Semester Hours	Total
Environmental Engineering Electives (500-level)	0-6	
Environmental Engineering Electives (600-level)	6-12	12

Courses are to be selected from the following:
- CEE 509 Environmental Process Systems
- CEE 534 Industrial Waste Management
- CEE 535 Solid Waste Management
- CEE 561 Environmental Analysis of Transportation Systems I
- CEE 570 Applied Hydraulics
- CEE 571 Applied Hydrology
- CEE 572 Open Channel Hydraulics
- CEE 573 Groundwater Hydrology
- CEE 670 Advanced Hydraulics
- CEE 673 Advanced Hydrology

CEE 674 Water Resource Systems
CEE 675 Surface Water Quality
CHE 509 Environmental Process Systems
CHE 620 Transport Phenomena I
CHE 637 Advanced Stagewise Processes
CHE 638 Advanced Absorption
CHE 650 Membrane Separations
CHE 662 Advanced Process Control
CHE 533 Chemical Engineering Safety and Health
CHE 534 Industrial Waste Management
CHE 535 Pollution Prevention (Waste Reduction Treatment and Disposal)
CHE 572 Plant Process and Project Design
ME 580 Air Pollution Control
CHEM 622 Analytical Separations
BIOL 521 Stream Ecology
BIOL 522 Aquatic Ecology
BIOL 568 Conservation Biology
BIOL 662 Ecosystems Ecology

Note:
Graduate courses not shown in the list above require approval from the Certificate Program Director.

Certificate courses do not constitute a degree program, but may be applied toward M.Eng., M.S., or Ph.D. degree requirements.

Other requirements:
Completion of graduate degree program at Speed Scientific School (M.Eng., M.S., or Ph.D.).

Classical and Modern Languages (CML)

www.louisville.edu/a-s/cml/

Departmental Faculty

Chair
Wendy E. Pfeffer, Professor

Professors
Howard B. Altman
Rhonda Buchanan
William L. Cunningham
Alan C. Leidner
Frank Nuessel
Sydney P. Schultze

Associate Professors
Mary Makris
Manuel Medina

Emeritus/Emerita
Roy L. Ackerman
Fortuna Gordon
David R. Hume
Hubert Papailler
Hans Petersen
Marilyn V. Schuler

Programs

The Department of Classical and Modern Languages, in the College of Arts and Sciences, offers programs leading to the degree of Master of Arts in French or Spanish. For all programs the applicant must meet the general requirements of the Graduate School outlined in the General Information section.

Prerequisite for all courses in the department offered at the graduate level is the ability to read, comprehend, speak, and write the language. In addition, it is strongly recommended that the applicant have some knowledge of a second European language.

Courses at the 500 level are open both to advanced undergraduate and to graduate students, while courses in the 600 series are open only to graduate students.

Students should consult the departmental advisors concerning pending changes in curricula and course offerings.

Master of Arts in French

Major: FREN
Degree: MA
Unit: GA

The Master of Arts in French requires 30 hours of academic work at the graduate level.

It is possible to complete this program as part of a joint B.A./M.A. program in French. Students may consult with the French advisor to take courses in place of the required courses listed below. Students must complete a minimum of 24 hours at the University of Louisville. It is recommended that students take ENG 601 during their first semester in the program and FRE 699 during their last semester in the program.

As part of their graduate program, students are required to spend at least one month in a French-speaking country. Information on funding for such travel is available from the French advisor in the department.

At the beginning of the semester during which a student expects to fulfill the requirements for a degree, an application for that degree must be presented to the Dean of the Graduate School.

Required Courses:

FRE 523 Advanced Communication Skills 3
FRE 524 Practice and Theory of Translation 3
FRE 531 Special Topics in Literature 2
FRE 552 French Work Exchange Research or
substitute as approved by advisor 3
FRE 601 Studies in French Linguistics 3
FRE 602 Studies in French Culture 3
FRE 603 Studies in French Media 3
FRE 604 Studies in French Literature 3
ENG 601 Introduction to English Studies[3] 3
FRE 699 Independent Research[4] ..... 3 .....

Total Credit Hours 30

[1] Thanks to the Modern Languages Fund, it is possible for the Department of Classical and Modern Languages to assist students financially so as to make a one-month stay in a French-speaking country a reality. The University of Louisville has a long-standing Work-Exchange Program with the city of Montpellier, France, where students spend a month each summer. As with any requirement, after consultation with the French advisor, it may be possible to find an appropriate substitution for this requirement.

[2] This course is normally taught during the summer by a visiting Modern Languages Fund professor. The course offers students unique opportunities to work with French native speakers in areas of the professor's specialty.

[3] ENG 601 is an introductory course for the MA in English. It introduces English students to elements of methodology and research that we believe would be useful to our students as well. At this time, there is no course in French which matches the content of ENG 601. If the English Department changes the nature of ENG 601, French students will be advised to substitute HUM 609 in its place. Alternatively, it may be advisable for FRE 609 (cross-listed with ENG 601 or HUM 609) to be created in the future.

[4] FRE 699 is envisaged as a capstone course for this program, with opportunities for the professor to evaluate the language skills and information base of individual students.

Combined BA/MA in French

Major: FREN
Degree: BA/MA
Unit: GA

Students who wish to pursue a combined non-thesis Master's Degree will be allowed to apply to the baccalaureate degree up to nine (9) hours of coursework taken for graduate credit. An additional twenty-one (21) hours of graduate coursework taken in addition will constitute the minimum number of credit hours for obtaining the non-thesis Master's in the combined program. The guidelines for this combined program are as follows:

1. Application forms are available in the Department of Classical and Modern Languages office (Humanities 326) or from the French Advisor. It is strongly recommended that at least one of the supporting letters submitted with the application be from a French faculty member.

2. Students must (A) apply for admission to this program no later than the end of the Junior year (a total of 90 degree applicable hours) and, (B) must have completed French 320, 321, 322 with grades of "B" or better.

3. Applications will be reviewed by the French faculty. A 3.35 overall grade point average and acceptable test scores on the GRE will be required for admission to the program

4. Students may take a maximum of nine (9) hours for graduate credit, which will also apply to the requirements for the baccalaureate degree in French. The nine hours must be from the following list: FRE 523, 524, 531, and 552.

5. Students who enroll in the combined program will be non-thesis students and must adhere to all policies pertaining to Graduate Students in the Department of Classical and Modern Languages.

Master of Arts in Spanish

Major: SPAN
Degree: MA
Unit: GA

Program: The Department of Classical and Modern Languages, in the College of Arts and Sciences, offers a program leading to the degree of Master of Arts in Spanish. Applicants must meet the requirements of the Graduate School outlined in the General Information section.

Prerequisite for all Spanish courses in the department offered at the graduate level is the ability to read, comprehend, speak, and write the language. In addition, it is strongly recommended that the applicant have some knowledge of a second romance language.

Degree requirements: Thirty hours of academic credit. MA candidates may elect to fulfill six of those credits by writing a thesis. At least 18 of the 30 hours, exclusive of thesis hours, if any, must be in courses open to graduate students only (i.e., courses at the 600 level). With the approval of the graduate advisor, candidates may take six hours of electives within the Humanities Division, in courses at the 500 or 600 levels. At the end of the program, a comprehensive evaluation is required of all students.

Required courses:
Spanish 624: Studies in Hispanic Linguistics
Spanish 634: Spanish for the Workplace and Community
Spanish 638: Theory and Practice of Translation
Spanish 644: Origins and Development of Hispanic Culture
Spanish 648: Contemporary Issues in the Hispanic World
Spanish 654: Hispanic Culture through Film and Media
One course in Latin American Culture and Heritage
One course in the Culture and Heritage of Spain
One course in Language Teaching
One elective in Spanish

Thesis Option: 24 hours of course work (chosen from the list of courses above) + 6 hours of Thesis Guidance (Spanish 690). The thesis must show competency in Spanish and the exercise of research skills. The thesis title and the name of the supervising director will be filed with the graduate advisor in Spanish before work on the thesis is done.

Combined BA/MA in Spanish

Major: SPAN
Degree: BA/MA
Unit: GA

Students who wish to pursue a combined non-thesis Master's Degree will be allowed to apply to the baccalaureate degree up to nine (9) hours of coursework taken for graduate credit. An additional twenty-one (21) hours of graduate coursework taken in addition will constitute the minimum number of credit hours for obtaining the non-thesis Master's in the combined program. The guidelines for this combined program are as follows:

1. Application forms are available in the Department of Classical and Modern Languages office (Humanities 326) or from the Spanish Advisor. It is strongly recommended that at least one of the supporting letters submitted with the application be from a Spanish faculty member.
2. Students must (A) apply for admission to this program no later than the end of the Junior year (a total of 90 degree applicable hours) and, (B) must have completed Spanish 321, 322, or 355 with grades of "B" or better.
3. Applications will be reviewed by the Spanish faculty. A 3.35 overall grade point average and acceptable test scores on the GRE will be required for admission to the program
4. Students may take a maximum of nine (9) hours for graduate credit, which will also apply to the requirements for the baccalaureate degree in Spanish.
5. Students who enroll in the combined program will be non-thesis students and must adhere to all policies pertaining to Graduate Students in the Department of Classical and Modern Languages.

Communication (COMM)

http://comm.louisville.edu/

Graduate Program Faculty
Chair
Charles A. Willard, Professor

Professors
John P. Ferre

Associate Professors
Allan Futrell
Joy Hart
Greg Leichty

The Department of Communications offers neither a graduate degree program nor a graduate certificate program. Courses offered by the department may be applied toward graduate degrees in other areas. Students must obtain their program advisor's permission before enrolling in these courses. Students who are interested in these courses should contact the Chair of the department.

Both the M.A. in Sociology and the Master of Business Administration programs offer formal concentrations in communication. For more information, contact Dr. Charles Willard, Chair of the department of communication, or your program advisor in sociology or business administration.

Students pursuing a communication concentration as part of their M.A. in Sociology must take 12 hours. Nine hours must be at the 600-level.

Communicative Disorders (CMDS)

www.louisville.edu/medschool/surgery/com-disorders

Departmental Faculty

Division Director
David R. Cunningham, Ph.D., Professor

Director of Speech Language Pathology
Barbara M. Baker, Ph.D., Professor

Director of Audiology
Ian M. Windmill, Ph.D., Associate Professor

Program:

The Graduate School offers a Master of Science in Communicative Disorders for speech language pathology majors, and the Doctor of Audiology degree for Audiology majors. Both programs are administered through the Division of Communicative Disorders, Department of Surgery, School of Medicine. Separate application and acceptance is required for admission to each degree program. Acceptance into one program does not guarantee admission to the other program.

The program leading to a Master of Science degree for Speech Pathology majors is a full time five-semester sequence beginning each year in the fall semester. The program leading to the Doctor of Audiology degree is a full-time, four-year degree program. The final year of the program may be spent at an external location.

The Council on Academic Accreditation (CAA) of the American Speech Language Hearing Association (ASHA) accredits the Speech Language Pathology Program and the Audiology Program. Graduating students will be eligible to apply for the Certificate of Clinical Competence by ASHA if all requirements are fulfilled. Students may also be eligible for Kentucky State Teaching Certification in speech language pathology. The Teacher Certification Program by which speech pathology students prepare for school therapy positions is certified by the National Council for Accreditation for Teacher Education. Additional coursework may be required to be eligible for ASHA or teaching certification.

The program operates its own teaching clinics, including the WHAS Crusade for Children Audiology and Speech Pathology Center, the University of Louisville Hospital, faculty practice locations, and Kosair Children's Hospital. In addition the program has cooperative arrangements with more than thirty schools, agencies, hospitals, and practice groups in the Kentuckiana region.

Admission Requirements
Speech Pathology: Applicants should have a cumulative undergraduate grade point average of at least 3.0 on a 4.0 scale and combined Verbal and Quantitative scores on the Graduate Record Examination of at least 900. At least three letters of recommendation should accompany the application. A formal interview may be required. The applicant should read and meet the general requirements for admission to the Graduate School.

Audiology: Applicants should have a cumulative undergraduate grade point average of at least 3.2 on a 4.0 scale and combined Verbal and Quantitative scores on the Graduate Record Examination of at least 1000. Three letters of recommendation should accompany the application and a formal interview is required.

Degree Requirements

Candidates for the Master of Science degree in speech pathology must complete at least 52 credit hours at the graduate level, exclusive of credits related to the completion of a (optional) master's thesis, courses required to complete ASHA certification requirements, and/or course work related to Kentucky State Teacher Certification. Candidates for the Doctor of Audiology degree must complete the prescribed curriculum and experiences as outlined in the program of study. Courses necessary to complete ASHA certification requirements are in addition to the prescribed curriculum.

Pass/Fail Option

In general, students in Speech Pathology or Audiology may not choose the pass/fail option. Certain courses may be offered with this option at the discretion of the faculty.

Comprehensive Examinations

Students in Speech Language Pathology will take an eight-hour written comprehensive examination followed by a one and one-half hour oral comprehensive examination during their last semester of study. The completion of a master's thesis is encouraged, but is optional. Thesis students will take at least one statistics course above the introductory level. Thesis students will take a comprehensive oral examination that will focus primarily, but not exclusively, on the thesis work itself.

These examinations must be completed at least five weeks prior to the completion of the student's graduate program. The student is responsible for becoming familiar with the consequences of failure on the written or oral examinations. This information is available at the program office.

Clinical Practicum

The American Speech Language Hearing Association requires a minimum of 375 clock hours of supervised clinical practicum in speech pathology or audiology to be eligible for certification. Twenty clock hours must be in the student's minor area and two hundred sixty clock hours must be at the graduate level. (Ten of the 260 hours are graduate observation and 250 are clinical clock hours.) In Audiology, students will earn between 2500 and 3000 experiential hours over the four years of the program. The student may spend the final year of the program at a clinical site outside the Louisville area.

Certain prerequisites and standards apply to the clinical practicum component of the program, including minimum course work requirements, mandatory readings, observations, case report formats, and grading criteria. This information is available in the program office and it is the student's responsibility to become acquainted with these requirements prior to enrolling in clinical practicum.

Falling below a 3.0 average in practicum for two consecutive semesters will result in dismissal from the program. Practicum assignments are made at the faculty's discretion and with the service needs of the clinic in mind. All practicum work done outside of the main program must be given prior approval by the section director.

For more detailed information regarding the Graduate Program in Communicative Disorders, please write: Program Chair, Graduate Program in Communicative Disorders, Myers Hall, University of Louisville, Louisville, Kentucky 40292 or telephone (502) 852-5274. www.graduate.louisville.edu.

Computer Engineering and Computer Science (CECS)

www.louisville.edu/speed/cecs

Departmental Faculty

Professors
Adel S. Elmaghraby (Acting Chair)
James H. Graham
Anup Kumar
Melvin J. Maron (EM-Core Coordinator)
Rammohan K. Ragade, (CSE, Ph.D. Coordinator)

Associate Professors
Dar-jen Chang
Ahmed H. Desoky (MEng Coordinator)
Ibrahim N. Imam
Mehmed M. Kantardzic

Assistant Professors
Antonio Badia
Emeritus
Khaled A. Kamel
Arthur M. Riehl

Programs

The Department of Computer Engineering and Computer Science of the Speed Scientific School, the school of engineering at the University of Louisville, offers a program of study leading to the degree of Master of Science in Computer Science.

The Department also offers a doctoral program in cooperation with the Department of Electrical and Computer Engineering. For more information on the doctoral program refer to the program section on Computer Science and Engineering. The Department also offers an integrated five-year program of cooperative education leading to the professional degree of Master of Engineering with a specialization in Computer Engineering and Computer Science. The first four (4) years are described in the University's Undergraduate Catalogue.

Admission Requirements

Please check application deadlines for prospective semesters. The admission requirements for the M.S. programs are essentially the same as the general requirements of the Graduate School. Prerequisites for each program are indicated in the catalogue.

Master of Science in Computer Science

Major: CS
Degree: MS
Unit: GS

This program is available for interested individuals who have an adequate background, but do not necessarily have a baccalaureate degree in engineering. This program is governed by the general regulations of the University of Louisville Graduate School and is accredited by the Southern Associations of Colleges and Schools. Interested students should refer to the Graduate School Catalogue or to the Department Office for further information about the Master of Science Program.

Prerequisites: (not included in degree program)
1. A bachelor's degree.
2. Successful completion of CECS 121, 230, 302, 303, 310, 325, 335, 420, and 440 or their equivalents and IE 360.

	Semester Hours	Total
Required Courses		
CECS 504, Automata Theory		
or CECS 530, Design of Compilers	3	
CECS 550, Software Engineering		
or CECS 630, Data Base Design	3	
CECS 619, Design and Analysis of Computer Algorithms		
or CECS 545, Artificial Intelligence	3	
CECS 622, Simulation & Modeling of Discrete Systems		
or CECS 522, Performance Evaluation of Computer Systems	3	
CECS 516, Fundamentals of Computer Communications and Networks		
or CECS 629, Distributed System Design	3	
CECS 563 Experimental Design in Engineering		
or CECS 508, Numerical Analysis	3	
CECS 690, M.S. Thesis in Computer Science		
or 2 CECS 600-level graduate courses for non-thesis options*	6	24
Elective Courses		
Computer Science	3	
Technical electives (may be from areas other than computer science)	3	6
Minimum Total		**30**

NOTES:
A minimum of 15 semester hours (including computer science thesis credit) must be in courses numbered 600 or above.

Electives require approval of student's graduate committee or graduate program advisor.

Languages such as C, C++, and JAVA might be needed. These are offered at the undergraduate level; not for graduate credit.

* Two CECS graduate faculty with the student's advisor must devise a plan of study with the student during the first semester outlining the requirements for successful completion of the non-thesis option. The study plan will be forwarded to the Graduate School for further approval and documentation.

Master of Engineering in Computer Engineering and Computer Science

Major: CS
Degree: MS
Unit: GS

On entering the Professional School, the student chooses an area of concentration for the master's thesis and selects a sequence of program elective courses for the thesis concentration (see list of courses at the end of the program). The Master of Engineering degree is accredited by EAC/ABET under the criteria for Computer Engineering. Students with ABET accredited Bachelors degrees in Engineering will also be considered for this degree.

	Semester Hours	Total
Higher Studies Division ([1,2])		
CECS 502, 510, 530	7	
CECS 619, 622, 630, 697[3]	17	
Approved CECS Electives ([2, 4])	6	
CECS 511	1	
Minimum Total		**31***

[1] CECS students are required to take the "C++" and "JAVA" programming language course. "C++" and "JAVA" programming is used in several CECS courses.
[2] The CECS elective may be chosen from the following approved list: CECS 522, 530, 542, 545, and 5463
[3] A full-time student is required to have selected both an approved M.Eng. thesis topic and the director of the thesis committee during the first term of the graduate/professional year.
[4] Required CECS program elective courses may be chosen from CECS 600-level courses to provide concentration at the Master of Engineering level in the areas of research focus in the department. Lists of appropriate engineering design courses and engineering science courses are available in the CECS Department.

* The five-year total for the M.Eng degree is 164 semester hours.

Computer Science and Engineering

The Computer Engineering and Computer Science Department (CECS) and the Electrical and Computer Engineering Department (ECE) jointly offer the Ph.D. degree in Computer Science and Engineering (CSE) through the Graduate School. Students interested in the Ph.D. program should consult the Graduate School Catalogue entry on Computer Science and Engineering Ph.D. program or contact Ms. Gina Payne-Yunker, Computer Science and Engineering Program Secretary (J.B. Speed Hall, Rm 124; glpayn01@gwise.louisville.edu or Dr. Rammohan Ragade: rkraga01@gwise.louisville.edu).

Admission

Typically, students who apply to the Ph.D. program will have completed a master's degree. Applicants whose score on the Verbal and Quantitative sections of the Graduate Record Examination General Test is 1200, who have a master's degree in Computer Engineering, Computer Science and Engineering, Electrical Engineering, or Engineering Mathematics and Computer Science from an accredited program, and whose grade point average is at least 3.25/4.0 may be granted unconditional admission.

Applicants with master's degrees in other branches of engineering, computer science, chemistry, physics, or mathematics may be admitted conditionally and may be required to complete up to 30 hours of undergraduate courses before being admitted to degree status. Applicants with degrees in fields other than those enumerated in this paragraph will be directed to enroll as postbaccalaureate students and complete up to 30 hours in computer hardware and software courses and may be required to complete up to 24 hours of mathematics courses in order to provide a background adequate for admission to the Ph.D. program.

After the completion of 9 hours of post-baccalaureate courses, a student is reviewed by the program faculty to assess the student's capacity for doctoral-level work and to assist in developing an appropriate course of study. The review is based on an evaluation of the performance of the student in courses taken for credit in the CSE program. Upon recommendation of the program faculty, a student who fails this review may repeat it at the next offering; however, the review may not be taken more than twice.

Computer Science and Engineering provides a broad base in both hardware and software and in the application of computer concepts to other disciplines. The core curriculum covers essential mathematics, provides a background in computer software and hardware, and includes an introduction to computationally intensive applications.

Doctor of Philosophy in Computer Science and Engineering

Major: CSE
Degree: PHD
Unit: GS

Program

Doctoral students must complete at least two courses (6 hours) in each of two core areas and must complete one course in each of the remaining two core areas. They must complete a sufficient number of additional approved electives to ensure a depth of preparation in the field of Computer Science and Engineering. The four core areas are: Computer Software Engineering, Computer Hardware Engineering, Computationally Intensive Applications, and Advanced Mathematics. Each student must also complete 3 hours of Seminar (CSE 695), but no more than 3 hours of CSE 695 may be credited toward the degree.

Computer Software Engineering core courses include: CSE 504, 530, 545, 550, 608, 619, 630.

Computer Hardware Engineering core courses include: CSE 510, 515, 611, 632, and ECE 516/CECS 525.

Computationally Intensive Applications core courses include: ECE 520, 545, 550, 560, 614, 620, 650, 661, 662, 670; CECS 522, 542, 622, 628; ECE 618/CECS 627, ECE 619/CECS 633.

Advanced Mathematics core courses include: CECS 508, 563, 615,; MATH 501, 511, 581, 660, 662, 681.

A student must consult with the dissertation advisor before registering for courses. A minimum of 72 semester hours of post-baccalaureate credit (including up to 24 semester hours for the dissertation), plus 3 hours of CSE Seminar (CSE 695) are required for the degree.

Upon the completion of the formal course work required for the Ph.D., a student must pass a written preliminary examination for admission to candidacy. The student shall prepare a formal plan of study for review by the dissertation committee soon after the formulation of the committee. This plan must be approved by the CSE Coordinator.

Each student is also required to prepare a written dissertation proposal and present it to the dissertation committee for approval. The dissertation proposal should be a sufficiently complete statement of the proposed research so that the committee can judge the originality, significance and likely success of the research. It should contain a detailed review of the previous contributions of others in the proposed area, with supporting reference citations. It should contain a clear statement of the proposed contributions, emphasizing the facets that will make this work unique, and it should include enough supporting detail and preliminary results so that an assessment of likelihood of success can be made. Appearance, format and citations should be in conformance with the requirements of the Graduate School.

After the committee has approved the dissertation proposal, the committee shall prepare a written examination pertaining to the proposal as well as background areas. This examination is called the preliminary examination. Upon successful completion of this examination, the student is admitted to candidacy status by the Graduate School.

CSE Departmental Faculty

Coordinator
Rammohan K. Ragade, Professor (CECS)

Professors
Peter B. Aronhime (ECE)
Darrel L. Chenoweth (ECE/CECS)
Thomas G. Cleaver (ECE)
Robert W. Cohn (ECE)
Joseph D. Cole (ECE)
Adel S. Elmaghraby (CECS)
Aly A. Farag (ECE)
James H. Graham (CECS/ECE)
Barry R. Horowitz (ECE)
Anup Kumar (CECS)
Melvin J. Maron (CECS)
Jacek M. Zurada (ECE)

Associate Professors
Dar-jen Chang (CECS)
Hollace L. Cox (ECE)
Ahmed H. Desoky (CECS)
Ibrahim Imam (CECS)
Mehmed Kantardzic (CECS)
Kevin M. Walsh (ECE)

Assistant Professors
Antonio Badia (CECS)

Emeritus/Emerita
Samuel V. Bell (ECE)
Kiron C. Bordoloi (ECE)
J. Carroll Hill (ECE)
Khaled A. Kamel (CECS)
Arthur M. Riehl (CECS)
Donald J. Scheer (ECE)

Educational and Counseling Psychology (ECPY)

www.louisville.edu/edu/ecpy

Faculty

Chair
Daya S. Sandhu, Distinguished Professor of Research

Professors
George K. Cunningham
Nancy J. Cunningham
John M. Dillard
Robert D. Felner, Dean
Pedro R. Portes, Distinguished Professor of Research
Gerald B. Sklare

Associate Professors
Michael J. Cuyjet
Patrick H. Hardesty
Kathleen M. Kirby

Assistant Professors
Laura Cherry
Victoria Guthrie
Steven J. Morris
Kate Perryman

Emeritus/Emerita
Rea T. Alsup
William F. Kelly
Eleanor Y. Love

Adjunct Faculty
Denise Gifford
Bridgette Pregliasco
Fred Rhodes
Linda Shapiro

Programs

Degrees offered by the Department of Educational and Counseling Psychology include the Doctor of Philosophy, the Master of Arts and the Master of Education.

The Doctor of Philosophy degree prepares advanced students for leadership roles in school counseling, college student personnel, and counseling psychology. A focus is placed on special issues associated with working in metropolitan settings.

The Master of Education degree in Counseling and Personnel Services offers optional concentrations in elementary or secondary school counseling, mental health counseling, counseling psychology and college student personnel services.

The Master of Arts in Expressive Therapies program introduces students to a variety of therapeutic and learning models. Areas of concentration are offered in family therapy, grief counseling and group processes.

Non-degree graduate programs are also available for certified teachers pursuing Rank I and Rank II Equivalency programs.

Departmental Admission and Retention Policy

For all programs in counseling and student personnel services, the student should exhibit those personal qualities and characteristics which, in the judgment of the faculty, are necessary for effective functioning in the role of a counselor, psychologist, or student personnel worker. The faculty may require interviews in addition to written credentials as part of the admission process.

At any point after admission, the faculty reserves the right to review a student's fitness, on the basis of personal characteristics, for continuing in the counseling and student personnel program. Such an assessment shall be initiated upon the recommendation of two faculty members and shall consist of a review of the student's academic record, other pertinent evidence, and an interview with the student by the department faculty.

This review must result in a recommendation to the Dean for (1) continuation of a student in the program, (2) continuation for a specified professional period with specific conditions for continuation thereafter, or (3) dismissal from the program. Some courses may require learning experiences which focus on self-understanding or growth.

Master of Education in Counseling and Personnel Services with concentration in Student Personnel Services

Major: CPS
Concentration: STPS
Degree: MED
Unit: GE

Admission Requirements:

Admission to the Graduate School, including passing scores on the GRE. Consult Department for specific information.

	Semester Hours	Total
General Requirements		
EDFD 600, Introduction to Research Methods and Statistics	3	
Professional Area Requirements		
ECPY 629, Theories &Techniques of Counseling and Psychotherapy	3	
ECPY 650, Group Process and Practice	3	
ECPY 660, Introduction to Student Personnel Work	3	
ECPY 661, Theories of College Student Development	3	
ECPY 662, Student Affairs Programs, Policies, and Practice	3	
ECPY 663, Multicultural Issues	3	
ECPY 664, College Student Sub-Cultures	3	
ECPY 681, Internship in College Student Personnel Services	3	
ECPY 681, Internship in College Student Personnel Services	3	
ECPY 721 Capstone Seminar	3	
ECPY 761, Program Development and Evaluation in Student Affairs	3	
EDAD 682, Organization & Administration of Higher Education	3	36
Professional Electives		
(Two courses from the following list:)		
ECPY 540, Evaluation and Measurement in Education	3	
ECPY 619, Theories of Counseling and Psychotherapy	3	
ECPY 640, Assessment Methods for Counselors	3	
ECPY 670, Career Counseling	3	
ECPY 699, Thesis or Professional Paper	3-5	
ECPY 605, Human Development *or* ECPY 631, Adolescence	3	
ECPY 705, Adult Development Theories	3	
ECPY 730, Social, Legal, and Ethical Issues in Counseling	3	
EDAD 607, Principles of Educational Leadership	3	
EDAD 680, Legal Issues in Post-secondary Education	3	
EDAD 684, Educational Research Management in Post-Secondary Education	3	
EDAD 686, The Two-Year College	3	
EDAD 730, Diversity in Educational Leadership	3	6-8
EDFD 680, The American College and University	3	
EDFD 681, The Philosophy of Higher Education	3	
Minimum Total		**48-50**

Master of Education in Counseling and Personnel Services with concentration in Mental Health Counseling

Major: CPS
Concentration: MHC
Degree: MED
Unit: GE

Fulfills the National Board for Certified Counselors (NBCC) educational requirements to sit for the exam for National Counselor Certification. Fulfills the requirement for a master's degree in counseling leading to the Certified Professional Counselor (CPC) endorsement.

Admission Requirements:

Admission to the Graduate School, including passing scores on the GRE. Consult Department for specific information.

	Semester Hours	Total
General Requirement		
EDFD 600, Introduction to Research Methods and Statistics	3	3
Professional Area		
ECPY 600*, Introduction to Counseling and Psychotherapy	3	
ECPY 540, Evaluation and Measurement in Education	3	
ECPY 670, Career Development and Counseling	3	
ECPY 619, Theories of Counseling and Psychotherapy	3	
ECPY 629, Theories and Techniques of Counseling and Psychotherapy	3	
ECPY 621 Differential Diagnosis and Treatment in Counseling		
ECPY 626 Consultation	3	3
ECPY 650, Group Process and Practice	3	
ECPY 663, Multicultural Issues	3	
ECPY 680, Practicum in Counseling OR	3	
ECPY 681 Internship	3	
ECPY 605, Human Development	3	
ECPY 730, Social, Legal, and Ethical Issues in Counseling	3	
General Track		**3**
ECPY 640 Assessment Methods for Counselors		
Electives from nine areas designated in the guidelines for Licensed Psychological Counselor Associate		
Testing Track		**3**
ECPY 648, Psychological Assessment		
ECPY 649, Psychological Assessment II	3	3
ECPY 680, Practicum	3	
Minimum Total		**60**

*Must be taken during the first nine hours of coursework in the program.

Master of Education in Counseling and Personnel Services with concentration in Human Services

Major: CPS
Concentration: CPSG
Degree: MED
Unit: GE

Admission Requirements:
Admission to the Graduate School, including passing scores on the GRE. Consult Department for specific information.

	Semester Hours	Total
General Requirement		
EDFD 600*, Introduction to Research Methods and Statistics	3	3
Professional Area		
ECPY 600, Introduction to Counseling and Psychotherapy	3	
ECPY 540, Evaluation and Measurement in Education	3	
ECPY 670, Career Counseling	3	
ECPY 629, Theories and Techniques of Counseling and Psychotherapy	3	
ECPY 640, Assessment Methods for Counselors	3	
ECPY 650, Group Process and Practice	3	
ECPY 663, Multicultural Issues	3	
ECPY 680, Practicum in Counseling	3	
Practicum or Internship	3	
Elective or Thesis	3	
Minimum Total		**30 hours**

* Must be taken during the first nine hours of coursework in the program.

Master of Education in Counseling and Personnel Services with concentration in Counseling Psychology - Plan B

Major: CPS
Concentration: CPSL
Degree: MED
Unit: GE

Fulfills the State Board of Psychology's educational requirements to apply to sit for the exam for Psychological Associate.

Admission Requirements:
Admission to the Graduate School, including passing scores on the GRE. Consult Department for specific information.

	Semester Hours	Total
General Requirements		
EDFD 600*, Introduction to Research Methods and Statistics	3	
EDFD 601, Applied Statistics	3	6
Professional Area		
ECPY 540, Evaluation & Measurement in Education	3	
ECPY 600, Introduction to Counseling and Psychotherapy	3	
ECPY 619, Theories of Counseling and Psychotherapy	3	
ECPY 629, Theories & Techniques of Counseling and Psychotherapy	3	
ECPY 621, Differential Diagnosis and Treatment in Counseling	3	
ECPY 730, Social, Ethical and Legal Issues in Counseling	3	
ECPY 671, Psychology of Career Development	3	
ECPY 663, Multicultural Issues	3	
ECPY 648, Psychological Assessment I	3	
ECPY 649, Psychological Assessment II	3	
ECPY 775, Biological Basis of Behavior	3	
ECPY 605, Human Development ***or*** ECPY 631, Adolescence ***or*** ECPY 705, Adult Development	3	
ECPY 611, Learning Systems: Theory and Practice	3	
ECPY 680, Practicum in Counseling	3-3	
ECPY 683 Internship in Counseling Psychology	1	52
Applied Therapy Course - choose one from:		
ECPY 635, Family Assessment Concepts	3	
ECPY 650, Group Process and Practice	3	
ECPY 696, Independent Study and Guidance ***or*** Applied course in expressive therapies	3	
ECPY 697, Topical Seminar	3	
Minimum Total		**55**

* Must be taken during the first nine hours of coursework in the program.

Master of Education in Counseling and Personnel Services with concentration in Elementary School Counseling (Pre-K-8)

Major: CPS
Concentration: ELCT
Degree: MED
Unit: GE

Admission Requirements:
Admission to Graduate School, including passing scores on the GRE; teacher certification in Early Elementary or Middle School Education; ECPY 540 Evaluation and Measurement

	Semester Hours	Total
Graduate Core		
EDFD 600, Introduction to Research Methods and Statistics	3	3
Professional Courses		
ECPY 600, Introduction to Counseling and Psychotherapy	3	
ECPY 625, Elementary School Counseling	3	
ECPY 651, Group Procedures with Children	3	
ECPY 663, Multicultural Issues	3	
ECPY 605, Human Development	3	
ECPY 626, Consultation	3	
ECPY 640, Assessment Methods for Counselors	3	
ECPY 670, Career Development and Counseling	3	15
ECPY 628, Theories and Techniques of Counseling Children	3	
ECPY 680, Counseling Practicum	3	
Minimum Total		**36**

A satisfactory portfolio is required for successful completion of this program.

Master of Education in Counseling and Personnel Services with concentration in Secondary School Counseling (5-12)

Major: CPS
Concentration: SECT
Degree: MED
Unit: GE

Admission Requirements:
Admission to the Graduate School including passing scores on the GRE; teacher certification in Middle School Education or Secondary Education; ECPY 540 Evaluation and Measurement

	Semester Hours	Total
Graduate Core		
EDFD 600, Introduction to Research Methods and Statistics	3	
Area of Concentration		
ECPY 600, Introduction to Counseling and Psychotherapy	3	
ECPY 624, Organization and Administration of Secondary School Counseling	3	
ECPY 650, Group Process and Practice	3	
ECPY 663, Multicultural Issues	3	
ECPY 631, Adolescence	3	
ECPY 626, Consultation	3	
ECPY 640, Assessment Methods for Counselors	3	
ECPY 670, Career Development and Counseling	3	

ECPY 629, Theories and Techniques of Counseling and Psychotherapy 3
ECPY 680, Counseling Practicum 3

Minimum Total 36

A satisfactory portfolio is required for successful completion of this program

Rank I Program for Certified School Counselors

Major: CPS
Concentration: ELCT or SECT
Unit: GE

Admission Requirements:
Admission to Graduate School; Master's Degree in Elementary or Secondary School Guidance or Rank II Equivalency

	Semester Hours	Total
General Requirements		
ECPY 663, Multicultural Issues	3	
ECPY 684, Internship in School Counseling	3	
ECPY 722, Adv. Theories of Counseling Psychotherapy	3	
ECPY 730, Social, Legal and Ethical Issues in Counseling	3	
ECPY 750, Group Counseling, Advanced Theory and Practice	3	
EDTL 624, Curriculum Theory		
ECPY 651, Group Procedures with Children ***or*** ECPY 650 Group Process and Practice	3	
Electives to complete Rank I program hours, if needed.		
Minimum Total		**60**

Qualifications for Rank I:

1. The candidate for Rank I shall hold a regular teaching certificate and a master's degree or its equivalent based on one of the following:
   a. A master's degree leading to a standard teaching certificate;
   b. A master's degree in a professional education specialty;
2. The Rank I classification shall require the completion of either:
   a. 30 semester hours approved graduate level or equivalent (approved teacher institute) credit in addition to the requirements for a Rank II classification, or
   b. 60 semester hours approved graduate level credit including a master's degree.
3. The candidate shall plan his Rank I program in consultation with an advisor in the School of Education in advance of completing the first coursework or very early in the program. The program shall be appropriate to the candidate's present or projected role in professional education. A copy of this program shall be filed in the Education Advising Center.
4. Of the total Rank I program, at least 15 semester hours beyond Rank II shall be taken a at the University of Louisville. The remaining credit hours may be taken at the same institution or, upon approval of the faculty advisor, at other institutions. There is no stipulation as to recently of completion of Rank I credit.
5. All coursework for Rank I shall carry graduate credit or equivalent (approved teacher institute) credit, and no less than half shall be earned in courses open only to graduate students.
6. An academic average of "B" shall be required on the course hours submitted for Rank I, and no credit shall be accepted for course carrying a grade lower than a "C".
7. A satisfactory portfolio is required for successful completion of this program.

Master of Arts in Art Therapy

Major: ARTT
Degree: MA
Unit: GE

A minimum of 45 semester hours is required for completion of the program. During the first year, emphasis is placed on theoretical foundations, media explorations and applications, and a limited clinical experience.

Undergraduate course prerequisites in psychology include: general or introductory psychology, developmental, abnormal, personality theory, and an introductory statistics course. Undergraduate course prerequisites in art include: a basic drawing course, a course in painting, a course using clay, and two other studio courses of the student's choice.

In addition to the requirements of the Graduate School for admission (a 3.0 undergraduate GPA and acceptable GRE scores) each candidate must also submit a autobiographical sketch, two letters of recommendation, and a portfolio of art slides (12 of varied art media). When this information is received and reviewed, candidates may be extended an invitation to interview with the faculty.

In addition to academic competence, the student must exhibit those personality and interpersonal qualities which, in the judgment of the faculty, are necessary to the pursuit of a successful and meaningful career as an art therapist. Priority application deadline is January 15th. Applications are processed in the order they are received and will be accepted throughout the year. The faculty reserves the right to recommend rejection of an applicant or dismissal of a student on the basis of personality or apparent lack of qualifications for rendering therapeutic services.

	Semester Hours	Total
Required Courses		
ET 601, Clinical Art Therapy I: Theories	3	
ET 604, Clinical Art Therapy II: Assessment	3	
ET 611, Applied Methods	2	
ET 617, Field Studies I	2	
ET 618, Field Studies II	2	
ET 621, Topical Seminar in Research	3	
ET 622, Master's Research Seminar	3	
ET 623, Practicum I	5	
ET 624, Practicum II	5	
ET 630, Multicultural Issues in Art Therapy	3	
ET 642, Symbols of Self-Actualization	2	
ET 648, Advanced Group Art Therapy	2	
ET 661, Theories of Psychotherapy	3	35
Elective Courses		
Minimum of 10 hours selected, with approval of advisor from department, to include areas such as expressive therapies, psychology, social work, education, research; medicine, and independent study	10	10
Minimum Total		**45**

This coursework fulfills the educational requirements for the American Art Therapy Association (AATA), Certified Professional Art Therapist (CPAT), Registered Art Therapist (ATR) and Board Certified Art Therapist (ATR-BC).

Health Promotion, Physical Education, and Sport Studies (HPES)

www.louisville.edu/edu/hpes

Faculty

Chair
Daniel F. Mahony, Associate Professor

Professors
Sharleen Johnson Birkimer
Richard A. Fee
Mary A. Hums
Cheryl A. Kolander
P. Joanne Rowe
Bryant A. Stamford
Ann M. Swank

Associate Professors
Kent Adams
Anita J. Moorman
Carol Stinson
William T. Weinberg

Assistant Professors
T. Christopher Greenwell

Emeritus/Emerita
Sherrill E. Brakmeier
Clark F. Wood

Lecturers
Nicholas Fabian
Sally Hope
Malinda Tuttle

Programs

The Department of Health Promotion, Physical Education, and Sport Studies offers programs leading to the Master of Education in Physical Education, the Master of Science in Exercise Physiology, the Master of Science in Sport Administration, and the Master of Arts in Teaching in Physical Education. The department also offers a concentration in Sport Administration as part of the Master of Arts degree in Higher Education.

Students pursuing the M.S. in Exercise Physiology may select either a thesis or non-thesis option. The thesis option requires two full years of study including summer between the first and second years. Students in this option are required to actively participate in all phases of basic research within the laboratory. The non-thesis option is for students interested in the use of exercise from a clinical standpoint. This program is designed to expose the student to a variety of health-related aspects of exercise, and is heavily oriented toward improvement of cardiovascular health through the use of exercise.

The MAT is designed for students seeking teacher certification. Please contact the department for more information.

Admission to these programs is selective.

Master of Arts in Teaching in Physical Education (certification in grades P-12)

Major: P ED
Degree: MAT
Unit: GE

Admission Requirements

1. Admission to Graduate School
2. Admission to Teacher Education
3. Admission to the professional year.
4. EDTL 501, General Methods and, ECPY 507/607 Learning Theory and Human Growth and Development
5. Admission portfolio.

	Semester Hours	Total
Professional Education Courses		
HPES 605, Teaching and Learning for Elementary Physical Education	6	
HPES 606, Teaching and Learning for Secondary Physical Education	6	
HPES 609, Methods and Practical Living: Health	3	
HPES 610, Experiential Outdoor Education	3	18
Exit Requirement		
HPES 611, Seminar: Student Teaching in Health and Physical Education	3	
HPES 612, Student Teaching in Health and Physical Education I	6	
HPES 613, Student Teaching in Health and Physical Education II	6	
HPES 614, Action Research Project	3	18
Minimum Total		36 hours

Exit Requirements:

1. Minimum 3.0 GPA required for graduation.
2. Successful completion of PRAXIS and PLT tests.
3. Satisfactory exit portfolio.

Note: The teaching minor in Health Education (21 hours) is generally completed in conjunction with this program. Course requirements are available in the College of Education and Human Development Advising Center.

Master of Education in Physical Education

Major: P ED
Degree: MED
Unit: GE

Admission Requirements:

Admission to the Graduate School including passing scores on the GRE.

	Semester Hours	Total
Core Requirements		
EDFD 600, Introduction to Research Methods and Statistics	3	
HPES 609, Research Methods	3	
HPES 631, Organization and Administration of Health Education and Promotion	3	
HPES 655, Current Trends & Studies in HPES	3	
SPAD 625, Sport Administration	3	
HPES 604, Research Methods in HPES	3	
The student must choose, with approval of an advisor, a course offered in the historical, sociological, or philosophical foundations of education, to be selected from among the following:		
EDFD 620, 625, , 630, 640, 680, 681	3	18
Content Area		
Student must complete one of the following Content Areas:		
Adapted Physical Activity		
HPES 619, Practicum: Psychomotor Assessment of Dysfunctions in Adapted Physical Activity	3	
HPES 620, Instructional Design in Adapted Physical Activity	3	
HPES 621, Diagnostic/Assessment in Adapted Physical Education	3	
HPES 697, Special Topics in HPES	3	
Related Electives: Approved by advisor	6	18
Pedagogy		
HPES 607, Methods of Supervision in Physical Education	3	
HPES 608, Curriculum: An Achievement Based Approach	3	
HPES 625, Instructional Leadership in Physical Education	3	
HPES 697, Special Topics in HPES	3	
Related Electives: Approved by advisor	6	18
Psychology and Motor Development		
HPES 650, Personality & Social Development in Sport	3	
HPES 659, Motor Control & Learning: Lab	3	
HPES 660, Motor Control and Learning	3	
HPES 697, Special Topics in Physical Education	3	
Related Electives: Approved by advisor	6	18
School & Community Health		
HPES 562, Alcohol and Drug Education	3	
HPES 675, Health Promotion & Disease Prevention at the Individual Level	3	
HPES 676, Community Health Promotion & Disease Prevention	3	
HPES 684, Program Planning in Health Education & Promotion	3	
Related Electives: Approved by advisor	6	18
Sport Administration		
SPAD 618, Rise of the Sport System in America	3	
SPAD 683, Sport Marketing	3	
SPAD 689, Legal Aspects in the Sport Industry	3	
SPAD 692, Internship in Sport Administration	3	
Six hours of electives selected from the following:		
SPAD 505, Sport Facility Management	3	
SPAD 529, American Woman in Sports	3	
SPAD 624, Administration of Professional Team Sports	3	
SPAD 635, Research in Sport Administration	3	
SPAD 661, Special Topics in Sport Administration	3	
SPAD 680, Athletics and Higher Education	3	
SPAD 684, Current Trends/Issues in Sport Administration	3	
SPAD 685, Case Studies in Sport Administration	3	18
Fitness/Wellness		
EXP 503, Selected Topics in Exercise Physiology	3	
HPES 629, Introduction to Health Consultation	3	
HPES 630, Nutrition and Athletic Performance	3	
HPES 675, Health Promotion and Disease Prevention at the Individual Level	3	
HPES 684, Program Planning in		

Health Education and Promotion.....3
Related Electives: Approved by advisor .....3.....18

Exit Requirement
Student must complete two of the following:
Thesis, Research Project (if not taken as undergraduate),
Written Examination, or Student Teaching or Practicum.

Minimum Total.....36

Note: To complete the program students must have a minimum of 3.0 cumulative GPA. No credit shall be accepted for a grade lover than "C."

Master of Science in Exercise Physiology

Major: EXP
Degree: MS
Unit: GE

Admission requirements:
Admission to the Graduate School including passing scores on the GRE.

	Non-Thesis	Thesis
Required Courses for Each Option		
EXP 501, Applied Exercise Physiology	3	3
EXP 502, Principles of Exercise Testing and Prescription	3	
EXP 600, Physiology of Exercise	3	3
EXP 601, Lab Methods in Exercise Physiology	3	3
EXP 603, Seminar in Exercise Physiology	3	3
EXP 605, Human Physiology	3	3
EXP 611, Principles of Electrocardiography	3	3
EXP 699, Thesis		1-6
EXP 604, Advanced Topics in Exercise Physiology	3	
EDFD 601, Applied Statistics	3	3
EXP 620, Clinical Internship	3	
Minimum Total	**38**	**33**

* Courses in the Exercise Physiology curriculum not required for the thesis degree may serve as elective credits.

(Note: Clinical internship is available for 3 credit hours for thesis option.)

Master of Science in Sport Administration

Major: SPAD
Degree: MS
Unit: GE

Admission requirements:
Admission to the Graduate School including passing scores on the GRE.

	Semester Hours	Totals
Core Courses		
EDFD 600, Introduction to Research Methods and Statistics	3	
HPES 604, Research Methods in HPES	3	
SPAD 505, Sport Facility Management	3	
SPAD 604, Financial Principles in Sport	3	
SPAD 625, Sport Administration	3	
SPAD 683, Sport Marketing	3	
SPAD 684, Current Trends and Issues in Sport Administration	3	
SPAD 689, Legal Aspects in the Sport Industry	3	
SPAD 692, Internship in Sport Administration	3	
Electives		
SPAD 529, American Women in Sport	3	
SPAD 561, Sport Publicity and Promotions	3	
SPAD 661, Special Topics in Sport Administration	3	
SPAD 680, Athletics and Higher Education	3	
SPAD 391, Sport in American Society	3	

Other courses approved by an advisor

Exit Requirements - Students must complete one of the following: written examination, research project, or thesis

Minimum Total.....36

Leadership, Foundations, and Human Resource Education (ELFH)

http://leader.louisville.edu/hre/index.htm

Faculty

Chair
Carolyn Rude-Parkins, Associate Professor

Professor
Joseph DeVitis
John L. Keedy
Sandra Mathison
Joseph M. Petrosko
John L. Strope, Jr.
John F. Welsh

Associate Professors
Mike A. Boyle
Stephen K. Miller
Paul A. Winter

Assistant Professor
Namok Choi
Patricia K. Leitsch
Freda Merriweather
Jayne Morgenthal
Thomas G. Reio

Instructor
Ray K. Haynes

Emeritus/Emerita
Keith Bayne
Edward H. Berman
Richard K. Crosby
Everett Egginton
Robert E. Hoye
Thomas S. Jeffries
Keith L. Raitz
Gordon C. Ruscoe
Robert R. Schulz
Francis C. Thiemann

Programs
The Department of Leadership Foundations and Human Resource Education offers a variety of programs at the Master's level in educational leadership, higher education administration, instructional technology (IT), human resource education (HRE), and research areas. HRE and IT programs provide considerable flexibility to pursue expanded professional careers in schools as well as performance improvement for students from business, industry, health care agencies, military or civil service and community agencies and organizations. Rank programs and endorsements are available to students preparing to use IT in public school teaching and leadership.

Courses in philosophy, diversity and research support the College of Education and Human Development programs by offering basic and advanced courses in research and urban education, many of which are specifically designed for doctoral students. Assistance to graduate students in design and implementation of research is provided in the area of research. Faculty work with teachers and other educational professionals in collaborative investigations as well as conducting research on the historical, philosophical, and sociological basis of schooling and education.

Degrees offered in School Leadership and Higher Education include the Doctor of Philosophy, Master of Education in Educational Administration, and Master of Arts in Higher Education (optional concentration in Sport Administration). Certifications as school superintendent, principal, supervisor of instruction, or director of special education are also available. Programs are designed to prepare graduates for roles in educational

institutions (P-12, post-secondary, public or private) or other organizations which value leadership by education-oriented managers. Concentration is on leadership-related concepts and competencies. Mature learners from the fields of education, health services, government, and various other public or private organizations may advance their knowledge of crucial administrative functions and increase their vision regarding organizational potential. Programs are opened to individuals within or outside professional education.

Master of Education in Educational Administration

Major: HED
Degree: MED
Unit: GE

Leads to professional certificate for instructional leadership P-12 principal.

Program Admission Requirements

Admission to this program requires:

- Admission to the graduate school
- Qualification for a Kentucky Classroom Teaching Certificate
- General Test Section score on the Graduate Record Exam of 800 "V+Q"
- A 2.75 Grade Point Average on a 4.0 scale on all collegiate preparation
- Successful completion of the Kentucky Teacher Internship Program, as provided in 704 KAR20:045, or two years (one year = 140 minimum contract days) of successful P-12 teaching experience outside of the state of Kentucky.

	Semester Hours	Total
Professional Area (18)		
ELFH 604, Instructional Leadership and Supervision	3	
ELFH 607, Principles of Educational Leadership	3	
ELFH 608, K-12 Leadership	3	
ELFH 609, Internship in Educational Leadership	3	
ELFH 612, Human Resource Management	3	
ELFH 620, Legal Issues in P-12 Education	3	18
Cognate Area (12) (must be approved by the advisor)		
* ELFH 600, Introduction to Research Methods and Statistics	3	
ELFH xxx (Selected with Advisor approval)	3	
ELFH 603, Leadership in a Reform Environment	3	
Elective (selected with advisor approval)	3	12
Minimum Total		**30**

Note: * Must be taken in first 9 hours. This program completes ONLY Level 1 Certification for Principal.

Program Completion Requirements

1. A grade point average of 3.0 in all courses counting on the program
2. Successful completion of a portfolio. Information about the portfolio is found in "Guideline for portfolio completion requirements" available from your advisor.

Certification Requirements

1. Satisfactory completion of the Kentucky Assessment Program for principal certification. Current information about the Kentucky assessment program may be obtained in the Education Advising Center. Assessment includes: (1) A minimum score of at least 85% on the Kentucky Specialist Test of Instructional and Administrative Practices; and (2) a minimum score of at least 155 on the School Leaders Licensure Assessment.
2. Completion of three (3) years of full-time teaching experience
3. Successful completion of the Kentucky Principal Internship Program

Certification Program for Instructional Leadership —School Principal (P-12)

Major: EDAD
Concentration: PRNP
Unit: GE

Certification program only. Not a degree program.

These courses do not constitute a degree program, but may be applied to a Rank I program or the Ed.S. or the Ph.D if the student is admitted to an advanced program. Kentucky law requires completion of at least Level One of a program as a prerequisite to taking mandated tests and then completion of a one-year on-the-job administrative internship.

Admission to this Program requires:
1. Admission to the Graduate School.
2. A Master's degree with a grade point average of 2.75 on a 4.0 point system.
3. Combined GRE scores of at least 800 (Verbal & Quantitative).
4. Qualification for a Kentucky classroom teaching certificate.
5. Successful completion of the Kentucky Teacher Internship Program or two years of successful K-12 teaching experience outside the Commonwealth of Kentucky.

	Semester Hours	Total
Level I Courses: (Initial Certification)		
ELFH 604, Instructional Leadership and Supervision	3	
ELFH 607, Principles of Educational Leadership	3	
ELFH 608, K-12 Leadership	3	
ELFH 609,Internship in Educational Leadership	3	
ELFH 612, Human Resource Management	3	
ELFH 620, Legal Issues in P-12 Education	3	18
Level II Courses: (First 5-year renewal)		
ELFH 603, Administrative Leadership in a Reform Environment	3	
ELFH 610, Collaboration and Communication for Effective Leadership	3	
ELFH 622, Educational Resource Management in P-12 Education	3	12
ELFH 720, Advanced Internship in Administration and Supervision	3	
Minimum Total		**30**

Exit Requirements:

1. Grade point average of 3.0 or higher.
2. Successful completion of a portfolio

Certification Requirements:

1. Minimum of 85% on KY Specialist Test of Instructional and Administrative Practices.
2. Minimum score of 155 on the School Leaders Licensure Assessment.
3. Completion of 3 years of full time teaching experience.
4. Successful completion of Kentucky Principal Internship Program (KPIP)

Certification Program for Supervision of Instruction (Grades P-12)

Major: EDAD
Concentration: SUPV
Unit: GE

Certification program only. Not a degree program.

These courses do not constitute a degree program, but may be applied to a Rank I program or the Ed.S. or Ph.D degree requirements, if the candidate is admitted to an advanced degree program.

Admission to this Program requires:
1. Admission to the Graduate School.
2. A grade point average of 3.0 on a 4.0 point system on all collegiate preparation..
3. Combined GRE scores of at least 800 (Verbal & Quantitative).
4. Qualification for classroom teacher certification in Kentucky (except speech and communication disorders).

	Semester Hours	Total
Level I Courses: (Initial Certification)		
ELFH 603, Administrative Leadership in a Reform Environment	3	
ELFH 540, Evaluation and Measurement in Education	3	
ELFH 604, Instructional Leadership and Supervision	3	
ELFH 607, Principles of Educational Leadership	3	
ELFH 608, K-12 Leadership	3	
ELFH 609, Internship in Educational Leadership	3	18
Level II Courses: (First 5-year Renewal)		
ELFH 610 Collaboration and Communication for Effective Leadership	3	
ELFH 612 Human Resource Management	3	
ELFH 620, Legal Issues in P-12 Education	3	
ELFH 720, Advanced Internship in Administration and Supervision	3	
Course approved by advisor	3	15
Minimum Total		**33**

Exit Requirements:
1. Grade point average of 3.0 or higher
2. Successful completion of portfolio

Certification Program for the School Superintendent

Major: EDAD
Concentration: SPDT
Unit: GE

Certification program only. Not a degree program.

These courses do not constitute a degree program, but may be applied to a the Ed.S. orPh. D. requirements, if the candidate is admitted to an advanced degree program.

Admission to this Program requires:
1. Admission to the Graduate School
2. A grade point average of 3.0 on a 4.0 point system on all collegiate preparation.
3. Combined GRE scores of at least 800 (Verbal & Quantitative).
4. Qualification for a Kentucky classroom teaching certificate.
5. At least (3) years of full-time teaching experience.
6. Completion of both Level I and Level II preparation and certification for principal or supervisor of instruction.

	Semester Hours	Total
Initial Certificate		
ELFH 639, The School Superintendency	3	
ELFH 649, School System Administration	3	
ELFH 679, Superintendency Practicum	3	
ELFH 659, School Planning	3	
Minimum Total		**12**

Program Completion Requirements:
1. A grade-point average of 3.0 on all courses counting on this program.
2. Successful completion of a portfolio. Guidelines are available in the department.
3. Successful completion of two years of experience in an approved school leadership position.

Professional Certification for Director of Special Education

Major: EDSP
Unit: GE

Prerequisites
1. Admission to the Graduate School
2. Kentucky certification as a teacher of exceptional children in one of the categories of exceptionality, school psychologist, or supervisor of curriculum instruction.
3. A Master's Degree in Special Education or related field.
4. Three years of experience as a teacher of exceptional children, school psychologist, or supervisor of curriculum.

	Semester Hours	Total
Certification Requirements		
EDSP 610, Administration and Supervision in Special Education	3	
ELFH 620, Legal Issues in P-12 Education	3	
ELFH 608, K-12 Leadership	3	
ELFH 720, Advanced Internship in Administration and Supervision	6	15

NOTES:
- Students who make a grade below "C" in any Special Education course leading to Teacher Certification are required to repeat the course and earn a minimum grade of "C."
- Supervisors of curriculum must also have courses or background in special education instructional methods, materials, and programs including those in preschool special education. The formal training and experience of school psychologists will be evaluated and additional coursework/experience may also be necessary.

Master of Arts in Higher Education

Major: HED
Degree: MA
Unit: GE

This program is designed for students who wish to qualify for college administrative positions. It does not qualify graduates for Kentucky administrator certification. This degree is also available for distance education through on-line instruction.

Admission Requirements:
Must be admitted to the Graduate School including passing scores on the GRE.

	Semester Hours	Total
General Requirements		
ELFH 600, Introduction to Research Methods and Statistics	3	
ELFH 680, The American College and University *or* ELFH 681, Philosophy of Higher Education	3	6
Professional Area		
ELFH 607, Principles of Educational Leadership	3	
ELFH 626, Planning	3	
ELFH 680, Legal Issues in Postsecondary Education	3	
ELFH 682, Organization and Administration of Higher Educational Institutions	3	
ELFH 684, Educational Resource Management in Postsecondary Education	3	15
Electives (advisor-approved)	6	6
Exit Requirement		
ELFH 690, Internship in Postsecondary Education	6	
or ELFH 699, Thesis or Professional Paper	4	4-6
Minimum Total		**31-33**

Master of Arts in Higher Education With Concentration in Sport Administration

Major: HED
Concentration: SADM
Degree: MA
Unit: GE

Admission Requirements:
Must be admitted to the Graduate School including passing scores on the GRE.

	Semester Hours	Total
Professional Area		
ELFH 600, Introduction to Research Methods and Statistics	3	
ELFH 607, Principles of Educational Leadership	3	
ELFH 620, Legal Issues in Education	3	
ELFH 682, Organization and Administration of Higher Educational Institutions	3	
EDFD 680, The American College and University *or* ELFH 681, Philosophy of Higher Education	3	
SPAD 625, Sport Administration	3	18
Specialization Area		
SPAD 505, Sport Facility Management *or* HPES 575, Administration of Physical Education Programs and Athletics	3	
SPAD 618, Rise of the Sport System in America *or* SPAD 680, Athletics and Higher Education	3	
SPAD 684, Current Trends and Issues in Sport Administration *or* other SPAD elective approved by the advisor	3	9
Exit Requirements		
ELFH 699 Thesis or Professional Paper	1-5	
or SPAD 692, Internship in Sport Administration	1-3	4-6
Minimum Total		**31-33**

Specialist in Education Degree in Educational Administration

Major: EDAD
Degree: EDS
Unit: GE

Kentucky requirements for certification programs and requirements for this degree program do not necessarily coincide. If the student wishes Kentucky administrative certification then the student must incorporate certification requirements into this degree program. Contact the Department of Leadership, Foundation and Human Resources Education in the College of Education and Human Development, for the most recent information on certification requirements.

The Specialist in Education (ED.S.) is a sixth-year degree program. Admission requirements for the ED.S. include:
1. Admission to the Graduate School.
2. A grade point standing of at least 3.3.
3. A combined score of 900 on the Verbal and Quantitative portions of the Graduate Record Examination.
4. Successful, relevant professional experience.
5. A written rationale for pursuing the degree.
6. Successful interview with a Departmental Committee.

A Departmental Committee of at least three faculty members will consider the application and make a recommendation about admission. Potential applicants should confer with the departmental chairperson before filing an application.

The Education Specialist degree requires 30 hours of post-master's credit, including the following courses:

	Semester Hours	Total
ELFH 720, Advanced Internship in Administration and Supervision	3	
ELFH 796, Research Literature	3	
ELFH 782, Action Research for Education Leaders	3	
ELFH or other approved courses	21	30

Master of Education in Instructional Technology

Major: IT
Degree: MED
Unit: GE

Masters, Rank I and second masters are available. Graduates work in classroom, school, and district leadership positions in area school districts. They also work in minority, local, and national companies as designers and developers. This program is appropriate for P-12 teachers, as well as specialists in training and instructional design. The focus is applications of hardware, software, and institutional theory and curriculum, for the purpose of enhancing student learning. An endorsement is available for teachers. Preparation for various industry computer certifications is available for all. The Technology Leadership Institution is co-host group for JCPS.

	Semester Hours	Total
Admission Requirements;		
1. Admission to the Graduate School.		
2. GRE of 800 (Verbal and Quantitative)		
Required Courses for Teachers (15)		
ELFH 600, Introduction to Research Methods and Statistics OR	3	
EDEM 605, Action Research (if EDFD 600 was already taken)**	3	
ELFH 622, Orientation Readings (first course for teachers)**	3	
ELFH 574, Using Productivity Tools	3	
ELFH 673, Using Technology for Curriculum, Instruction and Assessment	3	
ELECTIVE	3	15
Required Courses for Trainers (15 hours)		
ELFH 600, Graduate Research Methods and Statistics	3	
ELFH 664, Facilitating Change in Organizations	3	
ELFH 662, Organizational Analysis (trainers)	3	
ELFH 672, Instructional Design and Development (trainers)**	3	
Elective		
Required Courses and Readings (15 hours)	3	
ELFH 675, Web Use and Publishing	3	
ELFH 676, Authoring Multi-media Instruction**	3	
ELFH 677, Technical Support Skills*	3	
ELFH 574, Using Productivity Tools (teachers)*	3	
ELFH 674, Technology Leadership Seminar (teachers)**	3	
ELFH 671, Leadership in Instructional Technology	3	
ELFH 695, Distance Teaching and Learning**	3	
ELFH 616, Internship and Portfolio Seminar	3	
ELFH 699. Thesis	6	
Minimum Total		**45**

Exit Requirement
Successful Completion of Portfolio

Note:
* Computing and Technology Literacy
**Computing and Technology Leadership

Master of Science in Human Resource Education

Major: HRE
Degree: MS
Unit: GE

This program is designed to prepare or enhance individuals for a mid-level training and human resource positions in business, industry, health, military and education organizations. This degree is NOT acceptable for renewing a teaching certification or obtaining a Rank II salary status for Certified and Secondary Teachers.

Admission Requirements:
Must be admitted to the Graduate School including passing scores on the GRE.

Portfolio Requirements: This program requires the development of a portfolio. Portfolio projects are required in each course in the program. ELFH 616 Capstone Seminar and Portfolio Presentation includes the

requirements to organize and revise the projects and to present them in a professional portfolio. Portfolio Projects are organized around the program's professional standards.

	Semester Hours	Total
CORE COURSES (9 hours)		
ELFH 600, Introduction to Research Methods and Statistics	3)	
ELFH 616, Internship and Portfolio Seminar OR	3	
ELFH 699, Thesis	3	
ELFH 661, Adult Development & Learning Principles (3)	3	9
9		
Concentration: Performance Improvement (21 hours)		
ELFH 606, Program Evaluation (3)	3	
ELFH 611, Performance Improvement in HRD (3)	3	
ELFH 662, Organizational Analysis (3)	3	
ELFH 663, Methods of Facilitation (3)	3	
ELFH 664, Facilitating Change in Organizations (3)	3	
ELFH 672, Instructional Design & Development (3)	3	
ELFH 631 Ethics and Social Responsibility OR ELFH 671 Technology Enhanced Work and Learning (on-line only) OR ELFH 605 Organization and Administration of Human Resources (International only) or other courses approved by advisor	3	21
Minimum Total		**30-33**

Teaching and Learning (EDTL)

www.louisville.edu/edu

Faculty

Acting Chair
Robert N. Ronau, Professor

Professors
William Bush
Jean Anne Clyde
Mark W. F. Condon
Linda Irwin DeVitis
Allen E. Dittmer
Karen Karp
Diane W. Kyle
Karen K. Lind
Ellen McIntyre
Victoria J. Molfese
Robert N. Ronau
Gina Schack
Bernard J. Strenecky
Charles S. Thompson
Randall L. Wells

Associate Professors
Nettye Brazil
Marvin C. Holmes
Ann E. Larson
Phyllis Metcalf-Turner
Sharon Bortner Moore
Thomas J. Simmons
J. Lea Smith
Debra L. Voltz

Assistant Professors
Debra K. Bauder
Yash Bhagwanji
Sherri Brown
Andrew Kemp
Elizabeth Kirsch
William Penrod
Elizabeth Rightmyer

Emeritus/Emerita
William H. Banks, Jr.
James Neal Blake
Jewell B. Brownstein
Hilda R. Caton
Denzil Edge
John E. Garrett
Marjorie M. Kaiser
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Jack C. Morgan
Anne O. Netick
V. Daniel Ochs
John H. Pollock
F. Randall Powers
Patricia A. Walker

Adjunct Faculty
Jean Hicks
Dennis Spetz
David M. Wicks

Instructors
Yvonne Kelley
Mary Ann Reynolds

Lecturers
Marcia Lile
Sheila Poore

Programs

The Department of Teaching and Learning offers the Master of Arts in Teaching (MAT) Degree leading to certification in Early Elementary Education, Middle School Education, Secondary Education and the Master of Education degree leading to certification in Interdisciplinary Early Childhood Education and Special Education in the areas of Learning and Behavior Disorders (LBD), Moderate and Severe Disabilities (MSD) and Visual Impairment (VI).

The Master of Education degree is designed for certified teachers to pursue advanced studies in secondary education. For certified teachers, the Department offers the Master of Education degree in Elementary, Middle School and Secondary Education, and non-degree Rank II and Rank I programs, all with optional emphases in such areas as early childhood, literacy, mathematics, social studies, science, and gifted education. Students interested in a degree program beyond the Master's may also pursue the Doctor of Philosophy Degree in Curriculum and Instruction (Ph.D.).

The Master of Arts in Teaching (MAT) degree in Secondary Education leads to certification in grades 8-12 for Earth and Space Science, English, Biology, Chemistry, Mathematics, Social Studies, or Physics. Business and Marketing Education leads to certification in grades 5-12, and Certification in French, and Spanish (grades P-12) is also available through MAT in Secondary Education.

Alternative certification programs (M.Ed. and MAT) are available for those who are teaching in area schools in special education (Learning and Behavior Disorders or Moderate and Severe Disabilities), middle grades and secondary education in English, Mathematics, Social Studies, Middle School Science, Biology, Chemistry, Physics and Earth Space Science, and grades 9-12 in French and Spanish. ALTERNATIVE CERTIFICATION PROGRAMS have a number of specific requirements including passing the content PRAXIS and having employment as requirements for admission to the program.

Refer to the Fine Arts Department listing for information about the MAT in Art Education Grades P-12. Refer to the Music Department listing for information about the MAT in Music Education Grades P-12.

The Teaching and Learning Department offers endorsements in Gifted Education and English as a Second Language (ESL). In addition, the Department offers extensions for teachers who wish to add another certification level or subject to their original certification. The department is also planning new programs of study in specialized areas: Mentoring, Multicultural Education. Check with the department or go to the web site for additional specialized programs.

Non-degree Rank II programs in Special Education and Rank I programs in a variety of certification areas provide considerable flexibility for students to pursue expanded professional careers in teaching and related areas. These programs provide considerable flexibility for students to pursue expanded professional careers in teaching and related areas.

Master of Education in Early Childhood Education (Birth to Primary Teacher Certification Program)

Major: ECE
Degree: MED
Unit: GE

Program Intent

This program is designed for students who hold *at least* a baccalaureate degree in any academic area and who are interested in receiving Birth to Primary Teacher Certification in Kentucky. The program includes a *minimum* of 36 hours of course work. However, some students admitted to the program may not have general teacher competencies and will need to take pre-requisite courses as identified by their advisor. Due to the differing backgrounds of students who enter the program completion of the Self Assessment to determine areas of strength and need will be required upon admission.

Prerequisites

1. Baccalaureate degree from an accredited college in Child Development; Early Childhood Education; Early Childhood Special Education; or related field BA/BS degree in an unrelated field is based on completion of the Self Assessment.
2. Admission to Teacher Education.
3. Admission to Graduate School., including passing scores on the GRE.
4. Completion of Self Assessment.

	Semester Hours	Total
Required Core Courses		
EDFD 600, Introduction to Research Methods and Statistics	3	
EDEM 627, Applied Child Development	3	
EDEM 632, Curriculum Approaches of Early Childhood Education	3	
EDEM 633, Curriculum and Methods in Early Childhood Special Education	3	
EDEM 637, Infant/Toddler Development and Care	3	
EDSP 684, Early Family Intervention for Pre-School Children With Disabilities	3	
EDSP 686, Programs and Services for Pre-School Children With Disabilities	3	
EDEM 604, Special Problems or Field Experience in Curriculum Development/EDSP 697 Topical Seminar	3	
EDSP 687, Practicum/Action Research (field based)*	6	30
Elective Courses (select one course in two of the three strands listed below)		
Strand I (Major focus: Typical Development)		
ART 507, Art Education for Early Primary	3	
EDEM 636, Theories of Play	3	
PSYC 661, Advanced Developmental Psychology	3	
Stand 2 (Major focus: Atypical Development)		
CMDS 564, Pre-School Language Development	3	
EDSP 683, Early Childhood/Special Education Screening	3	
HPES 618, Diverse Populations and Physical Activity	3	
Strand 3 (Major focus: Families and Programs)		
EDEM 635, Administration and Consultation: Day Care and Early Childhood Education	3	
SW 625, Children and Families		

Exit Requirements:

1. 3.0 GPA with no grade lower than "C".
2. Successful completion of EDSP 687, Practicum, Action Research
3. Successfully completed professional portfolio. 3 6

Certification Requirement:

1. Successful completion of examinations required by the Commonwealth of Kentucky.

Minimum Total **36**

Master of Education in Early Childhood Education (without teacher certification)

Major: ECE
Degree: MED
Unit: GE

Prerequisites:

1. Baccalaureate degree from an accredited college
2. Admission to Graduate School, including passing scores on the GRE.
3. Completion of IECE Self Assessment

	Semester Hours	Total
Required Courses		
Curriculum: (select 18 hours)		
EDFD 600, Introduction to Research Methods and Statistics	3	
EDEM 632, Curriculum Approaches of Early Childhood Education	3	
EDEM 633, Curriculum and Methods in Early Childhood Special Education	3	
EDEM 637, Infant/Toddler Development and Care	3	
EDSP 537, Language Learning for Exceptional Children	3	
CMDS 564, Preschool Language Intervention	3	
HPES 618 Diverse Populations in Physical Activity	3	
ART 507, Art Education for Early Primary	3	18
Development: (select 12 hours)		
EDEM 627, Applied Child Development	3	
EDEM 630, Theories of Child Development	3	
EDEM 636, Theories of Play	3	
EDSP 683, Programs and Services for Preschool Children with Disabilities	3	
EDSP 687, Practicum/Action Research (Exit Requirement)	3	
PSYC 661, Advanced Developmental Psychology	3	12
Families and Programs: (select 6 hours)		
EDEM 635, Administration and Consultation: Daycare and Early Childhood Education	3	
EDSP 684, Early Family Intervention for Preschool Children with Disabilities	3	
EDSP 686, Program and Services for Preschool Children with Disabilities	3	
SW 625, Children and Families	3	6
Minimum Total		**36**

Exit requirement:

1. Successful completion of an IECE portfolio
2. Successful completion of EDSP 687 Practicum/Action Research
3. Minimum GPA of 3.0 with no grade lower than "C".

Masters of Arts in Teaching in Early Elementary Education (P-5)

Major: ERED
Degree: MAT
Unit: GE

Admission Requirements

1. Bachelor's degree with 2.75 grade point average,
2. "C" or better in writing course, Speech, ART 407, MUS 525, HPES 274, MATH 151 and 152, one physical and one biological science course, one with a lab,
3. Admission to Teacher Education
4. Admission to the Graduate School including passing scores on the GRE.

	Semester Hours	Total
Core Courses		
EDTL 602, Exploring Teaching within the Socio-Political Context of P-12 Schools	3	
EDTL 501, P-5 General Methods	3	
ECPY 607, Learning Theory and Human Growth and Development **Note:** The above three (3) courses must be taken prior to any of the next four (4) courses	3	
EDTL 603, P-5 Language Arts Methods	3	
EDTL 604, P-5 Mathematics Methods	3	

EDTL 605, P-5 Science Methods 3
EDTL 606, Social Studies Methods.....3

Mid-Point Assessment

Completion of all education courses listed above with a minimum of 3.0 in each; PRAXIS exam has been taken; recommendation of advisor.

EDTL 615, Student Teaching (Primary) 3
EDTL 616, Student Teaching (Intermediate).....3
EDSP 545, Exceptional Child in a Regular Classroom 3

Certification Exit Assessment

"B-" or better in each student teaching placement, satisfactory certification portfolio, passing scores on PRAXIS examinations, 2.5 GPA.

EDTL 503, Developing Cross-Cultural Competence*.....3
EDTL 504, Teaching with Technology**.....2
EDTL 505, Challenging Advanced Learners** 1

Note:
* Can be taken at any point in program.
** Must be taken concurrently and during/or after first content methods course. ...

MAT Degree Exit Assessment:
1. "B-" or better in each student teaching placement,
2. Satisfactorily updated portfolio
3. Overall 3.0 GPA

Minimum Total.....36

Masters of Arts in Teaching (Single Certification Area) (5-9)

Major: MSED
Degree: MAT
Unit: GE

Admission Requirements
1. Bachelor's degree with 2.75 GPA
2. "C" or better in a writing course and a speech communication course,
3. Within nine (9) credits of content area with a 2.50 or above GPA in content area
4. Admission to Teacher Education
5 PRAXIS Content Exam has been taken
6. Admission to the Graduate School, including passing scores on the GRE

	Semester Hours	Total
Core Courses		
EDTL 501, General Methods	3	
EDTL 602, Exploring Teaching within the Socio-Political Context of P-12 Schools	3	
ECPY 607, Learning Theory and Human Growth And Development		
Note: The above three courses must be taken prior to Content Methods		
EDTL 607, Content Area Methods #1	3	
EDTL 608, Content Area Methods #2		
EDSP 545, Exceptional Child in a Regular Classroom	3	

Mid-Point Assessment
1. Completion of all education courses listed above with a minimum of 3.0 in each.
2. Recommendation of faculty advisor.

EDTL 617, Student Teaching (Content Area #1).....3
EDTL 618, Student Teaching (Content Area #2).....3

Certification Exit Assessment

"B-" or better in each student teaching placement, satisfactory certification portfolio, passing scores on PRAXIS examinations, 2.5 GPA.

EDTL 503, Developing Cross-Cultural Competence*.....3
EDTL 504, Teaching with Technology **.....2
EDTL 505, Challenging Advanced Learners** 1
EDTL 620, Reading and Writing Across the Curriculum/Adolescent Literature* 3
EDTL 621, Intensive Field Experience (methods semester only), OPTIONAL*.....

* Can be taken at any point in the program

**Recommended with student teaching; *cannot* be taken before the content area methods course

MAT Degree Exit Assessment:
B- or better in student teaching; all course work in content area completed with a minimum 2.5 GPA overall, satisfactorily updated portfolio, and a minimum overall 3.0 GPA. .....

Minimum Total.....36

Master of Arts in Teaching (Double Area Certification) (5-9)

Admission to the 5-9 MAT Program
1. Bachelor's degree with 2.75 GPA
2. "C" or better in a writing course and a speech communication course,
3. Within nine (9) credits of content areas with a 2.50 or above GPA in content areas
5. PRAXIS Content Exams have been taken
6. Admission to Teacher Education
7. Admission to the Graduate School, including passing scores on the GRE.

	Semester Hours	Total
Courses:		
EDTL 602: Exploring Teaching Within the Socio-Cultural Context of P-12 Schools	3	
ECPY 607: Learning Theory and Human Growth & Development	3	
EDTL 501: General Methods	3	
(Note: The above three courses must be taken prior to Content Methods)		
EDTL 607: Content Area Methods #1	3	
EDTL 608: Content Area Methods #2	3	
EDSP 545: Exceptional Child in the Regular Classroom	3	

Mid-Point Assessment
1. Completion of all education courses listed above with a minimum of 3.0 in each
2. Recommendation of the advisor.

EDTL 617: Student Teaching (Content Area #1).....3
EDTL 618: Student Teaching (Content Area #2).....3

Certification Exit Assessment

"B- "or better in student teaching, satisfactory certification portfolio, passing scores on PRAXIS content and PLT tests, minimum 2.5 GPA overall, all coursework in both content areas completed with a minimum 2.5 GPA.

EDTL 503: Developing Cross-Cultural Competence*.....3
EDTL 504: Teaching with Technology**.....2
EDTL 505: Challenging Advanced Learners** 1
EDTL 620: Reading and Writing Across the Curriculum/Adolescent Literature* 3
EDTL 621: PDS Intensive Field Experience (methods semester only) OPTIONAL 3

MAT Degree Exit Assessment:
"B-" or better in student teaching; all course work in content areas completed with a minimum 2.5 GPA overall, satisfactorily updated portfolio, and a minimum overall GPA of 3.0

MinimumTotal 33-36

* Can be taken at any point in the program
**Recommended with student teaching; *cannot* be taken before the Content Methods course

Master of Arts in Teaching in Secondary School (8-12)

Major: SE
Degree: MAT
Unit: GE

Admission requirements
1. Bachelor's degree with 2.75 GPA;
2. "C" or better in a writing course and a course in speech communication
3. Within 9 credits of completing content area with a 2.50 GPA or above in content area
4. Admission to Teacher Education
5. Admission to the Graduate School, including passing scores on the GRE.

	Semester Hours	Total
Core Courses		
EDTL 602, Exploring Teaching within the Socio-Political Context of P-12 Schools	3	
EDTL 501, General Methods	3	
ECPY 607, Learning Theory and Human Growth and Development		
Note: The above three courses must be taken prior to the next course listed below.		
EDSD 606, Special Methods in Secondary Education (in teaching field)	3	
Mid-Point Assessment:		
Completion of all education courses listed above with a minimum of 3.0 in each, within 9 credits of completing the content major with a minimum 2.5 GPA, PRAXIS exam has been taken, successful portfolio review and recommendation of advisor.		
EDTL 619, Student Teaching in the High School	6	
EDSP 545, Exceptional Child in the Regular Classroom	3	
Certification Exit Assessment:		
"B-" or better in student teaching, satisfactory portfolio, passing score on PRAXIS and PLT, 2.5 GPA overall.		
EDTL 503, Developing Cross-Cultural Competence*	3	
EDTL 504, Teaching with Technology**	2	
EDTL 505, Challenging Advanced Learners**	1	
EDTL 620, Reading and Writing Across the Curriculum/Adolescent Literature*	3	
Electives chosen from:		
Academic support courses*	6	

* Can be taken at any point in the program
**Can be taken concurrent with or after content methods course

MAT Degree Exit Assessment:
B- or better in student teaching, satisfactory updated portfolio, and 3.0 GPA overall.

Minimum Total **36**

Master of Education in Early Elementary Education (P-5)

Major: ERED
Degree: MED
Unit: GE

Admission to the Program:
1. Admission to the Graduate School, including passing scores on the GRE.
2. Teaching Certificate

	Semester Hours	Total
Required Professional Courses		
EDFD 600, Introduction to Research Methods and Statistics [must be taken within the first nine (9) hours]	3	
EDTL 622, Orientation and Readings (taken in the first semester)	3	6
Leadership and Change (select one of the following)		
EDTL 623, Leadership and Change	3	
EDTL 624, Curriculum Theory	3	
EDTL 625, Social and Ethical Development of Teaching	3	
EDAD 603, Administrative Leadership in a Reform Environment	3	3
Success for All Learners (select one of the following)		
EDEM 642, Literacy Learning and Cultural Differences	3	
EDTL 626, Affirming Diversity	3	
EDTL 503, Developing Cross-Cultural Competence	3	3
Area of Emphasis		
In consultation with the Graduate Advisor, twelve (12) hours of Graduate courses must be selected		12
EDTL 627, Capstone Course	3	
Elective	3	6
Exit Requirement		
Successful completion of a portfolio based on the Kentucky Teacher Standards or a Masters Thesis (EDEM/EDSD 699)		2-5
Minimum Total		**30**

Note:
1. A minimum of 18 hours in 600-level courses is required.
2. Program completion requires a 3.0 GPA. No credit is awarded for grades lower than "C".
3. Final acceptance of transfer credit (a maximum of 6 hours) is dependent upon receipt of transcript.
4. Official program must be approved by advisor and filed with the College of Education and Human Development Advising Center at the beginning of the program.
5. A maximum of 6 hours taken in non-degree status can be applied toward a master's degree, upon approval of advisor.
6. All courses must be completed within 6 years of admission to the program.

Master of Education in Teaching Middle School Education (5-9)

Major: MSED
Degree: MED
Unit: GE

Admission Requirements:
1. Admission to the Graduate School, including passing scores on the GRE.
2. Teaching Certificate

	Semester Hours	Total
Core Courses		
EDTL 622, Orientation and Readings (take in first semester of enrollment)	3	
EDFD 600, Introduction to Research Methods and Statistics	3	6
Leadership and Change: Select one of the following courses		
EDTL 623, Leadership and Change	3	
EDTL 624, Curriculum Theory	3	
EDTL 625, Social and Ethical Development of Teaching	3	
EDAD 603, Administrative Leadership in a Reform Environment	3	3
Success for all learners: Select one of the following courses		
EDTL 503, Developing Cross-Cultural Competence	3	
EDTL 626, Affirming Diversity	3	
EDEM 642, Literacy Learning and Cultural Differences	3	3
Area of Emphasis		
In consultation with a Graduate Advisor, the student must select a minimum of 12 semester hours of graduate courses.		12
EDTL 627, Capstone Course	3	
Elective	3	6
Exit Requirements		
Successful completion of a portfolio based on the Kentucky Teacher Standards or a Masters Thesis (EDEM/EDSD 699)		2-5
Minimum Total		**30**

Note:
1. Minimum of 18 hours in 600-level courses is required.
2. Program completion requires a 3.0 GPA. No credit is awarded for grades lower than "C".
3. Transfer credit must be officially accepted by the advisor (maximum of 6 hours) - final acceptance is dependent upon receipt of official transcripts.

4. Official program must be approved by advisor and filed with the College of Education and Human Development Advising Center during the first semester enrolled.
5. A maximum of 6 hours taken in non-degree status can be applied toward a master's degree, upon approval of advisor.
6. All courses must be completed within 6 years of admission to the program.

Master of Education in Secondary School Education (8-12)

Major: SE
Degree: MED
Unit: GE

Admission Requirements;
1. Admission to the Graduate School, including passing scores on the GRE
2. Teacher certification in a K-12 area

	Semester Hours	Total
Core Courses		
EDTL 622, Orientation and Readings (taken first semester of enrollment)	3	
EDFD 600, Introduction to Research Methods and Statistics	3	6
Leadership and Change: Select one of the following courses		
EDTL 623, Leadership and Change	3	
EDTL 624, Curriculum Theory	3	
EDTL 625, Social and Ethical Development of Teaching	3	
EDAD 603, Administrative Leadership in a Reform Environment	3	3
Success for All Learners: (select one of the following courses)		
EDEM 642, Literacy, Learning and Cultural Differences	3	
EDTL 626, Affirming Diversity	3	
EDTL 503, Developing Cross-Cultural Competence	3	
EDSP 697, Topical Seminar	3	3
Area of Emphasis		
In consultation with the graduate advisor, students must select twelve hours (12) of graduate course work.	12	12
EDTL 627, Capstone Course	3	
Elective	3	6
Exit Requirements		
Successful completion of a professional portfolio based on the Kentucky Teacher Standards or a Master's Thesis (EDEM/EDSD 699).	2-5	
Minimum Total		**30**

Note:
1. A minimum of 18 hours in 600-level courses is required
2. Program completion requires a 3.0 GPA. No credit is awarded for grades lower than "C".
3. Final acceptance of transfer credit (maximum of 6 hours) is dependent upon receipt of official transcript.
4. Official program must be completed by advisor and filed with the Education Advising Center during the semester of the program
5. A maximum of 6 hours taken in non-degree status can be applied toward a Masters degree.
6. All courses must be completed within 6 years of admission to the program.

Rank I Program in Elementary Education (Advanced Practitioner)

Major: ERED
Unit: GE

Prerequisites for Admission:
1. Baccalaureate degree from an accredited college.
2. Teaching Certificate in a K-12 area
3. Rank II Equivalency or a Master's degree
4. Admission to Graduate School in Non-Degree Status

	Semester Hours	Total
Requirements		
Leading Change: (select one of the following):		
EDTL 622, Orientation and Readings (taken in the first semester of enrollment)	3	
EDFD 600, Introduction to Research Methods and Statistics	3	
OR		
Leadership and Change: Select one of the following courses:		
EDTL 623, Leadership and Change	3	
EDTL 624, Curriculum Theory	3	
EDTL 625, Social and Ethical Development of Teaching	3	
EDAD 603, Administrative Leadership in a Reform Environment	3	
The Multicultural Learner (select one of the following courses):		
EDEM 642, Literacy learning and Cultural Differences	3	
EDTL 403/503, Developing Cross-Cultural Competence	3	
EDTL 626, Affirming Diversity	3	
PAS 529, Teacher Institute on African-American Issues	3	
SOC 630, Sociology of Education	3	
WMST 532, History of American Sexualities	3	
WMST 556, Feminist Theory	3	3
Area of Emphasis (courses selected with advisor approval)	12	
EDTL 627 Capstone Course	3	
Electives	9	9
Exit Requirements		
Portfolio or National Board Certification		
Minimum Total		**30**

Note:
1. Minimum of fifteen (15) hours must be completed at the University of Louisville.
2. Transfer credit must be officially accepted by the advisor. Final acceptance is dependent upon receipt of official transcripts.
3. To complete the program, students must have a minimum of 3.0 cumulative grade point average. No credit shall be accepted for carrying a grade lower than "C".

Rank I Program in Middle School Education (Advanced Practitioner)

Major: MSED
Unit: GE

Prerequisite for Admission:
1. Baccalaureate degree from an accredited college
2. Certification in a K-12 area and master's degree or Rank II equivalency
3. Admission to Graduate School in Non-Degree status

	Semester Hours	Total
Requirements		
Leading Change: (select one of the following):		
EDTL 622, Orientation and Readings (taken in the first semester of enrollment)	3	
EDFD 600, Introduction to Research Methods and Statistics	3	
OR		
Leadership and Change (select one of the following courses):		
EDTL 623, Leadership and Change	3	
EDTL 624, Curriculum Theory	3	
EDTL 625, Social and Ethical Development of Teaching	3	
EDAD 603, Administrative Leadership in a Reform Environment	3	3
The Multicultural Learner (select one of the following courses):		
EDEM 642, Literacy Learning and Cultural Differences	3	
EDTL 403/503, Developing Cross-Cultural Competence	3	
EDTL 626, Affirming Diversity	3	
PAS 529, Teacher Institute on African-American Issues	3	
SOC 630, Sociology of Education	3	
WMST 532, History of American Sexualities	3	
WMST 556, Feminist Theory	3	

Area of Emphasis (courses selected with advisor approval)	12	12
EDTL 627 Capstone Course	3	3
Electives	9	9

Exit Requirements
Portfolio or National Board Certification

Minimum Total **30**

Note:
1. Minimum of fifteen (15) hours must be completed at the University of Louisville.
2. Transfer credit must be officially accepted by the advisor. Final acceptance is dependent upon receipt of official transcripts.
3. To complete the program, students must have a minimum of 3.0 cumulative grade point average. No credit shall be accepted for carrying a grade lower than "C".

Rank I Program in Secondary Education (Advanced Practitioner)

Major: SE
Unit: GE

Prerequisite for Admission:
1. Baccalaureate degree from an accredited college
2. Certification in a K-12 area and a master's degree or Rank II equivalency
3.Admission to Graduate School in Non-Degree status

	Semester Hours	Total
Requirements		
Leading Change (select one of the following):		
EDTL 622, Orientation and Readings (taken in the first semester of enrollment)	3	
EDFD 600, Introduction to Research Methods and Statistics	3	
OR		
Leadership and Change (select one one of the following courses):		
EDTL 623, Leadership and Change	3	
EDTL 624, Curriculum Theory	3	
EDTL 625, Social and Ethical Development of Teaching	3	
EDAD 603, Administrative Lleadership in a Reform Environment	3	
The Multicultural Learner (select one of the following courses):		
EDEM 642, Literacy Learning and Cultural Differences	3	3
EDTL 403/503, Developing Cross-Cultural Competence	3	
EDTL 626, Affirming Diversity	3	
PAS 529, Teacher Institute on African-American Issues	3	
SOC 630, Sociology of Education	3	
WMST 532, History of American Sexualities	3	
WMST 556, Feminist Theory	3	3
Area of Emphasis (courses selected with advisor approval)	12	12
EDTL 627 Capstone Course	3	3
Electives	9	9

Exit Requirements
Portfolio or National Board Certification

Minimum Total **30**

Master of Education in Reading Education (with endorsement in Reading and Writing)

Major: RE
Degree: MED
Unit: GE

Admission:
1. Admission to the Graduate School, including passing scores on the GRE

	Semester Hours	Total
Required Core		
EDFD 600, Introduction to Research Methods and Statistics (must be taken within the first 9 hours)	3	
EDTL 624, Curriculum Theory	3	6
Required Literacy		
EDEM 610, Foundations of Literacy (must be taken in first nine hours)	3	
EDEM 614, Helping Struggling Readers and Writers K-12	3	
EDEM 615, Measurement and Evaluation in Literacy	3	
EDEM 642, Literacy, Learning, and Cultural Differences	3	
EDSD 617, Louisville Writing Project (must apply) OR		
EDEM 644, The Authoring Cycle (3), OR		
EDSD 647, Teaching Writing and Language in Secondary School (3)	3	15-18
Literacy Electives	3-6	

These courses will be selected from courses according to Kentucky Department of Education State Guideline (IIIB) for preparation of reading specialist.

Capstone Experience		
EDEM 618, Practicum in Literacy (exit requirement)	3	

Minimum Total **30**

Master of Education Degree in Special Education (non-teaching)

Major: SPE
Degree: MED
Unit: GE

This degree is designed for master's degree candidates whose professional goals are in areas other than teaching or whose goals are in the area of early childhood/special education, specifically comprehensive-care centers, institutions, clinics, day care centers, preschools, and community programs.

Prerequisites for Admission
1. Baccalaureate degree from an accredited college
2. Admission to Graduate School, including passing scores on the GRE.
3. EDSP 540: Introduction to Special Education

Degree Requirements
1. A minimum of 33 semester hours of graduate coursework
2. At least 18 hours of courses numbered 600 or above
3. A culminating course, either EDSP 639 or EDSP 687, to be taken at the end of the program and requiring a major paper.

	Semester Hours	Total
Core Requirements		
EDFD 600, Introduction to Research Methods and Statistics	3	
EDFD 6XX: (Historical, Sociological, or Philosophical Foundations of Education to be selected from the following: EDFD 620, 625, 629, 630, 640 or 681)	3	6
Introductory Courses		
Select three courses from the following:		
EDSP 697, Applied Behavioral Analysis	3	
EDSP 537, Language Learning for Exceptional Children	3	
EDSP 594, Problems & Methods of Teaching the Physically Handicapped/Sensory Impaired	3	
EDSP 624, Educational, Physical, Psychological and Social Aspects of Visual Impairment and Blindness	3	
EDSP 634, Introduction to Mental Retardation	3	
EDSP 640, Introduction to Learning Disabilities	3	
EDSP 670, Autism: Introduction and Understanding	3	
EDSP 674, Theories of Behavior Disorders	3	9
Advanced Courses		
Courses will be selected, with advisor's approval, to provide the necessary background to meet the candidate's professional goals		
Advanced Courses	9	9
Related Electives	6	6

Exit Requirement
EDSP 639, Research Analysis in Special Education .....3.....3

Minimum Total.....33

Certification in Learning and Behavior Disorders Rank II Equivalency and/or Master of Education in Learning and Behavior Disorders

Admission Requirements:

- Candidates for this program must have a valid regular education teaching certificate (P-5, 5-9.8-12). The courses listed below, may, with advisor's approval, be applied toward a Rank II or Rank I program.
- Teachers certified only in Music, Physical Education or Home Economics (at any level) or regular classroom teaching at the 5-8 or 7-12 level(s) must complete the EDEM 610 and EDEM 620 (pending review by the LBD Screening committee) with grades of C or better in each prior to enrolling in the Special Education Entry Courses.
- Admission to Graduate School in Non- Degree status for Rank II Equivalency; For Masters degree Admission to Graduate School, including passing scores on the GRE.

Course Requirements for RANK II Equivalency
EDEM 610, Literacy: Research and Theory.....3
EDEM 620, Mathematics Education in the Elementary School.....3.....6

Special Education Entry Courses
(To be completed as the first nine hours of EDSP course work)
EDSP 540, Introduction to Exceptional Children 3
EDSP 640, Introduction to Learning Disorders.....3
EDSP 675, Management of the Behavior Problem Child.....3.....9

The following six courses may be taken in any sequence/combination upon completion of the "Special Education Entry Courses:"
EDSP 537, Language Learning for Exceptional Children.....3
EDSP 594, Problems and Methods of Teaching the Physically Handicapped/Sensory Impaired OR
EDSP 638. Education Management of Physical Disabilities.....3
EDSP 614, Transition Services.....3
EDSP 618, Instructional Technology for Students with Special Needs 3
EDSP 681, Early Childhood Education of Exceptional Children.....3.....18

Special Education in Exit Courses for those seeking certification only:
(completed sequentially as the last nine hours of the program)
EDSP 642, Assessment Procedures for LBD 3
EDSP 643, Instructional Procedures for LBD.....3
EDSP 645, Student Teaching: Learning and Behavioral Disorders (if waived, a 3-hour course approval by advisor) .....3.....9

Minimum Total: 33-39

Additional courses required for the Master of Education in Learning and Behavior Disorders
(the M.Ed. includes all courses listed in the Rank II program above and the following requirements of six additional hours)
EDFD 600, Introduction to Research Methods and Statistics 3
EDFD 6XX, Elective from EDFD 620, 630, 640 (or course approved by advisor) .....3.....6

Minimum Total: 39-42

NOTE:

- The Certification Only Program requires a Midpoint Performance Review and successful completion of a professional portfolio.
- Students who make a grade of C or below in any Special Education course leading to teacher certification are required to repeat the course before being admitted to Student Teaching (EDSP 645).

Exit Requirement:

- A satisfactory professional portfolio is required for completion of this program.

Certification Requirement:

- Successful completion of the following PRAXIS exams are required for Learning and Behavior Disorders Teacher Certification: (1) Application of Core Principles Across Categories of Disability, (2) Teaching Students with Emotional/Behavioral Disorders.

Fifth Year (Rank II Equivalency) Program — Special Education

This program is for students who already hold a teaching certificate. Students who wish to complete a Rank II Equivalency Program in Special Education will be required to complete 33 hours.

Admission Requirements:
1. Admission to Graduate School in Non-Degree status.
2. Kentucky teacher certification.
3. Introduction or a survey course in Special Education.

Program Requirements:
1. Meet with a faculty advisor to determine an area of specialization and to prepare an official Rank II Equivalency Program sheet.
2. Complete one course (3 hours) in philosophical, historical or sociological foundations of education to be selected from EDFD 620, 625, 640 or 681.
3. Complete four courses (12 hours) selected with your advisor in your area of specialization.
4. Complete 18 hours of electives. For those who have not had courses in cultural diversity, taking electives in the area is strongly recommended.
5. Complete a minimum of 33 hours.

Exit Requirement:
1. Successful completion of a portfolio.

Certification Requirement:
1. Successful completion of the required PRAXIS examinations.

NOTE: Up to 12 hours of Professional Education Units may be counted toward this program.

Rank I Program in Special Education

This program is available for certified teachers. It is designed to improve professional competency in the area of the teaching certificate, to extend the scope of professional competency to a new certification area, or to obtain certification for professional advancement to a higher position.

Admission requirements:
1. A regular teaching certificate and a master's degree or its equivalent based upon one of the following:
   a. A master's degree leading to a standard teaching certificate.
   b. A master's degree in a professional education specialty.
   c. A master's degree in an academic subject identified in the teacher certification requirements (religion and law are not appropriate)
   d. A 32 semester hour non-degree fifth year program
   e. A 32 semester hour non-degree fifth year program which may include 12 semester hours of credit earning as continuing education credit units and/or professional staff development units.
2. Admission to the Graduate School in Non-Degree status.

Program Requirements:
1. The completion of the Rank I requires either:
   a. 30 semester hours of approved graduate level or equivalent credit in addition to the requirements for a Rank II classification OR
   b. 60 semester hours of approved graduate level credit including a master's degree.
2. The candidate shall plan the Rank I program in consultation with an advisor in the College of Education and Human Development prior to completing any coursework. A copy of this program is to be on file in the Education Advising Center.
3. At least 15 semester hours beyond Rank II must be taken at the University of Louisville. The remaining credit hours may be taken at other institutions with the approval of advisor.
4. All coursework must carry graduate credit or equivalent and no less than half shall be at the 600 level.
5. An academic average of "B" shall be required on the coursework submitted for Rank I, and no credit will accepted on courses with a grade lower than "C".

Exit Requirements:
1. Successful completion of a portfolio is required.

Master of Education in Special Education with Concentration in Learning and Behavior Disorders

(Stand-alone certification program in Learning and Behavior Disorders for persons with no teacher certification)

Major: SPE
Degree: MED
Concentration: SLBD
Unit: GE

Program Prerequisites
1. Admission to Graduate School, including passing scores on the GRE.
2. Admission to Teacher Education.
3. Employed as teacher in a Learning and Behavior Disorder classroom.

Two Options:
Option A: Jefferson County Public Schools Program.
This option leads to a Master of Education degree and teacher certification in Learning and Behavior Disorders. The program begins in the summer and is completed in five semesters, including KTIP. While in the program you teach (with a provisional certificate) in a LBD classroom for JCPS. In most cases for each "B" or higher you earn in the program, JCPS will reimburse you for a part of your tuition.

Option B: Master of Education degree or Certification only in LBD
This option can lead to certification in LBD or certification in LBD and a Master's degree. This program begins in the summer and is completed in five semesters. While in the program you teach (with a provisional certificate) in an LBD classroom in a local school district. The Teaching and Learning Department's Admissions committee must approve your school location. Students who decide to start out in the certification only program and later change to the Master of Education program may only transfer 6 hours to the master's program.

	Semester Hours	Total
Required Courses for certification		
EDSP 541, Introduction to Learning and Behavior Disorders	3	
EDSP 675, Management of the Behavior Problem Child in the Classroom	3	
EDSP 537, Language Learning for Exceptional Children	3	
EDSP 612, Curriculum Methods and Assessment I	3	
EDSP 613, Curriculum Methods and Assessment: Field Component I	3	
EDSP 618, Instructional Technology for Students With Special Needs	3	
EDSP 693, Consulting with Parents and Teachers of Exceptional Children	3	
EDSP 616, Curriculum Methods and Assessment II	3	
EDSP 617, Curriculum Methods and Assessment: Field Component II	3	
EDSP 614, Transition Programs Services for Children and Youth with Disabilities	3	
EDSP 681, Early Childhood Education of Exceptional Children	3	
EDSP 594, Problems and Methods of Teaching the Physically Handicapped and Sensory Impaired	3	
EDEM 610, Literacy Research and Theory	3	
EDEM 620, Introduction to Teaching Elementary Mathematics Education	3	42
Additional courses for Masters degree:		
EDFD 600, Introduction to Research Methods and Statistics	3	
EDFD xxx, Elective (approved by advisor)	3	

Exit Requirements:
—Develop successful professional portfolio
—Successfully complete all coursework with grade of "B" or better

Certification Requirements:
—Successful completion of the required PRAXIS examinations.

Minimum Total.....48

Master of Education in Special Education in Moderate and Severe Disabilities

Major: EDSP
Degree: MED
Concentration: MSVD
Unit: GE

Admission Requirements
1. A teaching certificate valid for regular classroom teaching in grades P-5, 5-9, or 9-12
2. Admission to Graduate School, including passing scores on the GRE.
3. Introduction or Survey Course in Special Education

NOTE: Students need access to a computer (at least 300 MHz with 64SD RAM, sound card and speakers, CD-ROM, at least 56.6 modem or higher capability) able to send and receive e-mail and access Internet, with printer.

	Semester Hours	Total
Certification Requirements		
EDSP 614, Transition Programs and Services for Youth with Disabilities	3	
EDSP 619, Orientation and Mobility for Teachers	3	
EDSP 627, Application of Assistive Technology	3	
EDSP 634, Characteristics and Needs of Students with Moderate and Severe Disabilities	3	
EDSP 635, Moderate and Severe Disabilities Practicum	4	
EDSP 636, Diagnostic/Prescriptive Teaching of Individuals with Moderate Mental Retardation	3	
EDSP 637, Transdisciplinary Collaboration for Inclusion	3	
EDSP 638, Educational Management of Physical and Multiple Disabilities	3	
EDSP 646, Augmentative Communication	3	
EDFD 600, Introduction to Research Methods and Statistics (M.Ed. only)	3	
EDSP 670, Introduction to Autism	3	
One course in the philosophical, historical, or sociological foundations to be selected from: EDFD 620, 630, or 640,	3	
Electives	9	
Minimum Total	36 Hours	

Exit requirements:
1. Maintain a 3.0 GPA with no grade lower than "B-".
2. Successful completion of a professional portfolio.

Certification Requirement:
1. Successful completion of the required Praxis examinations.

Master of Education in Special Education with concentration in Moderate and Severe Disabilities

(Stand-alone Certification Program in Moderate and Severe Disabilities for persons with no teacher certification)

Major: SPE
Degree: MED
Concentration: MSDD
Unit: GE

Admission Requirements
1. Admission to Graduate School, including passing scores on the GRE
2. Admission to Teacher Education
3. Employed as a teacher in a moderate and severe disabilities classroom

Two Options
Option A: Master of Education Degree or Certification Only
This option can lead to a Master of Education degree with certification in MSD OR certification in MSD with a master's degree. You may begin the program in any semester and the program can be completed in two years or you may take as long as six years. While in the program you teach (with an emergency certificate) in an MSD classroom in a local school district.

The Teaching and Learning Department's Admissions Committee must approve your school location. Students who decide to start out in the certification only program and later change to the Master of Education program, may only transfer in six hours to the master's degree program .

Option B: Alternative Certification with a Master of Education Degree or Certification Only
This option can lead to certification in MDS OR certification in MSD with a master's degree. As part of this program you will receive a temporary provisional teaching certificate. You must be employed as an MSD teacher. The Teaching and Learning Department's Admissions Committee must approve your location. The second year of this program you will participate in the Kentucky Teacher Internship Program (KTIP). Students who decide to start out in the certification only program and later change to the Master of Education program, may only transfer in six hours to the master's degree program.

	Semester Hours	Total
Required Courses		
EDSP 537, Language Learning for Exceptional Children	3	
EDSP 613, Curriculum Methods and Assessment: Field Component I (MSD)	3	
EDSP 614, Transition Program Services for Children and Youth With Disabilities	3	
EDSP 617, Curriculum Methods and Assessment Field:Component II (MSD)	3	
EDSP 627, Applications of Assistive Technology	3	
EDSP 634, Characteristics and Needs of Students With Severe and Moderate Disabilities	3	
EDSP 636, Diagnostic/Prescriptive Teaching of Individuals with Moderate Mental Retardation	3	
EDSP 637, Transdisciplinary Collaboration for Inclusion	3	
EDSP 638, Educational Management of Physical and Multiple Disabilities	3	
EDSP 646, Augmented Communication	3	
EDSP 644, Applied Behavior Analysis	3	33
For Rank or Masters Program		
EDFD 600, Introduction to Research Methods and Statistics	3	
EDFD 6XX, Elective approved by advisor.	3	6
Minimum Total		**39**

Exit Requirements:
1. Successful completion of a professional portfolio.
2. Successfully complete all course work with a grade of B or better.

Certification Requirement:
1. Successful completion of the required PRAXIS examinations.

Certification and/or Master of Education in Special Education with a concentration in Visual Impairment and Blindness

Major: EDSP
Degree: MED
Concentration: SVI
Unit: GE

The first twenty-seven (27) hours lead to teacher certification only in VI, but may be incorporated into a Master of Education, Rank II Equivalency, or Rank I program.

Admission Requirements
1. Admission to the Graduate School, including passing scores on the GRE.
2. A teaching certificate valid for regular classroom teaching in grades P-5, 5-9 or 8-12
3. EDSP 540 or another survey course in special education.

NOTE: Access to a computer (at least 300 MHz with 64 RAM, sound card and speakers, CD-ROM, at least 56.6 modem) able to send and receive e-mail and having access to the internet and printer is required for this program. The instructor may require access to additional equipment for some courses..

	Semester Hours	Total
Certification Requirements (30 hours)		
EDSP 624, Educational, Physical, Psychological and Social Aspects of Visual Impairment and Blindness	3	
EDSP 625, Standard English and Nemeth Braille Codes	3	
EDSP 626, Educational Procedures for Low Vision Individuals	3	
EDSP 627, Applications of Technology	3	
EDSP 628, Assessment Procedures for Visually Impaired	3	
EDSP 619, Orientation and Mobility Daily Living Skills	3	
EDSP 634, Characteristics and Needs of Students with Moderate and Severe Disabilities	3	
EDSP 629, Student Teaching Visually Impaired	3	
EDSP 636, Diagnostic/Prescriptive Teaching of Individuals with Moderate Mental Retardation	3	
EDSP 637, Transdisciplinary Collaboration for Inclusion	3	30
Additional requirements for the M.Ed. and Rank programs (consult advisor)		
EDFD 600, Introduction to Research Methods and Statistics (M.Ed. only)	3	
One course in the philosophical, historical, or sociological foundations to be selected from: EDFD 620, , 630, or 640	3	
Minimum Total		**36**

Successful completion of the appropriate Praxis specialty exams are also required for teacher certification.

Master of Education in Special Education Program in Orientation and Mobility (Leading to ACVREP Certification) –PENDING APPROVAL

NOTE: This does not lead to a Kentucky teacher certification.

Major: EDSP
Degree: pending
Concentration: pending
Unit: GE

Prerequisites
1. Admission to Graduate School, including passing scores on the GRE.
2. EDSP 540 or survey course in Special Education

Note: Access to a computer (at least 300 MHz with 64 RAM, sound card and speakers, CD-ROM, at least 56.6) able to send and receive e-mail and access Internet, with printer. Instructor may require access to additional equipment for some courses.

	Semester Hours	Total
Required Courses		
EDFD 600, Introduction to Graduate Studies	3	
EDFD 6XX, Elective (Foundation course approved by advisor)	3	
EDSP 620, Introduction to Orientation and Mobility	3	
EDSP 621, Advanced Methods in Orientation and Mobility I	3	
EDSP 622, Advanced Methods in Orientation and Mobility II	3	
EDSP 623, Orientation and Mobility for Infants, Preschool, and Multiply Impaired	3	
EDSP 624, Characteristics and Needs of Students Who are Visually Impaired or Blind	3	
EDSP 625, American Braille Codes	3	
EDSP 630, Practicum: Observation and Participation in O&M	3	
EDSP 631, Internship	3	
EDSP 634, Characteristics and Needs of Students With Severe and Moderate Disabilities	3	
Minimum Total		**39**

Exit Requirements:
1. Satisfactory professional portfolio
2. Maintain a 3.0 or above grade point average with no grade lower than a B. Participants whose academic performance falls below the required grade point average will be asked to develop a plan for improvement. Failure to meet the objectives of this plan will result in dismissal from the program
3. Pass Comprehensive Specialty Exit Exam for AVCREP certification.

Electrical and Computer Engineering (ECE)

www.ece.louisville.edu

Departmental Faculty

Chair
Darrel L. Chenoweth, Professor

Professors
Peter B. Aronhime
Samuel V. Bell, Jr., Emeritus
Kiron C. Bordoloi, Emeritus
Thomas G. Cleaver
Robert W. Cohn
Joseph D. Cole
Aly A. Farag
J. Carroll Hill, Emeritus
Barry R. Horowitz
Leo B. Jenkins, Jr., Emeritus
Donald J. Scheer, Emeritus
Jacek M. Zurada

Associate Professors
Bruce W. Alphenaar
Hollace L. Cox
John H. Lilly
Kevin M. Walsh

Assistant Professor
John F. Naber
Xiangqian Liu

Programs

The Department of Electrical and Computer Engineering, offers a program of graduate study leading to the degree of Master of Science. It also offers an integrated five-year program of cooperative education leading to the professional degree Master of Engineering (described in the University's Undergraduate Catalogue).

The Department of Electrical and Computer Engineering offers a Ph.D. degree in Electrical Engineering and, also participates in the Ph.D. program in Computer Science and Engineering, offered jointly with the Computer Engineering and Computer Science Department.

Admission Requirements for MS

Applicants for admission to the M.S. program in Electrical Engineering should have a baccalaureate degree in Electrical Engineering or in a closely related area from an accredited institution with a GPA of 3.0/4.0 or better. Students whose baccalaureate degree is not in Electrical Engineering but is in a closely related area may be required to take pre-requisite undergraduate courses in ECE. While no fixed minimum score on the Graduate Record Examination is required for admission, experience has shown that a combined score of 1170 (verbal+ quantitative) is a good indicator of success in a graduate program in electrical engineering. In addition, to be successful, applicants should have received at least a 3 on the AAW portion of the new GRE exam. For students native language is not English or who received an undergraduate degree from a non-English speaking country, the TOEFL test is required. It is highly recommended that a student should score at least 550 or higher on the paper-based test or 213 on the computer-based test. An applicant who does not meet some requirements, but whose credentials are otherwise acceptable, may be admitted on a conditional status provided his/her GPA is at least 2.75. New students will not normally be considered for financial aid until after two semesters of residency.

Advising

Upon initial enrollment, a student will be assigned a temporary advisor. Upon the completion of at least 12, but not more than 18 semester hours of graduate work, a permanent advisor, who will also serve as the student's thesis director, will be selected. During the semester following the selection of the permanent advisor, the student in consultation with the permanent advisor selects the remaining members of the thesis committee. The committee consists of the permanent advisor and at least two other graduate faculty members, one of whom must be from outside the Electrical and Computer Engineering Department.

Master of Science in Electrical Engineering

Major: EE
Degree: MS
Unit: GS

	Semesters Hours	Total
Electrical and Computer Engineering		
Graduate-only (600) level courses (in addition to thesis)	12	
Courses chosen from graduate-only (600) ***or*** graduate (500) level	3-6	15-18
Area Other Than Electrical and Computer Engineering (mathematics, physics, or computer science recommended)		
Courses chosen from graduate-only (600) ***or*** graduate (500) level	6-9	6-9
M.S. Thesis	6	6
Minimum Total		**30**

ECE Graduate Students are allowed to take only six (6) hours of Independent Study (ECE 593 or 693) and/or Projects (ECE 505 or 605). These courses may be taken in any combinations, but the total number of hours is NOT to exceed 6 (six).

Once a student has completed course and thesis hours (in EE MS), that student must register for MAST 600 (Masters Candidacy) in order to stay active in the EE MS Program. International students must do this as well in order to stay in compliance with INS requirements.

Master of Engineering and Electrical Engineering

Major: EE
Degree: MEN
Unit: SS

The mission of the electrical engineering program is to educate students in a professional school context, with the students completing a five-year program including cooperative education assignments and a major design experience.

Higher Studies Division	Total[1]
ECE 500-level Program Electives[2]	9-13
ECE 600-level Program Electives[2]	9-13
XX 500-level Technical Elective[3]	3
XX 600-level Technical Elective[3]	3
ECE 697 or ECE 698[4] (thesis or paper alternative)	0-8
Minimum Total	32[5]

[1] A total of nine semester hours of design electives is required in the Higher Studies Division. A list of approved Design Electives is available in the Department.
[2] Courses selected to meet the 500 and 600 level Program Electives require the approval of the student's thesis director. Students selecting the thesis or paper alternative must complete 9 semester hours. Students selecting the courses alternative must complete 13 semester hours.
[3] Courses selected to meet the 500 and 600 level Technical Electives require the approval of the student's thesis director.
[4] The requirement for the major design experience, as specified by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET), may be satisfied by either ECE 697 Master of Engineering Thesis in Electrical Engineering or ECE 698 Master of Engineering Paper in Electrical Engineering, or a course designated by the department as providing the major design experience.
[5] The five-year total for the M.Eng. degree is 168 semester hours.

ECE Graduate Students are allowed to take only (six) hours of Independent Study (ECE 593 or 693) and/or Projects (ECE 505 or 605). These courses may be taken in any combination, but the total number of hours is NOT to exceed 6 (six).

Once a student has completed course and thesis hours (in ECE MENG), that student must register for MENG 600 (Master of Engineering Residency) in order to stay active in the EE MENG Program. International students must do this as well in order to stay in compliance with INS requirements.

Doctor of Philosophy in Electrical Engineering

Major: EE
Degree: PhD
Unit: GS

The purpose of the following is to provide guidance to students pursuing the Electrical Engineering (EE) Doctorate. The general requirements for graduate study at the University of Louisville are contained in the Graduate Catalogue.

Admission Requirements for Ph.D.

For admission into the EE Ph.D. Program, it is highly recommended that students have an undergraduate GPA of at least 3.5 on a 4.0 scale. Also recommended are a combined score of 1200 on the verbal and quantitative portions of the GRE and at least a 3 on the AAW portion of the new GRE test. GRE subject tests are not required. For students whose native language is not English or who received an undergraduate degree from a non-English speaking country, the TOEFL test is required. A student should score at least 550 or higher on the paper-based test or 213 on the computer-based test. An applicant who does not meet some requirements, but whose credentials are otherwise acceptable, may be admitted on a conditional basis. Normally, it is expected that the student will complete a Master's degree before being admitted to the Ph.D. Program. Admission to the Ph.D. Program without a Master's degree will be permitted only in very exceptional circumstances.

Curriculum

The Ph.D. in Electrical Engineering is structured to be in strict conformity with the curricular requirements of the University of Louisville Graduate School. Completion of the program requires a minimum of 48 semester hours beyond a Master's degree in electrical engineering. The curriculum includes coursework in advanced mathematics, in-discipline technical electives, and additional program electives.

Minimum Curricular Requirements of the Program:

Requirement	Semester Hours
Mathematics	6
In-Discipline Electives	15
Program Electives	9
Dissertation	18
Total (minimum)	**48**

The mathematics requirement of six hours provides the analytical background necessary to complete the demanding program of study and research in advanced engineering topics. Approved mathematics electives are drawn from both the Computer Engineering and Computer Science Department in the Speed Scientific School and the Mathematics Department in the College of Arts and Sciences.

Candidates must take 15 graduate level semester hours of in-discipline (electrical engineering) electives and 9 graduate level semester hours of program electives chosen from other departments in the Speed Scientific School and/or from other departments in the University as determined in consultation with the dissertation advisor. Together, the in-discipline electives and program electives must support the candidate's research effort and constitute an integrated program of study. The student's advisor and the Director of Graduate Studies must approve individual course plans.

ECE Graduate Students are allowed to take only 6 (six) hours of Independent Study (ECE 593 or 693) and/or Projects (ECE 505 or 605). These courses may be taken in any combination, but the total number of hours is NOT to exceed 6 (six).

Once a student has completed course and dissertation hours (in EE Ph.D.), that student must register for DOCT 600 (Doctoral Candidacy) in order to stay active in the EE Program. International students must do this as well in order to stay in compliance with INS requirements.

Objectives

The objective of this program is to prepare the student for practice, research and/or teaching of electrical engineering at the advanced level. Upon the completion of the program, the student should be able to analyze a broad range of advanced problems in his or her field of specialization and determine the appropriate analysis technique or solution. It is expected that the student will publish his or her dissertation research in at least one refereed publication in a national or international journal.

Contact Information

For admission applications and additional information on financial assistance, contact:

Lisa Bell, EE M.S. and Ph.D. Program Secretary
llbell02@athena.louisville.edu
W.S. Speed Hall, Room 200
University of Louisville
Louisville, KY 40292

English (ENGL)

www.louisville.edu/a-s/english

Departmental Faculty

Chair
Debra Journet, Professor

Professors
Dale B. Billingsley
Thomas B. Byers
Geoffrey A. Cross
Julia C. Dietrich
Alan C. Golding, Director of Undergraduate Studies
Susan M. Griffin
Dennis R. Hall
Suzette A. Henke, Thruston B. Morton, Sr. Professor
Brian Huot, Director of Composition
Estella C. Majozo
Robert H. Miller
Sena J. Naslund
Jeffrey T. Skinner
Robert N. St. Clair
Thomas A. Van

Associate Professors
David Anderson
Beth Boehm, Vice Chair and Director of Graduate Studies
Karen Chandler
Paul F. Griner, Director of Creative Writing
Karen Hadley
Carol Mattingly, Director of Writing Center
Karen A. Mullen, Director of IESL
Mary I. Rosner
Pamela D. Takayoshi, Director of CAI Lab

Assistant Professors
Matthew Biberman
Marc Bousquet
Karen Kopelson
Susan Ryan
A. Elizabeth Willey
Bronwyn T. Williams
Joanna Wolfe

Emeritus/Emerita
Lucy M. Freibert
Harold E. Richardson
Mary Ellen Rickey

Instructor
Elaine Wise, Chair of Humanities

Information

The Department of English, in the College of Arts and Sciences, offers a Doctor of Philosophy degree in English Rhetoric and Composition and a

Master of Arts degree in English with concentrations in literature, rhetoric and composition, and creative writing. All students should obtain a copy of the English Department's Graduate Program Guidelines, available by request from the Director of Graduate Studies, English Department, University of Louisville, Louisville, Kentucky 40292, (502) 852-6801, or on-line at: www.louisville.edu/a-s/english.

Financial Support

Financial support for English graduate students includes University Fellowships (Ph.D. program only), Graduate Teaching Assistantships. All inquiries concerning financial support should be addressed to the Director of Graduate Studies, English Department, University of Louisville, Louisville, Kentucky 40292. Applications for Graduate Teaching Assistantships must include all application credentials and are due no later than February 1st. GTAships begin in the Fall semester only.

Satisfying Foreign Language Requirement

Students must satisfy the language proficiency requirement for the degree they are seeking in one of the following ways:

1. Demonstrate a reading ability, with the aid of a dictionary, during a three-hour exam administered by the Department of English. These examinations are usually given by a faculty member in the University of Louisville's Department of Classical and Modern Languages.
2. Pass, with the grade of "A", a 300-level or with the grade of "B", a 500-level, University of Louisville undergraduate course in an approved language. Courses taught in English translation will not qualify. These courses must be approved by the English Graduate Committee.

The Graduate Committee of the Department of English reserves the right to approve the language the student selects to fulfill the language proficiency requirement. Ordinarily the approved languages are: French, German, Greek, Italian, Latin, Russian and Spanish.

Admission to the Ph.D.

There are a limited number of openings in the doctoral program; therefore, admission is competitive. All doctoral degree applicants should present the following documents:

1. Complete transcripts of previous undergraduate and graduate work;
2. Three letters of recommendation about the applicant's potential for success in a doctoral program;
3. A written statement of no more than a thousand words detailing the applicant's professional goals in the field of rhetoric and composition;
4. Reports on the Graduate Record Examination General Test are required. The Subject Test in Literature in English is recommended but not required;
5. A sample of scholarly, critical writing (15-20 pages);
6. International students must also present scores of at least 600 on the TOEFL Examination (paper test) or at least 210 on the TOEFL Exam (computer test).

The English Graduate Committee reviews applications for the doctoral program in rhetoric and composition and makes all admission decisions. This committee considers complete applications to the Ph.D. program every spring. Applicants must have a Master's degree. Completed applications are due no later than February 1st for Fall admission only. All applicants must fulfill the general requirements of the Graduate School.

Doctor of Philosophy in English Rhetoric and Composition

Major: ERC
Degree: PhD
Unit: GA

Ph.D. Degree Requirements

All doctoral students are expected to complete a minimum of 51 graduate hours, distributed as follows:

	Semester Hours	Total
Required (12 hours):		
ENGL 602, Teaching College Composition	3	
ENGL 620, Research in the Composing Process	3	
ENGL 689, Directed Reading for Comprehensive Preliminary Exams	3	
ENGL 691, Contemporary Theories of Interpretation	3	12
Additional Requirements (15 hours from the following categories):		
Pedagogy and Program Administration	3	
Rhetoric	3	
Literature	9	15
Electives (12 hours):		
Chose from offerings in Pedagogy and Program Administration, Rhetoric, Linguistics, or Research Methods. One elective may be taken outside these offerings, including a course outside the department		12
Dissertation (690)	12	12
Minimum Total		**51**

Ph.D. Language Requirement

Each doctoral student must demonstrate proficiency in one foreign language and either a second foreign language, an advanced level of proficiency in the first foreign language or a research or retrieval skill (ordinarily statistics or a computer language) approved by the Graduate Director.

Time Limit and Residency for Ph.D.

All work for the Ph.D. must be completed within six years of admission to the program.

A year of full-time residency in the English doctoral program is the completion of two consecutive semesters of nine hours each.

For students holding Graduate Teaching Assistantships, a year of full-time residency in the English doctoral program is eighteen semester hours within a single academic year. Students ordinarily take nine hours of course work and teach six hours in the fall and spring terms. Summer registration for a maximum of six hours is optional.

Professional Requirements

Sometime during their tenure in the doctoral program, students must participate in a year-long supervised teaching-intern program. Intern experience may include teaching in regular freshman and advanced writing courses and tutoring in the Writing Center. Students who wish to complete their intern experience at another institution must make specific arrangements to do so with the Director of Graduate Studies in English. Such arrangements require the approval of the English Graduate Committee.

Graduate Teaching Assistants automatically fulfill the professional requirement once they have completed one successful year as a Graduate Teaching Assistant.

Comprehensive Preliminary Examination

When students have completed coursework, satisfied foreign language requirements, and received the approval of the Graduate Committee, they may sit for the Comprehensive Preliminary Examination. This is a written specialist's examination given in three 6 hour sessions on alternate days during one week.

Admission to Candidacy

Students will be admitted to candidacy for the Ph.D. after they have completed coursework, met the foreign language and professional requirements, and passed the comprehensive preliminary examination; they remain doctoral degree candidates until they complete the dissertation.

Dissertation

The doctoral dissertation requires the equivalent of a full year of graduate work and involves registration in at least 12 hours of work at the 690 level.

The Dean of the Graduate School, upon the recommendation of the Director of Graduate Studies in English, in consultation with the student, will appoint the dissertation director and reading committee. The dissertation committee will be appointed immediately after the approval, by the English Graduate Committee, of the student's dissertation prospectus. This approval must be submitted to the Graduate School at least nine months before the final dissertation oral examination.

Guidelines for writing the dissertation prospectus are included in the English Department's Graduate Program Guidelines. The dissertation will be submitted, in the form prescribed by the Graduate School, to the chairman of the department not less than six weeks before the end of the term in which the doctoral degree is to be conferred.

Final Oral Examination
The defense of the dissertation will be scheduled at least three weeks before the end of the term. The results of this examination shall be conveyed to the candidate in writing by the chairman of the department. The dissertation will then be revised according to the dissertation committee's recommendations and one copy shall be submitted to the Graduate School and one bound copy to the Department of English. Along with the dissertation, the candidate shall submit an abstract for publication in Dissertation Abstracts.

Master of Arts in English

Major: ENGL
Degree: MA
Unit: GA

Admission to the Masters Program
All Masters degree applicants should present the following documents:
1. Complete transcripts of previous undergraduate and any graduate work;
2. Two letters of recommendation, normally from persons with recent experience of applicant's academic performance;
3. Score Reports on the Graduate Record Examination General Test and the Subject Test in Literature in English;
4. A sample of critical writing (at least ten pages);
5. International students must also submit reports of the TOEFL examination.

Applicants presenting the following credentials are eligible for degree status in the English M.A. program:
1. A "B" or better average in the major from an accredited college or university;
2. A "B" or better average overall from an accredited college or university;
3. A score in the 50th percentile or better on the GRE Verbal and Advanced Literature sections;
4. Letters of recommendation that give promise of success in the program;
5. A writing sample that promises success in the program;
6. International students must also present scores of at least 600 on the TOEFL Examination (paper test) or at least 210 on the TOEFL Exam (computer test).

The Director of Graduate Studies in English reviews all applications for Masters programs and makes all admission decisions. This director considers complete applications to the Masters programs throughout the academic year. Applicants with a B.A. in fields other than English, or with fewer than 24 credit hours for an English major, may be eligible for admission to the M.A., but the Graduate Committee may require that students make up deficiencies on an individual basis.

In extraordinary circumstances, an applicant with incomplete credentials may petition the English Graduate Committee for admission to conditional status. Admission in non-degree status is at the discretion of the English Department Director of Graduate Studies as governed by Graduate School policies.

All applicants must fulfill the general requirements of the Graduate School.

Degree Requirements
The Master of Arts in English requires 30 hours of academic work at the graduate level. After fulfilling the core requirements, students may take additional work in literary studies, creative writing, or rhetoric and composition.

Required Courses – 15 hours:
1. English 601: Introduction to English Studies
2. English 691: Contemporary Theories of Interpretation
3. Two courses in Pre-1800 literature
4. One course in Post-1800 literature

Electives – 9-15 hours:
Students may take no more than three 500-level courses. Creative writing courses (including up to six hours of thesis guidance) may total no more than 15 hours.

Students may petition the Graduate Committee to take courses outside the Department of English that are relevant to their individual programs.

Foreign Language Requirement
The student must demonstrate proficiency in an approved foreign language. The foreign language requirement must be satisfied before the thesis can be defended. (See Satisfying Language Requirement)

Admission to Candidacy
Students are admitted to candidacy for the M.A. after they have completed coursework and met the foreign language requirement; they remain masters degree candidates until they complete a thesis or culminating project.

Thesis Option: 24 hours of coursework + 6 hours of thesis Guidance.
Students who choose this option will be expected to write a critical or creative thesis that is a genuine contribution to the field, shows an awareness of current academic practice, and employs methods appropriate to an extended academic project. Students must submit a prospectus and have it approved at least three months before the thesis oral examination is held. Guidelines for writing a prospectus are in the English Department's Graduate Program Guidelines.

Non-Thesis Option: 30 hours of coursework + a culminating project
Students who choose this option may, as a culminating project, select one of their strongest seminars papers or creative writing projects to revise; the purpose of the project is to give students the opportunity to revise a seminar paper with publication in mind. To this end, students will write a brief prospectus (2-3 pages) indicating the intended place of publication and types of revisions they will make to the paper for that publication's audience. A screening committee will evaluate the prospectus, and upon its approval, the student will make the necessary revisions under the guidance of a faculty advisor.

Time Limit and Residency for Masters
All work for the M.A. must be completed within six years of admission to the program. The student must complete a minimum of 24 hours at the University of Louisville.

Fine Arts (FA)

www.louisville.edu/a-s/finearts

Departmental Faculty

Chair
James Grubola, Professor

Professors
Ying Kit Chan
Robert L. Douglas, Sr.
Lida G. Gordon
Stephanie J. Maloney
Steven Skaggs
John Whitesell

Associate Professors
Thomas Buser
Linda M. Gigante
Barbara L. Hanger
Jay M. Kloner
Mark A. Priest

Assistant Professor
R. Todd Burns
Mary Carothers
Mitch Eckert
Christopher B. Fulton
Benjamin Hufbauer
Scott Massey

Emeritus/Emerita
Henry Chodkowski, Jr.
Dario A. Covi, Allen R. Hite Professor of Fine Arts
Suzanne Mitchell
William D. Morgan

Programs

The Department of Fine Arts offers a Ph.D. in art history and a master's degree in fine arts with tracks in art history, studio art, and critical and curatorial studies. Specific courses also serve the needs of advanced undergraduate and graduate students in other fields who are qualified for the specific study.

Students who have a bachelor's degree with a "B" average or better from a duly accredited school are eligible for admission to the Graduate School. They will be admitted as full-time students to the departmental master's program upon demonstration of qualifications appropriate to each program.

The master's degree requires 31 semester hours.

Ph.D. in Art History

Major: ARTH
Degree: PHD
Unit: GA

Coursework required for the Ph.D. in Art History includes completion of the M.A. plus 15 hours ARTH 500-level electives, 15 hours ART 600-level electives, 6 hours of Dissertation Research, 6 hours of graduate level electives outside art history program, for a total of 72 hours. Additional 600-level courses may be substituted for 500-level.

Up to a total of 15 hours of 500 or 600 level electives outside Art History may be substituted for Art History electives of similar level provided they are appropriate and are approved in advance by the student's advisor.

Each student must complete at least one graduate-level course in each of the following areas: Ancient, Medieval, Renaissance, Baroque, and Modern. Students who have not completed that distribution as part of the M.A. will have to do so before completing the Ph.D.

The Art History Placement Essays must be taken during the first semester in the Art History Program. It is normally given in the first week of September and the first week of February.

Two languages, either French or German and one additional language appropriate to the student's course of study, are required. This requirement may be fulfilled by demonstrating reading competence at the intermediate level in one of three ways: placement exam; completion of undergraduate coursework at the intermediate level with a grade of "B" or better; or passing a departmentally-administered language exam. The requirement in one language must be fulfilled in the first year.

Through course work and independent study, each student must prepare her/himself to pass written comprehensive exams in two areas (majors, minor) before admission to candidacy. Language requirements must have been met and most course work completed before a student may take this exam.

After being admitted to candidacy, the student must write a dissertation and defend it in a final oral examination.

Master of Arts in Fine Arts

Major: Art
Degree: MA
Unit: GA

Students may receive a Master of Arts degree in the Department of Fine Arts by completing thirty-one (31) hours of graduate study divided between work in the Core Curriculum and work in one of the following three tracks of study: Art History, Critical and Curatorial Studies or Studio Art.

	Semester Hours	Total
Master of Fine Arts Core Curriculum		
ARTH 541, Modern Perspectives in the Visual Arts	3	
Art History Elective (500 or 600 level)	3	
Elective - Outside the Department of Fine Arts (with approval of advisor)	3	
Fine Arts Electice (outside their Fine Arts Track)	3	
Thesis Guidance	3	
Graduate Seminar	1	
Total		**16**

With a Concentration in Art History

Applicants for admission to the Master's Program in this track are expected to demonstrate competence in the history of art, equivalent to an undergraduate major.

The Art History Placements Essays must be taken within the first year of the program. It is normally given in the first week of September and the first week of February.

The requirements of one foreign language must be satisfied during the first year in the Art History Concentration. Language requirements may be fulfilled by completing the intermediate level (usually 12 hours) of a language with a grade of "B" or better or by taking a departmentally administered language exam. Language exams are scheduled for the first Friday in October and March.

Each student must complete a core curriculum (16 hours) consisting of Art History 541 ("Modern Perspective in the Visual Arts"), six (6) hours of 500 or 600-level electives in the Department of Fine Arts, three (3) hours of 500 or 600-level electives outside the Department, three (3) hours of thesis guidance, and a one (1) hour graduate seminar.

The concentration in Art History will require fifteen (15) hours of 500 or 600-level courses with a minimum of one course in each of the following areas: Ancient or Medieval; Renaissance or Baroque; and Modern, concluding with a written thesis. The thesis consists of a research paper demonstrating critical knowledge of relevant sources, skill in analysis and interpretation, and ability to present the results in a well-organized and intelligent manner. The thesis must be defended in an oral examination. A reading knowledge of one foreign language is required (see above).

With a Concentration in Critical and Curatorial Studies

Applicants for admission to the Master's Program in this track are expected to demonstrate competence in the history of art, studio art or arts management equivalent to an undergraduate major.

Each student must complete a core curriculum (16 hours) consisting of Art History 541 ("Modern Perspectives in the Visual Arts"), six (6) hours of 500 or 600-level electives in the Department of Fine Arts, three (3) hours of 500 or 600-level electives outside the Department, three (3) hours of thesis guidance, and a one (1) hour graduate seminar.

The concentration in Critical and Curatorial Studies will require fifteen (15) hours of coursework consisting of Approaches to Critical Inquiry, Museum Methods I and II, Arts Management, and Internship, concluding with a written thesis, exhibition or a curatorial project. The exhibition or curatorial project may be produced in cooperation with the University's Galleries, the J.B. Speed Art Museum or in another museum or gallery authorized by the Department, and should take place during the candidate's last year of study. To fulfill this requirement through an exhibition or project, the candidate must submit a prefatory statement written by the candidate, and documentation of the exhibit or project. This documentation may include an exhibition catalog and/or photographic reproductions of the exhibition or project in one of the following forms: black and white photographs, color photographs, or slides placed in plastic sleeves to be bound into the thesis. The statement will be submitted in conformity with the regulations governing the form and presentation of the written master's thesis.

	Semeter Hours	Total
Concentration Courses		
ARTH 542 Approaches to Critical Injury	3	
Museum Methods I & II	6	
Arts Management	3	
ARTH 591 Internship	3	
Written Thesis with Exhibition or Curatorial Project		
Total		**15**

With a Concentration in Studio Art

Applicants for admission to the Master's Program in this track are expected to complete training equivalent to an undergraduate major. To demonstrate his/her ability to pursue study at the graduate level, a student must submit examples of his/her work to the department by November 1 for spring semester admission and April 1 for fall semester admission. Contact the department for complete portfolio requirements.

Each student must complete a core curriculum (16 hours) consisting of Art History 541 ("Modern Perspectives in the Visual Arts"), six (6) hours of 500 or 600-level electives in the Department of Fine Arts, three (3) hours of 500 or 600-level electives outside the department, three (3) hours of thesis guidance, and a one (1) hour graduate seminar.

The concentration in Studio Arts will consist of fifteen (15) hours of 500 or 600-level courses taken in 2-D Studios, and/or 3-D Studios concluding with a thesis exhibition (listed below). The thesis exhibition, which must be authorized by the Department, should take place during the candidate's last semester of study. To accompany this exhibition, the candidate must submit a catalog containing a prefatory statement written by the candidate, a properly documented list of works in the exhibition, photographic reproductions of the work in one of the following forms: black and white photographs, color photographs, or slides placed in plastic sleeves to be bound into the thesis. The catalog will be submitted in conformity with the regulations governing the form and presentation of the written master's thesis.

Core Area

Studio courses (500 or 600 level) with courses to be selected in consultation with thesis advisor Thesis Exhibition with Thesis Statement. Total of 15 hours.

Total Program = 31 hours

Master of Arts in Teaching in Art Education (certification in grades P-12)

Major: EDAR
Degree: MAT
Unit: GE

Admission to the P-12 MAT Program: Bachelors degree with overall GPA of 2.75or "C" or better in a writing course, speech, within nine (9) credits of completing the content major with a minimum GPA of 2.5, GRE score of at least 800 (combined verbal and quantitative), and admission to the Graduate School.

	Semester Hours	Total
P-12 Master of Arts Teaching degree in Art		
EDTL 602, Exploring Teaching within the Socio-Cultural Context of P-12 Schools	3	
ECPY 607, Learning Theory and Human Growth and Development **Note:** The above two courses must be taken prior or concurrently with the next two courses.	3	
ART 508, Art Education Methods/Research I	3	
ART 518, Art Education Methods/Research II	3	

Midpoint Assessment: Completion of all education courses listed above with a minimum of 3.0 in each, within nine credits (9) of completing the content major with a minimum 2.5 GPA, PRAXIS exam has been taken, recommendation of advisor.

Six hours chosen from among:		
EDTL 619, Student Teaching the High School	6	
EDSP 545, Exceptional Child in a Regular Classroom	3	

Certification Exit Assessment: "B-" or better in Student Teaching, satisfactory portfolio, passing score on PRAXIS, 2.5 GPA overall and 2.5 GPA in content area.

EDTL 503, Developing Cross-Cultural Competence*	3	
ART 500, Level Academic Support Course	6	
Elective: Choose six (6) credits from:		
EDTL 504, Teaching with Technology**	2	
EDTL 505, Challenging Advanced Learners**	1	
EDTL 620, Reading and Writing Across the Curriculum/Adolescent Literature*	3	
ART 500, Level Academic Support Course	3	

* Can be taken at any point in the program
**Can be taken concurrent with or after Content Methods Course

Minimum Total.....36

MAT Degree Exit Assessment "B-" or better in each Student Teaching Placement, Certification Exit Requirements, plus a satisfactorily updated portfolio, and a 3.0 GPA overall.

Geography & Geosciences (GEOG/GEOS)

www.louisville.edu/a/s/geog

Graduate Program Faculty

Chair
Clara A. Leuthart, Associate Professor

Professors
Anthony O. Clarke
James E. Conkin
A.William Dakan
Jafar Hadizadeh
David A. Howarth
George A. Lager
Darren M. Scott

The Department of Geography and Geosciences offers neither a graduate degree program nor a graduate certificate program. However, courses offered by the department may be applied toward graduate degrees in other areas. Students must obtain their program advisor's permission before enrolling in these courses. Students who are interested in courses in Geography should contact the Chair of the department.

The M.A. in Sociology program offers a concentration in geography. For more information contact A. William Dakan.

History (HIST)

www.louisville.edu/a-s/history

Departmental Faculty

Chair
Thomas C. Mackey, Associate Professor

Professors
Bruce F. Adams
Ann T. Allen
Mark E. Blum
John T. Cumbler, Jr.
Benjamin T. Harrison
Robert B. Kebric
Justin A. McCarthy
Andrea L. McElderry
Lee Shai Weissbach

Associate Professors
Blake R. Beattie
Tracy E. K'Meyer
Thomas C. Mackey
John E. McLeod
Bruce M. Tyler
Jonathan R. Ziskind

Assistant Professors
Wayne E. Lee, Vice Chair and Director of Graduate Studies

Program

The Department of History, in the College of Arts and Sciences, offers programs leading to the degree of Master of Arts.

Admission

The department shall admit unconditionally, by act of the Director of Graduate Studies, those students who have a 3.00 on a 4.00 point scale overall grade point average and who meet the other requirements for admission set by the Department. Those students whose overall average is between 2.86 and 2.99 on a 4.00 point scale, and who meet the other requirements for admission, will be accepted conditionally by act of the Director. Those whose average is between 2.50 and 2.85 on a 4.00 point scale, and who meet the other requirements for admission, may be admitted conditionally at the discretion of the Departmental Graduate Committee after an inspection of the student's total record. Applicants whose records are based on a 3.00 grade scale will be judged in equivalency to a 4.00 point grade scale.

The Department requires the aptitude section of the Graduate Record Examination (GRE). A combined score of 1000 on the Verbal and Quantitative sections is expected for unconditional admission.

No student will be admitted to degree status until all materials required for his or her file have been submitted, and the student meets all other requirements.

The Department may admit students to pursue course work with non-degree status by act of the Director of Graduate Studies.

The Department will admit otherwise qualified students who have a minimum of 21 undergraduate hours in history. Students with fewer than 21 undergraduate hours in history will be required to take post-baccalaureate undergraduate hours sufficient to raise the total number of undergraduate hours in history to 21. The Director of Graduate Studies will determine which of these courses, if any, may apply to the approved graduate program, but in no case may more than six credit hours apply.

Applicants are also required to submit a statement, not to exceed 500 words, addressing the question: "What do you understand as the historian's task and what is your purpose for pursuing an MA in history?"

For the most up-to-date information regarding admission to the Graduate School and other information about the Graduate School in general, please refer to the graduate catalogue or the Graduate School homepage.

Course Load

A normal graduate load in this department will be 9 hours or three courses, and in no case will more than 12 hours or four courses be taken during any one regular semester. The course-load decision will be made by the Director.

M.A. candidates have the option of taking up to 6 hours of course work outside of the Department. Those hours must be directly relevant to the student's academic program, and can be taken only with the consent of the Director of Graduate Studies.

In a student's approved graduate program, no Pass-Fail courses will apply, unless the History Department itself creates Graduate Pass-Fail courses.

Quality of Work

Good standing requires a graduate GPA of 3.00.

Student Appeals

Student appeals concerning departmental guidelines will be submitted to the Director, who will forward the appeal to the Department's Graduate Committee for decision.

Master of Arts in History

Major: HIST
Degree: MA
Unit: GA

Each candidate for the M.A. in History will define areas of major and secondary emphasis in consultation with the Director of Graduate Studies. This program of studies normally must be approved by the Graduate Director before the student enrolls for the second semester of work. Areas of emphasis are:

- Greater Atlantic World, including Europe, Africa, and the Americas.
- Greater Mediterranean Basin, including Europe, Africa, and the Middle East.
- Asia-Pacific Rim, including South Asia, East Asia, Pacific, and the Americas.
- Western Pacific and Indian Ocean World, including East Asia, South Asia, Africa, and the Middle East.

Candidates for the Master of Arts in History, including those in the accelerated BA/MA program, may choose from among three program options as described below.

Option 1: Completion of 30 credit hours and a thesis.

Course Work – 24 hours. 15-18 of these hours must be in the major area of emphasis; 6-9 hours in secondary area of emphasis; electives, 0-6 hours. At least 12 hours of the 24 hours of course work must be in 600 level courses with at least 9 of these hours in the major area of emphasis.

Thesis preparation – 6 hours. The thesis must be in the major area of emphasis and must be defended in an oral examination before a committee consisting of the thesis director (chair of committee) and at least two other persons of professorial rank, one of whom must be from a different department, and all three must be members of the graduate faculty. The committee must be approved by the Graduate Director of the History Department and by the Graduate School. If the members of the thesis committee accept the candidate's thesis and if the student fulfilled all other requirements, the student will be certified for the Master of Arts degree in history.

Option 2: Completion of 33 credit hours of course work and two research papers, each 25-35 pages.

Course Work: 18-21 hours must be in the major area of emphasis; 9-12 in the secondary area of emphasis; electives, 0-6. At least 18 hours must be at the 600-level with at least 15 of these hours in the major area of emphasis.

Research papers: One paper will normally be in the major area of emphasis, and one in the minor area. A committee will evaluate the written work and conduct an oral examination on the two papers and the relevant areas of history. The committee will consist of three faculty members, normally the two faculty members who directed the research papers and a third member who will normally be a member of the History Department faculty, but may be from outside the department. The committee must be approved by the Graduate Director. If the members of the committee accept the candidate's work and if the student has fulfilled all other requirements, the student will be certified for the Master of Arts degree in history.

Option 3: The student must complete 33 credit hours of course work and two written examinations.

Course Work: 18-21 hours must be in the major area of emphasis, 9-12 in the secondary area of emphasis; electives 0-6. At least 18 hours must be at the 600-level with at least 15 of these hours in the major area of emphasis.

Examinations: One examination will be in the major area of emphasis, and one in the minor area. A committee of at least three members will evaluate the examinations and conduct an oral examination on their content and the relevant areas of history. The committee will consist of three faculty members, normally the two faculty members who administered the examinations and a third member who will normally be a member of the History Department faculty, but may be from outside the department. The committee must be approved by the Graduate Director. If the members of the committee accept the candidate's work and if the student has fulfilled all other requirements, the student will be certified for the Master of Arts degree in history.

For M.A.-level work in certain areas knowledge of one or more foreign languages or knowledge of other specialized research tools may be required.

Students will be allowed to transfer up to 6 hours from outside the University, and with the permission of the Graduate Director, take up to six hours of relevant course work outside the department, within the University.

Accelerated BA/MA

This program allows history majors to take up to 6 hours of graduate course work which will meet undergraduate degree requirements and be counted toward the hours required for the MA. Upon completion of the

undergraduate degree, students will begin the graduate program and must complete the appropriate number of hours remaining and other requirements for the degree option they select before being certified for the Master of Arts degree in history.

To be considered for admission to the accelerated program, students must
(1) have a minimum overall grade point average (GPA) of 3.0 and a history GPA of 3.35. In addition, students must retain a 3.35 GPA (have a B+ in graduate history courses) in history during their senior year to remain in the program.
(2) Complete an application for admission to the graduate program (including Graduate Records scores and two recommendations) no later than the end of the junior year.

Humanities (HUM)

www.louisville.edu/a-s/humanities

Departmental Faculty

All members of the graduate faculties of the Departments of English, Fine Arts, Classical and Modern Languages, Linguistics, Music History, Philosophy, Theatre Arts, and of the Division of Humanities, as well as occupants of the Bingham Chair in Humanities and the Justus Bier Distinguished Professor of Humanities. Graduate faculty from the departments of History, Pan-African Studies, and Women's Studies also participate.

Chair
Elaine O. Wise, Assistant Professor, Department of English

Professors
Howard B. Altman, Classical and Modern Languages: Linguistics
Thomas B. Byers, English, Director: Commonwealth Center for Humanities and Society
John H. Flodstrom, Emeritus, Philosophy
Melvin E. Greer, Emeritus, Philosophy
Riffat Hassan, Humanities: Religious Studies
Thomas S. Maloney, Philosophy
Dismas A. Masolo, Philosophy, Justus Bier Distinguished Professor of Humanities
Karen Mullen, English: Linguistics
Frank Nuessel, Classical and Modern Languages: Linguistics
Robert St. Clair, English: Linguistics
Arthur J. Slavin, Justus Bier Distinguished Professor of Humanities, Emeritus
Osborne P. Wiggins, Jr., Philosophy

Associate Professor
Annette Allen, Humanities, Director of Humanities Ph.D.
Charles F. Breslin, Philosophy, Emeritus
Robert H. Kimball, Philosophy, Linguistics
Nancy Potter, Philosophy
Mary Ann Stenger, Humanities: Religious Studies

Assistant Professor
Avery Kolors, Philosophy

Programs

The Humanities Division of the College of Arts and Sciences offers three concentrations leading to the degree of Master of Arts. Procedures and standards of admission to the degree program are given in the General Information section of this catalogue.

For the traditional concentration, the applicant will be expected to have an undergraduate background of some depth in at least two of the following disciplines: art history, literature, classical and modern languages, linguistics, music history, philosophy, theatre arts, and religious studies, or in one of the following interdisciplinary cultural studies periods: ancient, medieval-renaissance, early modern (17th and 18th centuries) or modern. Those who do not meet this requirement will be required to take undergraduate courses before admission is granted.

For the concentration in Humanities and Civic Leadership, the applicant will be expected to have worked in a profession for five years (unless the applicant has completed another graduate or professional degree program or is enrolled in the Joint JD/MAHUM program). Scores from the GMAT, LSAT, MCAT, or other professional examination may be substituted for the GRE General Test. A 1000-word Statement of Intent must be submitted to the Humanities Graduate Advisor before the applicant will be considered for admission.

For the concentration in Linguistics and the Humanities, which is a non-thesis option with a focus on the study of language, the applicant should have an undergraduate background which includes courses in linguistics. The second discipline or area of emphasis will be approved by the Graduate Advisor.

Master of Arts in Humanities

Major: HUM
Degree: MA
Unit: GA

I. Traditional M.A. concentration (thesis option or non-thesis option):

1. A total minimum of 30 semester hours as follows:
   12-15 semester hours in one of the following areas:
   - art history, literature, classical and modern languages, music history, philosophy, theatre arts, religious studies, ancient studies, medieval-renaissance studies, early modern (17th and 18th century) studies, or modern studies;
   - 3 semester hours in methodology (HUM 609 or 610 or appropriate substitute approved by the chair);
   - 6 semester hours in Thesis Guidance (HUM 645 A-F) or three semester hours in directed study project;
   - 9-12 semester hours in second discipline/area.
2. A minimum of 15 semester hours must be in courses at the 600 level, excluding thesis hours or directed study hours.
3. Students who do not have one of the Humanities 591-596 sequence in their undergraduate record will be required to take one of these as part of their electives.
4. Pass a competency exam in French, German, or an approved alternate foreign language.
5. An oral examination covering the content of the thesis.

Traditional MA with Thesis	**Traditional MA: Non Thesis**
(minimum of 30 hours)	(minimum of 30 hours)
12-15 hours in 1 discipline/area	12-15 hours in 1 discipline/area
9-12 hours in 2nd discipline/area	9-12 hours in 2nd discipline/area
3 hours in Methods	3 hours in Methods
6 hours in Thesis	3 hours in Directed Study project (interdisciplinary research project that combines 2 disciplines/area)
Foreign Language Competency**	Foreign Language Competency**
Foreign Language Competency**	Foreign Language Competency**
Example:	**Example**:
12 hours in Philosophy	15 hours in Philosophy
9 hours in Art History	9 hours in Literature
3 hours of HUM 510/610	3 hours of HUM 609
6 hours of thesis	3 hours of Directed Study project
Foreign Language Competency**	Foreign Language Competency**

2. Concentration in Humanities and Civic Leadership: non-thesis*
   (minimum of 30 hours):
   1. 12 hours in one discipline/area:
   2. 3 hours in Methods (609 or 610)
   3. 3 hours in second discipline/area;
   4. 6 hours in Internship (650);
   5. 3 hours Direct Study Project (655)
   6. 3 hours in Interdisciplinary Seminar in Humanities and Civic Leadership (636)

   No foreign language requirement.
   Demonstrated writing proficiency is required for admission.

*This program is also offered for a dual degree with the Law School (JD/MAHUM).

3. Concentration in Linguistics and the Humanities: non-thesis
   (minimum of 30 hours)
   1. 15 credit hours of Linguistic coursework, three hours in each of the 5 areas:
      —Introduction to Linguistics: Required
      —LING 518 Foundations of Language

Language and Culture: Choose 1
—ENG 523 History of the English Language
—LING 621 Sociolinguistics
—LING 623 Culture as the Basis of Foreign Language Teaching
—LING 630 Language and Culture

Language and Structure
—ENG 522 Structure of Modern American English
—LING 535 Applied Linguistics for English Teachers
—LING 603 Syntax
—LING 606 Historical and Comparative Linguistics
—LING 610 Phonetics and Phonology

Language and Cognition: Choose 1
—LING 524 Psycholinguistics
—LING 622 Psychology of Second Language Learning and Teaching
—LING 624 Language and Cognition
—LING 641 Recent Philosophy of Language

Any 500-600 level elective course in Linguistics, not already chosen: Choose 1
—LING 521 Teaching Techniques in Foreign Language
—LING 590 Special Topics in Linguistics
—LING 600 Independent Study
—LING 605 Summer Workshop for Foreign Language Teachers
—LING 620 Special Topics in Foreign Language Education
—LING 625 The Teaching of English as a Second Language
—LING 690 Seminar in Linguistics

2. 9 credit hours in a second humanities discipline or area 9
3. 3 credit hours in methodology: Humanities 609 or 610.....3
4. 3 credit hours in Directed Study Project: Humanities 655.....3
5. Foreign Language Competency
6. An Oral Examination will cover the contents of the Directed Study Project

A minimum of 15 semester hours must be in courses at the 600 level, excluding HUM 655, The Directed Study Project.

For students who are pursuing an ESL (English as a Second Language) Endorsement, the above MA Concentration allows ESL endorsement coursework to count toward the degree. For more information on the ESL endorsement requirements, see www.louisville.edu/a-s/iesl/Endorsement

Accelerated BA/MA in Humanities

Major: HUM
Degree: MA
Unit: GA

Students who wish to pursue an accelerated Masters degree, will be allowed to apply to the Baccalaureate degree up to 9 hours of coursework taken for graduate credit. Twenty-one (21) hours of graduate coursework in addition will constitute the minimum number of credit hours for obtaining the MA. The guidelines for the Accelerated (BA/MA in Humanities) are as follows:

1. Students must apply no later than the end of the junior year for admission to the accelerated program.
2. A minimum overall grade point average and major grade point average of 3.35 will be required for admission to and for retention in the program.
3. Student must complete the GRE and fill out the Humanities Division application for the accelerated BA/MA in Humanities.
4. Student may take a maximum of 9 hours for graduate credit, which will also apply to the requirements for the baccalaureate degree in Humanities.
5. The accelerated BA/MA in Humanities will be offered for the Traditional Concentration and for the Linguistics Concentration, but not for the Concentration in Humanities and Civic Leadership.
6. Students who enroll in the accelerated BA/MA in Humanities may elect the thesis option or non-thesis option, which ever is appropriate to the concentration and course of study.
7. All students in the program will take either HUM 609 or HUM 610 to fulfill the "theory requirement".
8. All of the requirements remain the same, including the foreign language requirement.

Humanities (HUM) Ph.D.

The Humanities Division offers a Doctorate of Philosophy degree in the Humanities. Designed to provide a broad program of study to qualified students, this doctoral program combines seminars in interdisciplinary humanities with offerings from participating departments and programs: Art, Classical and Modern Languages, English Language and Literature, History, Linguistics, Music History, Philosophy, Religious Studies, Theatre Arts, Pan-African Studies, and Women's Studies. The Humanities Ph.D. provides learning, research, and service opportunities in two interdisciplinary areas of concentration: 1) Aesthetics and Creativity; 2) Studies in Culture. The goal of the program is to preserve, explore, and enhance humankind's cultural legacy through the study of formal expressions, creative artifacts, and philosophical and religious constructs.

Information

All students should obtain a copy of Humanities Program's Guidelines available by request from the Director of Humanities Doctoral Program, Humanities Program, University of Louisville, Louisville KY 40292. Information on Graduate Teaching Assistantships is also available upon request. All inquiries should be addressed to the Director, Humanities Doctoral Program.

Admission to the Ph.D.

1. Completion of a Master's degree or an equivalent number of graduate credits (30) prior to admission
2. Complete transcripts of undergraduate and graduate work
3. Reports on the Graduate Record Examination (GRE) are required.
4. Submission of three letters of recommendation about the applicant's potential success in a doctoral program.
5. A written statement of intent of no more than a thousand words detailing the applicant's professional goals.

All applicants must fulfill the general requirements of the Graduate School

Doctor of Philosophy in Humanities

Major: HUM
Degree: Ph.D.
Unit: GA

Ph.D. Course Requirements

All doctoral students are expected to complete a minimum of 48 hours beyond the Masters degree distributed as follows.

CORE REQUIRED COURSES.....Total credit hours: 21

Chronological Sequence: 3 .....Credit Hours: 6

*HUM 661: Humanistic Studies I 3

*HUM 662: Humanistic Studies II 3

Theory and Methods: .....Credit Hours: 3

*HUM 609: Interdisciplinary Theory:
Arts and Humanities 3

Interdisciplinary Topics Seminars:.....Credit Hours: 6

*HUM 671: Interdisciplinary Seminar.....3

*HUM 672: Interdisciplinary Seminar.....3

Internships:.....Credit Hours: 3

*HUM 690: Doctoral Internship

Capstone Course: .....Credit Hours: 3

*HUM 699: Interdisciplinary Symposium

AREAS OF CONCENTRATIONS.....Total credit hours: 18

1. Aesthetics and Creativity
   Hum. 681 Topics in Aesthetics and Creativity
2. Studies in Culture
   Hum. 682 Topics in Studies in Culture

Graduate courses housed within departments in the Humanities Division meet the area concentration requirements in the primary and secondary areas of concentration:

(1) Aesthetics and Creativity; and (2) Studies in Culture.

A student in consultation with his/her Supervisory Committee will select courses appropriate to his/her course of study. No more than 12 hours of the 18 hours required in primary and secondary areas of concentration may be taken in one discipline.

Primary Area .....Credit hours: 12

(Creativity and Aesthetics OR Studies in Culture)

Secondary Area .....Credit hours: 6

(Creativity and Aesthetics OR Studies in Culture)

Dissertation Research:.....Credit hours: 9

*HUM 700

Complete program credit hours: 48

Students may supplement the minimum of 48 hours with additional coursework in a specific discipline or additional hours for the dissertation.

Ph.D. Language Requirement

Each doctoral student must demonstrate basic proficiency in one classical or modern language in addition to English, and either basic proficiency in a second classical or modern language in addition to English, or an advanced level of proficiency in the first, that decision to be made by the individual student's Ph.D. advisory committee. Doctoral students may not take comprehensive exams until basic language proficiency in two foreign languages or advanced proficiency in one foreign language has been satisfied.

Students whose native language is other than English will be required to demonstrate basic proficiency in one classical or modern language in addition to the native language (advanced proficiency to be verified by submitted credentials) and English (proficiency to be verified by selected ETS examinations). Students may demonstrate basic language proficiency in two languages in addition to English in the following ways:

1. Satisfaction of requirement in a graduate program at another institution. In order to qualify, the student must submit credentials (such as a transcript) which verify that proficiency in one or two foreign languages has been attained. The Humanities Ph.D. Admissions Committee will decide cases in which a question arises concerning submitted credentials.
2. Humanities Division Foreign Language Proficiency Examination. Students must demonstrate a reading ability of a foreign language by successfully completing a translation, with the aid of a dictionary, during a proficiency examination period scheduled and administered by the Division of Humanities. Language proficiency examinations are normally administered three times a year on designated dates in summer, fall, and spring, but may be administered by appointment, at the discretion of the Director of the Ph.D. program. A non-refundable grader's fee will be charged.
3. Superior Work in a 300 Level Undergraduate Course taught at the University of Louisville. The student must pass, with the grade of A, a 300 level course in a language offered by the University and approved by the student's Ph.D. advisory committee. Courses taught in translation do not qualify.

Students may demonstrate advanced language proficiency in one language in addition to English in the following ways:

1. Humanities Division Foreign Language Proficiency Examination. A student may demonstrate advanced proficiency in a single foreign language by successfully completing a translation, during a proficiency examination period scheduled and administered by the Division of Humanities. Advanced language proficiency examinations will be administered as needed. A Graduate Faculty member with facility in the language will certify this advanced ability.
2. Superior Work in a 500 or 600 Level Graduate Course taught at the University of Louisville. The student must pass, with the grade of A, a 500 or 600 level course in a foreign language offered by the University and approved by the student's Ph.D. advisory committee. Courses taught in translation do not qualify.

Professional Requirement

During the doctorate program, all students participate in a supervised internship in teaching or interning in an Arts or Humanities agency or foundation. Graduate Teaching Assistants fulfill this requirement once they have completed a semester of teaching.

Comprehensive Preliminary Examinations

After students have completed all course work, the language requirements, and received permission of the Graduate Committee, students proceed to comprehensive examinations, a sequence consisting of three written examinations, approximately 3-4 hours each, in areas of concentration and one oral examination. The examining committee, composed of the three members of the student's Supervisory Committee, oversees preparation of the three examination fields within guidelines established by the program. At least seven days before the scheduled examinations, faculty members submit examination questions to the Humanities Office. The maximum time allowed for student completion of the sequence of three examinations is twenty working days.

Dissertation: (9 semester hours minimum)

Students may submit a preliminary dissertation proposal for consideration early in candidacy. The dissertation is to be submitted in final, completed form to the head of the division at least thirty days before the end of the term in which the candidate expects to be graduated, and the candidate is not eligible until the dissertation has been approved. The dissertation shall be read by the reading committee chaired by the major professor, and appointed by the Dean of the Graduate School upon the recommendation of the director of the Humanities Ph.D. program. This committee shall consist of not fewer than three members of the Graduate Faculty and must include one representative of an allied department. The dissertation must be approved by the committee and the director of the graduate program. Once coursework, including dissertation research credit, is completed, students must remain continuously enrolled in 'candidacy' status (summer, fall, spring) until the dissertation is defended and the degree is awarded.

The Ph.D. program of study is the same for students who choose to do a research dissertation and those who choose to do a creative dissertation. Only the dissertations are different.

Research Dissertations

The dissertation should be a scholarly achievement of cultural knowledge, theory, and research; it should demonstrate a thorough understanding of critical questions and research techniques appropriate to interdisciplinary studies, revealing the students' ability to analyze, interpret, and synthesize knowledge.

Creative Dissertations

Doctoral dissertations which are deemed creative may be anchored in writing (such as poetry, fiction, or scripts), translation, performance (whether musical or theatrical), and the visual arts. Creative dissertations presuppose a sophisticated level of artistic skill and accomplishment and a minimum number of classes related to the proposed medium. All creative dissertations must contain two distinct but equally important parts: a creative work (i.e., a creative performance, an exhibition, or a substantial body of written work-translation or original) and a scholarly essay (two or three chapters) discussing the generation of the creative project and placing it in a cultural, historical, and artistic context. The scholarly discussion must demonstrate an awareness of the artistic climate within which the work was created and be able to present the various decisions reached by the artist from the work's conception to the final implementation. The underlying rationale is that the creator should be able to anchor theoretical discussion of the work in the product and its making.

Final Oral Examination

The defense of the dissertation will be scheduled at least three weeks before the end of the term. The results of this examination shall be conveyed to the candidate in writing by the Division Chair. The dissertation will then be revised according to the dissertation committee's recommendations and one copy shall be submitted to the Graduate School and one bound copy to the Humanities Division. Along with the dissertation, the candidate shall submit a 350-work abstract for publication in dissertation Abstracts.

Industrial Engineering (IE)

www.louisville.edu/speed/industrial

Departmental Faculty

Chair
Suraj M. Alexander, Professor

Professors
William E. Biles, Clark Professor of Computer-Aided Engineering
Gerald W. Evans
Carol O'Conner Holloman
Waldemar Karwowski
Herman R. Leep
G. Don Taylor, Jr., Duthie Professor of Engineering Logistics
John S. Usher
Thomas L. Ward, Emeritus
Mickey R. Wilhelm, Associate Dean for Research

Assistant Professor
Gail W. DePuy

Associates
Mahesh Gupta
Jon Hill Rieger

Programs

The Department of Industrial Engineering in the Speed Scientific School, the school of engineering and applied science of the University of Louisville, offers programs of study leading to the degrees of Master of Science and Doctor of Philosophy in Industrial Engineering and the Master of Engineering in Engineering Management. It also offers an integrated five-year program of cooperative education leading to a B.S./M.Eng. professional degree.

Pass-Fail Grading

The Department of Industrial Engineering does not offer courses on the pass-fail basis. Neither does it accept for credit courses outside the department that have graded on a pass-fail basis.

Doctor of Philosophy in Industrial Engineering

Major: IE
Degree: PHD
Unit: GS

The general requirements of the Doctor of Philosophy program are the same as those of the Graduate School. Other specific guidelines for the Ph.D. degree in Industrial Engineering include a minimum total of 76 semester hours of post-baccalaureate degree courses, including no more than 18 semester hours for doctoral dissertation credit.

Applicants to the program will normally have completed a master's degree; however, a qualified student may be admitted directly to the doctoral program after receiving the B.S. degree. Students with a B.S. in another branch of engineering, or in chemistry, physics, or mathematics are required to resolve undergraduate deficiencies by taking up to 25 semester hours of industrial engineering coursework. Students with a B.S. in areas other than the above are required to take at least 25 semester hours of undergraduate industrial engineering courses, and to demonstrate mathematical preparation comparable to that provided by an ABET accredited engineering program. Typically, an acceptable undergraduate record in mathematics would include calculus, differential equations, linear algebra, and probability and statistics.

Potential applicants to the Ph.D. degree program are encouraged to request more detailed information regarding program requirements from the Department of Industrial Engineering.

Master of Science in Industrial Engineering

Major: IE
Degree: MS
Unit: GS

Admission Requirements

Candidates for admission into the MSIE degree program must satisfy the following requirements for admission:

1. Baccalaureate degree with complete transcripts
2. 2.75/4.00 GPA for unconditional admission
3. A combined verbal and quantitative score for the GRE basic examination of at least 1000
4. For international students, a TOEFL score of at least 535

Prerequisite Requirements

A candidate with a BSIE degree will have to give evidence of having taken the courses listed below for non-BSIE degree holders. A candidate with a BS degree in an engineering discipline other than IE must take the following courses, unless his/her transcript contains an equivalent course.

—EMCS 360, Engineering Probability & Statistics
—IE 320, Manufacturing Processes
—IE 321, Facility Location and Layout I
—IE 340, Work Measurement and Methods
—IE 415, Introduction to Operations Research
—IE 590, Math CAD Applications in Industrial Engineering

A candidate with a baccalaureate in an area other than engineering (e.g., mathematics, physics, psychology) must take all of the courses above prerequisites, plus any other courses his/her thesis advisor deems appropriate.

	Semester Hours	Total
Required Courses		
The following core of graduate courses is required.		
IE 541, Simulation	3	
IE 570, Engineering Design Economics*	3	
IE 600, Advanced Manufacturing Methods	3	
IE 630, Production Planning and Control	3	
IE 681, Human Performance	3	
IE 690, M.S. Thesis in Industrial Engineering	6	21
In addition to this core of IE courses which form a "Breadth Requirement" for the MSIE, the candidate must take at least three additional courses in one of the four stem areas.		
—Operations Research and Systems		
—Manufacturing Engineering		
—Human Factors Engineering		
—Production Systems	9	9
The specific courses selected will be a discretion of the candidate and his/her advisor.		
Minimum Total		**30**

Advising

Entering MSIE students will be advised by the MSIE Program Coordinator, Dr. Evans, with consultation with another member of the IE faculty. The candidate must select a thesis advisor prior to registering for his/her second semester (term) in residence.

Master of Engineering with specialization in Industrial Engineering

Major: IE
Degree: MENGIE
Unit: GS

The Master of Engineering with specialization in Industrial Engineering (M.Eng.I.E.) is a professional degree offered by the Speed Scientific School. It is accredited at the advanced level by the Accreditation Board for Engineering and Technology (ABET). Students can obtain a concentration in Manufacturing Engineering as part of their degree program.

Admission

Requirements for admission or readmission include:

1. Completion of a program of studies equivalent to that obtained through the Speed Scientific School Division of Pre-Engineering and Basic Studies for the field of industrial engineering;
2. Recommendation by the faculty and chair of the Department of Industrial Engineering; and
3. A cumulative baccalaureate program grade- point average of 2.50/4.00 for unconditional admission.

Prerequisite Requirements

Since the M.Eng.I.E. is accredited as part of a five year program, the requirements of item (1) above in the section of Admissions must be satisfied exactly. This is very difficult for students who have not matriculated through the preceding four years at the Speed School. Therefore, almost all students who earn an ABET accredited undergraduate degree pursue the MSIE or Ph.D. degrees.

Degree Requirements

The minimal requirements for eligibility for the M.Eng.I.E. are set below.

Course/Credit Hours

The academic courses and three completed cooperative internships periods required in the Divisions of Pre-Engineering and Basic Studies (or equivalent) (3)

—IE 540, Robots and Manufacturing (3)
—IE 600, Advanced Manufacturing Methods (3)
—IE 640, Applied Systems Analysis (3)
—IE 650, Material Flow Systems Design (3)
—IE 683, Design of Man-Machine Systems (3)
—IE 697, M.Eng. Thesis in Industrial Engineering (8)
—IE xxx, Approved industrial engineering depth electives[1] (9)

TOTAL = 168

[1] Nine semester hours of electives must be taken from one of the following four groups.

—Human factors engineering: IE 681, 685, 687
—Manufacturing engineering: IE 545, 601, 605, 606, 673, 687
—Operations research: IE 610, 611, 642, 643, 673
—Production systems: IE 606, 630, 631, 660

Advising

M.Eng. IE candidates are advised by the department chairman.

Master of Engineering with specialization Engineering Management

Major:
Degree: MENGEM
Unit: GS

The Master of Engineering with specialization in Engineering Management (M.Eng.E.M.) is a professional degree offered by the Speed Scientific School. It is a part time, evening degree program open only to those students who have graduated from an ABET-accredited engineering degree program.

Admission

A requirement for admission to the program is that the applicant possess a bachelor's degree in engineering from a college or university offering programs which are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. In addition, it is expected that the student be actively engaged in full-time professional employment during the period of enrollment in the degree program.

Prerequisite Requirements

A calculus-based course in probability and statistics is a required prerequisite. The assumption is made that entering students are reasonably competent in a computer programming language such as BASIC, C, FORTRAN, PASCAL, etc.

Degree Requirements

Students may choose either a thesis curriculum or an alternative curriculum that permits graduation without preparation of a thesis. If the thesis curriculum is selected, the student must submit a written thesis and present it orally before an examining committee. In order to emphasize the strong orientation of the program toward the solution of ongoing practical problems in the management of technological enterprises, every effort is made to select a thesis topic which involves regular employment experience. The ability of the student to perform an in-depth study of such a problem with the guidance and assistance of a faculty advisory committee is judged to be an important part of the program under the thesis option

In the alternative curriculum for the Master of Engineering degree, the eight (8) semester hours of thesis credits are replaced with six (6) semester hours of additional engineering management or industrial engineering approved course electives, plus two (2) semester hours of independent study in engineering management resulting in a project paper. The purpose of the project paper is to provide the student with an opportunity to practically utilize, in a real world setting, an amalgam of subject matter from the engineering management discipline. Each student choosing this option will undertake an independent study and report the findings in a paper. This grade will be based upon the quality of the written report, after consideration of any clarifications provided by the student in an oral discussion of the paper. The oral discussion is only required to clarify any questions about the paper, and is initiated by the faculty advisor.

The requirements for the Master of Engineering degree, with specialization in the field of engineering management are as follows:

Course/Credit Hours

—EM 515, Operations Research (3)
—EM 570, Engineering Economic Analysis (3)
—EM/IE xxx, Probability or statistics approved elective (3)
—EM/IE xxx, Management science approved electives[1](6)
—EM/IE xxx, Engineering management or industrial engineering approved electives[1] (9)
—EM 690, M.Eng. Thesis in Engineering Management[1] (8)

TOTAL = 32

Note:

[1] The faculty of the Industrial Engineering Department have approved an alternative curriculum that permits students to graduate without preparing a thesis. For students selecting this alternative, the 8 semester hours of M.Eng. thesis in Engineering Management will be replaced with 6 semester hours of courses selected from the approved list of engineering management or industrial engineering electives. in addition, the student selecting this alternative curriculum will be required to successfully complete 2 semester hours of EM 693 - Independent Study in Engineering Management resulting in a project paper.

[2] The requirements of the Kentucky Council on Higher Education specify that a minimum of 12 semester hours (excluding thesis credit) must be completed in courses at the 600-level or above for the Master of Engineering degree.

Advising

M.Eng.E.M. candidates will be advised by the M.Eng.I.E. Program Coordinator, Dr. Biles.

Interdisciplinary Studies (IS)

www.graduate.louisville.edu

Programs

Master of Arts and Master of Science degree programs and a non-degree certificate program in Logistics and Distribution are available to qualified students who wish to structure graduate programs crossing traditional disciplinary lines. These interdisciplinary master's programs are administered through the Office of Student Services of the Graduate School, since admission procedures for these programs are necessarily more complex than those for more traditional graduate programs.

Students who wish to enroll in these programs should contact the Dean of the Graduate School, for information about application and development of a program and for details about the general regulations relating to master's degrees and their application to these programs.

Students who wish to pursue the certificate in Logistics and Distribution should contact Program Director Dr. Mickey Wilhelm (see program description and admission procedures below).

Application and Admission for Master of Arts and Master of Science

Applicants for individualized interdisciplinary master's programs must present complete admission credentials in order to be formally admitted by one of their constituent departments. Such formal admission must be recommended by at least one department or program offering degrees through the Graduate School before the student may register for course work. The required credentials are:

1. The application for admission, specifying which departments the student expects to comprise the program;

2. Transcripts showing all undergraduate and graduate course work and all degrees earned;

3. Scores on the Graduate Record Examination General Test;

4. Three letters of recommendation;

5. TOEFL score if the applicant's native language is not English and he/she has not earned a degree from a university or college in the U.S.;

6. A written statement of career objectives and rationale for the interdisciplinary research objective.

All these credentials must be sent to the Office of Graduate Admissions, University of Louisville, for distribution to the appropriate offices.

Only upon receipt of a letter of admission from the Office of the Graduate School may the applicant enroll for course work. There is no guarantee, however, that the desired degree program will be approved. Admission will be conditional until the program proposal has been submitted and approved by the Office ofthe Graduate School. During the initial semester, the curricular requirements of the program must be worked out with a supervisory committee of at least three faculty members. The Chair, as well as the majority of the Committee, must be members of the Graduate Faculty.

All departments or programs in which the student proposes to take more than 3 hours of graduate course work must offer degrees through the Graduate School; and, before submitting a program proposal, the student must have the permission of the department or program to take those courses.

Program Proposal

In addition to the above stipulations regarding constituent departments or programs, each interdisciplinary degree program must meet specific criteria as follows:

1. An overall minimum of 30 semester hours at 500 or 600 level.

2. A thesis (maximum of 6 hours for thesis in a 30-hour program) or six (6) additional hours of 600- level courses for non-thesis. Interdisciplinary students must enroll in GS 699 for thesis credit.

3. At least one-half of the non-thesis, non-practicum, non-internship credit hours must be at the 600 level.

4. A minimum of 6 hours of 600-level course work must be taken in each of at least two departments or programs offering degrees through the Graduate School.

5. No single department or program may offer more than half the total number of credit hours required by the program.

6. Exclusive of thesis credit, no more than 6 hours may be taken in courses of the independent-study or practicum type; such course work may not be counted toward criteria specified in 3 or 4.

7. Courses designated as fulfilling degree requirements must be offered with sufficient frequency to permit the student to complete degree requirements within a reasonable time (two years for a 30-hour program).

8. The proposed curriculum must be submitted on the appropriate form, with approval signatures of at least three faculty members.

9. Requests for approval of substitutions or alternate courses must be submitted in writing to the Director of Interdisciplinary Studies in the Office of the Graduate School.

Upon receipt by the Graduate School, the program proposal will be reviewed and will be approved, provided that it meets the criteria stated above. The student will be notified of its approval by receiving a signed copy.

Only after the proposal has been approved and all necessary permissions from academic units have been received, will the student be fully admitted to the program in interdisciplinary studies. Admission is conditional until that time.

Requests for further information or assistance should be addressed to:

Graduate Student Services

Houchens Building, Suite 105

University of Louisville

Louisville, Kentucky 40292

OR

graduate@louisville.edu

Logistics and Distribution (LAD CLD)

http://www.louisville.edu/org/lodi/certificate.htm

The Graduate Certificate Program in Logistics and Distribution is offered jointly by the College of Arts and Sciences, the College of Business and Public Administration, and The J. B. Speed Scientific School. It provides qualified applicants a high quality program for structured graduate study in this truly interdisciplinary field. The program is designed primarily for people who are currently working in the logistics and distribution organizations in the Louisville area, or for those who aspire to gain general knowledge in the field that may lead to career opportunities in logistics and distribution. As a result, the outcomes of the program are to provide, (1) a highly skilled workforce for regional employers; (2) a sought-after academic credential for employee-students; and (3) a career advancement credential for both employers and employees in the logistics and distribution sector.

Director of Programs

Dr. Mickey R. Wilhelm

Program Faculty

The faculty who teach in the certificate program will be drawn from the members of the Logistics and Distribution Institute (LoDI) faculty. A list of these faculty members, with links to their vitae, may be found on the web at: http://www.louisville.edu/org/lodi/faculty.html.

Curriculum

The curriculum of the Certificate in Logistics and Distribution requires the completion of a total of 18 semester hours of coursework, consisting of six 3-semester hour courses. These courses are:

MKT 525 Distribution Management (3 hours)

Math 588 Discrete Mathematics for Logistics and Distribution Applications (3 hours)

ACCT 526 Finance and Accounting Applications in Logistics and Distribution (3 hours)

IE 621 Facilities Planning (3 hours)

IE 651 Warehousing and Transportation (3 hours)

MKT 527 Logistics Management (3 hours)

Admission Requirements

Students who apply for admission to the certificate in logistics and distribution program are expected to meet the following typical U of L Graduate School standards:

— Submission of a University of Louisville Graduate School Application,
— At least two letters of recommendation,
—The possession of at least a baccalaureate degree,
—The submission of an official transcript for each prior degree earned,
—A minimum 2.75/4.0 undergraduate cumulative grade point average, and
—Submission of scores on the Graduate Record Examination (GRE) or the Graduate Management Admissions Test (GMAT)

Justice Administration (JA)

www.louisville.edu/a-s/justice

Departmental Faculty

Chair
Deborah G. Wilson, Professor

Graduate Coordinator
Gennaro F. Vito, Professor

Professors
J. Price Foster
Richard Tewksbury
Gennaro F. Vito
William F. Walsh

Associate Professors
Terry D. Edwards
Elizabeth L. Grossi

Assistant Professors
Thomas Hughes
Angela D. West

Emeritus/Emerita
B. Edward Campbell
John C. Klotter

ntroduction

The goals of the Department of Justice Administration are for students to achieve a sound liberal arts education and a specialized understanding of the criminal justice system, criminal behavior, legal processes and the relationship of these phenomena to society.

Graduate studies in the Department of Justice Administration provide students with advanced social and behavioral science skills as well as a detailed and thorough understanding of crime, criminal justice and related processes. Graduates of this program are prepared to continue advanced studies in criminal justice or other social sciences and to assume mid and upper-level leadership positions within criminal justice programs and agencies.

The interdisciplinary nature of the program maintains the dynamic posture that allowed this crime related discipline to emerge and to mature quickly and successfully. Graduate students are given latitude in choosing elective courses in the Master of Science in the Administration of Justice. Elective courses related to the student's program of study are selected from the resources of the entire University. Courses in social work, public administration, law, business, and the various departments of the College of Arts and Sciences are possible electives that the student and his or her advisor may consider. With proper selection, the electives can complement the core criminal justice courses and produce a balanced, interdisciplinary program which is tailored to meet specific professional and career goals.

The combination of three elements, the degree programs, the Southern Police Institute and the National Crime Prevention Institute, makes the program in Justice Administration a unique blend of theory and practice. We offer our program in two formats. We offer evening courses on campus and we offer our courses on-line via the internet.

- The Southern Police Institute, one of the oldest, most respected police management and administration educational programs in the United States.
- The National Crime Prevention Institute, the only center in the country devoted exclusively to training and educating crime prevention and loss prevention specialists and managers.

Admissions

Anyone seeking admission to the Graduate School, University of Louisville, for purposes of pursuing the Master of Science in the Administration of Justice must provide the following:

- Transcripts of all undergraduate and graduate work completed. The minimum requirement for admission is the Baccalaureate degree or its equivalent.
- Two letters of recommendation from individuals who can speak to the applicant's academic or professional capabilities.
- Scores on the General Test Section of the Graduate Record Examination (GRE).
- An original essay identifying the applicant's background, professional interests and goals. The essay should be 300-500 words and should allow the faculty to better understand the applicant's motivation and potential for graduate work.
- Completed on-line application form for admission to the Graduate School, University of Louisville http://graduate.louisville.edu
- $50.00 application fee, check or money order made payable to the University of Louisville.

The faculty in Justice Administration consider applications and supporting materials and recommend a disposition. The minimum requirements for unconditional admission to degree status are a grade point average of at least 2.75 on a 4-point scale in senior-college courses and at least 900 on the combined verbal and quantitative scores of the GRE as well as a positive evaluation of the letters of recommendation and the essay. In some instances students who fail to meet all requirements may be granted conditional admission. For additional information please visit our website at http://www.louisville.edu/a-s/ja/

Master of Science in Administration of Justice

Major: MS
Degree: ADJ
Unit: GA

General Requirements

The general requirements for the Master of Science degree in the Administration of Justice are the completion of at least 36 graduate credit hours. The completion of these credit hours may include either thesis or non-thesis options. The thesis option requires the completion of 30 semester hours of graduate level courses and a thesis for a total of 36 credit hours. The non-thesis professional paper option requires the completion of 33 semester hours of graduate courses plus a professional paper for a total of 36 credit hours. The non-thesis comprehensive examination option requires the completion of 36 hours of graduate course work and passing scores on a series of comprehensive exams.

At least a 3.0 grade average must be maintained for all graduate coursework. Core or specific courses required for graduation total 15 semester hours with the remaining courses being electives. The

composition of the list of elective courses will vary from student to student depending on the student's undergraduate major, aspirations and background.

The degree is offered in web-based format, see department web-page for more information.

	Semester Hours Thesis	Total Professional Paper	Comp Exam
JA 621, The Criminal Justice System	3	3	3
JA 625, Legal Aspects of Criminal Justice Management	3	3	3
JA 643, Theories of Crime and Delinquency	3	3	3
JA 649, Applied Statistics in Criminal Justice	3	3	3
JA 650, Research Methods in Criminal Justice	3	3	3
Electives (to be approved by advisor)	15	18	21
Thesis	6		
Professional Paper			3
Minimum Total	**36**	**36**	**36**

Mathematics (MATH)

www.math.louisville.edu

Departmental Faculty

Chair
Kevin F. Clancey

Professors
Patricia B. Cerrito
Richard M. Davitt
Michael S. Jacobson
Andre Kezdy, Graduate Advisor
Lee Larson
Inessa Levi
Robert B. McFadden
Robert Powers
Prasanna Sahoo, Director of Graduate Studies
W. Wiley Williams

Associate Professors
George R. Barnes
Mary E. Bradley
Udayan B. Darji
Ewa Kubicka
Grzegorz Kubicki
Gregory Rempala
Thomas Riedel
Steven Seif
Wei-Bin Zeng

Assistant Professors
Manabend Das
Ryan S. Gill
Kiseop Lee

Adjunct Professor
Stephen W. Looney

Emeritus/Emerita
Roger H. Geeslin
Thomas M. Jenkins
Lael F. Kinch
Lois K. Pedigo
Leland L. Scott
William H. Spragens

Doctor of Philosophy in Applied and Industrial Mathematics

Major: MATH
Degree: PHD
Unit: GA

Departmental Ph.D. Requirements

All students admitted to the program must complete the following or their equivalent:

A. Core Courses - 24 semester hours

(i) Two sequences, each of six (6) semester hours, chosen from:
Algebra ..... MATH 621-622
Combinatorics ..... MATH 681-682
Real Analysis ..... MATH 601-602

(ii) Two sequences, each of six (6) semester hours, chosen from:
Applied Statistics ..... MATH 665-667
Mathematical Modeling ..... MATH 635-636
Probability & Mathematical Statistics ..... MATH 660-662

B. Additional Topics and Area of Specialization - 18 semester hours

In addition to the core, an application area of 18 hours will be required. The courses may be in a department outside Mathematics. They will be chosen in consultation with the student's advisory committee.

C. Qualifying Examinations

Students must pass three written examinations. Two of these will be chosen from the areas Algebra, Combinatorics and Real Analysis. The third will be chosen from the areas of Applied Statistics, Mathematical Modeling and Probability & Mathematical Statistics. Normally, these will be taken within a year of completion of the core coursework. These examinations need not be taken together and each may be attempted at most twice.

D. Industrial Internship – six (6) semester hours

Each student, with prior approval of the Graduate Studies Director and the Industrial Internship Director, has to complete at least six (6) hours of an internship in an appropriate industrial or governmental setting, or have equivalent experience.

E. Computing Project

Each student must complete an approved computer project related to the student's area of concentration.

F. Candidacy Examination

Each student must pass an oral examination in the chosen area of concentration. Usually, at most two attempts at passing this examination will be permitted. Students who wish to make a third attempt must petition the Graduate Studies Committee of the department for permissions to do so.

G. Dissertation – 18 to 24 semester hours

A doctoral dissertation is required of each student.

Master of Arts in Mathematics

Major: MATH
Degree: MA
Unit: GA

Prerequisites:

Undergraduate coursework equivalent to a major in mathematics from an accredited university. This should include a one-year course in either analysis or abstract algebra, equivalent to Mathematics 501-502 and 521-522 at the University of Louisville. Candidates who have not taken both must complete the second in their M.A. program.

Degree Requirements:

1. Candidates must complete a program of study approved by the department. All courses (up to a maximum of 12 semester hours) to be taken outside the Department of Mathematics must have prior departmental approval.
2. All students must complete a minimum of 30 semester hours of non-thesis graduate credit, including at least 15 semester hours in the Department of Mathematics, with one full-year sequence, in courses numbered 601 through 689.

3. Students must satisfy one of the following two requirements:
   a. (Examination Option): Pass written examinations in three areas of mathematics chosen from a list prepared by the department. At most two attempts are allowed. Examinations will be approved and administered by the departmental Graduate Studies Committee.
   b. (Thesis Option): Write a thesis on an advanced topic in the mathematical sciences. A total of two full-year sequences among courses numbered 601 through 689 must be completed.
4. Students choosing the Thesis Option must pass a final oral examination described under "Requirements for the Master's Degree" in the General Information section of the Graduate School Catalogue.

Accelerated M.A. Option in Mathematics

Students who wish to pursue an accelerated M.A. may apply up to nine (9) hours of coursework taken for graduate credit to the requirements for their baccalaureate degree.

1. Students must apply for admission to the program no later than the end of the junior year and must have completed MATH 205, 206, 301, and 325, or equivalent courses, prior to application.
2. Applicants must have a minimum overall GPA of 3.5, and a minimum GPA of 3.66 in mathematics courses.
3. As part of the combined degree, students must complete MATH 405 and at least four (4) of the following: MATH 501, 502, 521, 522, 561, 562, or 581, including at least one sequence from among these courses.
4. The student may take a maximum of nine (9) hours for graduate credit, which will also apply to the requirements for the baccalaureate degree in Mathematics. All 600-level courses numbered 689 or below qualified, as do 500-level courses, when completed in accord with the stipulations for graduate credit outlined in the syllabus.

Mechanical Engineering (ME)

www.louisville.edu/speed/mechanical

Departmental Faculty

Chair
Glen Prater, Associate Professor

Professors
W. Geoffrey Cobourn
Michael L. Day
Julius P. Wong
Associate Professors
Timothy E. Dowling
William P. Hnat

Assistant Professors
Ellen G. Brehob
Robert S. Keynton
Peter M. Quesada

Emeritus Professors
Hsing Chuang
Robert L. Collins
George C. Lindauer
Thomas E. Mullin
Robert E. Stewart

Programs

The Department of Mechanical Engineering of the Speed Scientific School, the school of engineering and applied science of the University of Louisville, offers a program of study leading to the degree of Master of Science and Doctor of Philosophy. It also offers an integrated five-year program of cooperative education leading to the professional degree of Master of Engineering (described in the Speed Scientific School Catalogue).

Admission to the Doctoral Program

Unconditional admission into the Doctor of Philosophy program requires an earned mechanical engineering master's degree and the following credentials:

- Minimum undergraduate GPA of 3.0/4.0; minimum graduate GPA of 3.25/4.0.
- Three letters of recommendation, with at least two addressing the applicant's ability to perform independent research successfully.
- A composite score (verbal and quantitative) on the Graduate Records Examination (GRE) of no less than 1100 (1500 preferred). International students must show proficiency in English by scoring 550 or higher on the TOEFL (Test of English as a Foreign Language) examination, or by completing the University's Advanced Level of the Intensive English as a Second Language Program.

Qualified applicants may be admitted directly to the doctoral program after receiving a baccalaureate degree. These students will be required to complete an additional 30 hours of coursework at the 500 and 600 level under an individual plan developed in conjunction with the Chair of the Department's Graduate Studies Committee. Students with a B.S. in another branch of engineering, or in chemistry, mathematics, physics, or life sciences may be required to take up to 24 undergraduate units in mechanical engineering, and to demonstrate preparation comparable to that provided by an ABET accredited engineering program.

Admission to the M.S. Program

Applicants for admission to the M.S. program in Mechanical Engineering should have a baccalaureate degree in Mechanical Engineering or a related discipline, with a GPA of 2.75/4.0 or better. Unconditional admission requires a composite score (verbal and quantitative) of no less than 1100 on the Graduate Record Examination (1500 preferred). International students must show proficiency in English by scoring 550 or higher on the TOEFL (Test of English as a Foreign Language) examination, or by completing the University's Advanced Level of the Intensive English as a Second Language Program. An applicant not meeting a requirement, but with otherwise acceptable credentials, may be admitted on a conditional basis. New students will not be considered for financial aid until after one semester of residency.

Advising

Upon enrollment, a student will be advised by the Department's M.S. academic advisor. After completing at least 12, but not more than 18 semester hours of graduate work, a permanent thesis advisor must be chosen by the student and approved by the Department Chair. During the semester following the selection of the permanent advisor, the student and thesis advisor should select the remaining two members of the thesis committee from among the graduate faculty, one of whom must be from outside the Mechanical Engineering Department.

Doctor of Philosophy in Mechanical Engineering

Major: ME
Degree: PhD
Unit: GS

The Department of Mechanical Engineering in the JB Speed Scientific School, the School of Engineering, and Applied Science of the University of Louisville, offers a program of study leading to the degree of Doctor of Philosophy in Mechanical Engineering. This program provides an opportunity for students to complete advanced course work and conduct independent research in the following specialization areas: Biomechanics or Advanced Product Design and Development.

Completion of the program requires forty- eight (48) semester hours beyond a Masters degree in mechanical Engineering, or seventy- eight (78) semester hours beyond a baccalaureate degree in Mechanical Engineering.

	Semester Hours	Total
Required Core Courses		
Research Seminar	3	
Advanced Mathematics	6	
Mechanical Engineering Technical Core (appropriate for the specialization area)	6	
Technical Electives	15	
Dissertation Research	18	
Minimum Total		**48**

Master of Science in Mechanical Engineering

Major: ME
Degree: MS
Unit: GS

	Semester Hours	Total
Courses in Major		
ME 600-level (graduate only) courses (in addition to thesis)	9	
ME electives 500-600 level	6	
ME 690, thesis	6	
Courses Outside of Major		
Non-ME electives (500-600 level)[1]	9	
Minimum Total[2]		**30**

[1] Non-mechanical engineering electives must be approved by the student's advisor. These courses usually lie in mathematics, computer science, or another engineering discipline.
[2] A minimum of 12 hours of coursework, exclusive of thesis hours, must be taken at the 600-level.

MICROBIOLOGY AND IMMUNOLOGY (MBIO)

www.louisville.edu/medschool/microbiology/

Departmental Faculty
Chair
Robert D. Stout, Ph.D., Professor

Professors
David E. Justus. Ph.D.

Uldis N. Streips, Ph.D.

Jill Suttles, Ph.D.

Associate Professors
Faye E. Austin, Ph.D.

Haribabu Bodduluri, Ph.D., The James Graham Brown Cancer Center

Lawrence A. Hunt, Ph.D.

Richard D. Miller, Ph.D.

Haval Shirwan, Ph.D., Director of Molecular Transplantation Immunology Program, Institute for Cellular Therapeutics

Assistant Professors
Pascale Alard, Ph.D.

James E. Graham, Ph.D.

Michele Kosiewicz, Ph.D.

Thomas C. Mitchell, Ph.D., Institute or Cellular Therapeutics

Esma Yolcu, Ph.D., Institute of Cellular Therapeutics

Joint Appointments
Nalini Srivastava Bora, Ph.D., Associate Professor, Department of Ophthalmology and Visual Sciences, KY Lions Eye Center

Robert P. Edwards, Ph.D., Associate Professor, Department of OB/GYN; Director and Thomas G. Day, Jr., Endowed Chair, Cynecologic Oncology

G. Rafael Fernandez-Botran, Ph.D., Associate Professor of Pathology and Laboratory Medicine

Henry Kaplan, M.D., Evans Professor of Ophthalmology, Chairman, Department of Ophthalmology and Visual Sciences; Director, KY Lions Eye Center

Denis Kinane, Ph.D., Professor and Endowed Chair of Periodontology, Associate Dean for Research, School of Dentistry

Mariuz Ratajczak, M.D., Ph.D., Professor, Department of Medicine, Director of Stem Cell Biology Program

Gordon D. Ross, Ph.D., Professor, Department of Pathology; Acting Director, Chemo Attractant Group, The James Graham Brown Cancer Center

Hui Shao, M.D., Ph.D., Assistant Professor, Department of Ophthalmology and Visual Sciences, KY Lions Eye Center

Robert H. Staat, Ph.D., Professor of Molecular, Cellular and Craniofacial Biology, School of Dentistry

Deming Sun, M.D., Associate Professor, Department of Ophthalmology and Visual Sciences, KY Lions Eye Center

Associate Appointments
John Barker, M.D., Ph.D., Associate Professor, Department of Surgery

William G. Cheadle,M.D., Professor, Department of Surgery

H. Leighton Grimes, Ph.D., Assistant Professor, Institute of Cellular Therapeutics

Y. James Kang, Ph.D., Professor, Department of Medicine

Jon B. Klein, M.D., Ph.D., Professor, Kidney Disease Program, Department of Medicine

Gary S. Marshall, M.D., Professor, Department of Pediatrics

Kenneth McLeisch, M.D., Professor, Kidney Disease Program, Department of Medicine

James W. Snyder, Ph.D., Professor, Clinical Services, Department of Pathology, Chief of Microbiology Lab, U of L Hospital

James T. Summersgill, Ph.D., Associate Professor, Clinical Services, Division of Infectious Diseases, Department of Medicine

Samuel R. Wellhausen, Ph.D., Associate Professor, Clinical Services, Department of Pathology

Lung T. Yam, M.D., Professor, Department of Medicine, Hematology/Oncology Unit, V.A. Medical Center

Jun Yan, M.D., Ph.D., Assistant Professor, The James Graham Brown Cancer Center

Adjunct Appointments
George E. Buck, Ph.D., Director, Microbiology Laboratory, Norton Healthcare Pavilion

Karen Cost, Ph.D., Director, Clinical Immunology Laboratory, Norton Healthcare

Anthony J. Janckila, Ph.D., Technical Director, Special Hematology Laboratory, V.A. Medical Center

Diane J. Pidwell-Brown, Ph.D., Transplant Immunologist, Department of Pathology, Histocompatibility Lab, Jewish Hospital

Gerald Sonnenfeld, Ph.D., Professor and Chairman, Department of Microbiology and Immunology, Morehouse School of Medicine

Emeritus/Emerita
Robert D. Higginbotham, Ph.D.

Pinghui Liu, M.D.

Admission Requirements

The Department of Microbiology and Immunology, in the School of Medicine, offers programs of study leading to the degrees of Doctor of Philosophy and Master of Science. For admission to the Ph.D. or M.S. program, the applicant must have attained the B.S or B.A. degree with a minimum grade-point average of 3.0 (on a 4.0 point scale). The scores of the General Test Section of the Graduate Record Examination and the TOEFL (where applicable), official transcripts of all undergraduate and graduate course work, two letters of recommendation, and a short biographical sketch are required. The applicant must meet the other general requirements of the Graduate School as outlined in the General Information section of this catalogue. Applicants are encouraged to apply early as space is limited. Applications are reviewed on a rolling basis beginning February 1st.

The applicant is expected to have completed the following: One year of introductory biology, one year of organic chemistry, one year of physics, one semester (or equivalent) of introductory calculus, and one semester of biochemistry.

Prospective students may be invited for a personal interview with members of the department.

Doctor of Philosophy in Microbiology and Immunology

Major: MBIO
Degree: PHD
Unit: GM

The minimum requirements for this degree in addition to those listed in the General Information section of this catalogue include**:

Required Courses:

BIOC 645, Advanced Biochemistry I (4)

MBIO 600, Laboratory Rotations in Microbiology and Immunology (1-2)

MBIO 606, Seminar and Journal Club (2)

MBIO 667, Cell Biology (3)

MBIO 690, Research Methods in Microbiology and Immunology (3)

MBIO 619, Research (1-12)

Choose four (4) electives (at least two (2) must be offered by the Microbiology and Immunology Department). Suggested electives include:

MBIO 601, Introductory Pathogenic Microbiology (3)

MBIO 602, Introductory Immunology (2)

MBIO 658, Cellular and Molecular Immunology (3)

MBIO 670, Molecular Virology (3)

MBIO 680, Microbial Genetics (3)

MBIO 685, Microbial Physiology (3)

MBIO 687, Microbial Pathogenesis (3)

BIOC 647, Advanced Biochemistry II (4)

BIOC 668, Molecular Biology (4)

BIOC 675, Molecular Basis of Cancer (2)

PHY 621, Methods in Cellular Fluorescence (3)

PATH 869, Immunology of Cancer (1) (will need another 1 credit course)

Note: ** Students enrolled in the M.D./Ph.D. Joint Degree Program who have completed step I of NBME will have satisfied all of the course requirements except seminar and research. They will be required to satisfactorily complete the Qualifying Exam and successfully defend a dissertation research project, in addition to attending all seminars.

Program of Study

Upon successful completion of the required course work, maintaining a minimum 3.0 GPA, and upon the recommendation of the Advisor or Chair, the student may take the Ph.D. Qualifying Examination. The Qualifying Examination will consist of a written research proposal outside of his/her area of primary research, and oral defense of the project. Three to five faculty with expertise in the area of the proposal will be selected by the Chair to serve as the Examining Committee. The student may enter degree candidacy upon receipt of satisfactory judgment from the Examining Committee.

Dissertation Research

The student will decide on a dissertation research project after consulting with his/her Research Advisor. The student and Advisor will form a Dissertation Committee composed of the dissertation advisor, three graduate faculty members of the Department of Microbiology and Immunology and one additional graduate faculty member from another department. The Department Chair may serve as an ex-officio member of Dissertation Committees.

All Ph.D. candidates will prepare a research proposal in the format of an NIH grant application. This dissertation research proposal, with any revisions required by the Dissertation Committee, should be final and approved by the middle of the third year in the program.

The Committee will meet at regularly to evaluate progress of the research. The student will also be required to present a research seminar to the Department annually on this progress. When the dissertation research is completed, the Committee will conduct the final oral examination in accordance with the guidelines in the General Information section of this catalogue.

For more information go to the department website at www.louisville.edu/medschool/microbiology/

Master of Science in Microbiology and Immunology

Major: MBIO
Degree: MS
Unit: GM

Required Course:

BIOC 645, Advanced Biochemistry I (4)

MBIO 601, Introduction to Pathogenic Microbiology (3)

OR

MBIO 602, Introductory Immunology (2)

MBIO 606, Seminar and Journal Club (2)

MBIO 690, Research Methods in Microbiology and Immunology (3)

Choose two from the suggested list of electives:

MBIO 658, Cellular and Molecular Immunology (3)

MBIO 667, Cell Biology (3)

MBIO 670, Molecular Virology (3)

MBIO 680, Microbial Genetics (3)

MBIO 685, Microbial Physiology (3)

MBIO 687, Microbial Pathogenesis (3)

MBIO 619, Research (1-12)

MBIO 620, Thesis (optional) (1-6)

Minimum Total 30

If the student has satisfactorily completed the required courses and total credit hour requirements with an overall and program GPA of 3.0, then the student may register as an M.S. candidate.

Program of study
Students admitted to the M.S. Degree Program should select a Research Advisor, from a Thesis Committee, and decide upon an area of research in the first semester. The student and Advisor should form a Committee of three (3), composed of the Advisor, one other graduate faculty member of the Department, and a third member with graduate faculty status in another department. The second Committee member will serve as Co-Advisor, if the Advisor does not have primary appointment in the Department of Microbiology and Immunology. The Department Chair may serve as an ex-officio member of the Thesis Committees.

Students in the M.S. Program are required to submit and defend a thesis. The thesis must conform to the Graduate School's Guidelines. Students, with the consent of the Departmental Graduate Faculty Committee, may elect to substitute a written research proposal instead of a traditional thesis, based on laboratory research performed by the student, describing successive research to be pursued. The final oral defense will be preceded by a research seminar open to everyone. The oral examination will be administered by the Thesis Committee, and will be open to any other interested graduate faculty members. Evaluation of student competence and thesis acceptability, together with departmental recommendations for graduation will be forwarded to the Dean of the Graduate School.

MUSIC (MUS)

www.louisville.edu/music/

Departmental Faculty

Professors
Robert Amchin, Area Coordinator – Music Education and Music Therapy

Jack Ashworth, Director of Early Music Ensemble, Distinguished Teaching Professor

Paul R. Brink

Jean Christensen, Area Coordinator - Music History

Anne Marie de Zeeuw, Distinguished Teaching Professor

Melvin D. Dickinson

Christopher Doane, Dean

Donn Everette-Graham

Brenda E. Kee, Area Coordinator – Keyboard/Vocal Performance

Herbert Koerselman

Peter McHugh, Area Coordinator - Instrumental Performance

Naomi Oliphant, Associate Dean, Distinguished Teaching Professor

Steve Rouse, Area Coordinator – Music Theory and Composition

Mark Satterwhite

Frederick Speck, Director of Bands

Edith Davis Tidwell, Distinguished Teaching Professor

Michael Tunnell

Barbara Wheeler\

Associate Professors
Richard Dugger

Kent Hatteberg, Director of Choral Activities

Bruce Heim

Assistant Professor
Seow-Chin Ong

Julia Shinnick

Emeritus/Emerita
Jerry W. Ball

Doris Owen Bickel

Ernest E. Lyon

Wesley K. Morgan

Robert Weaver

Graduate Programs

The School of Music offers training toward two specific master's degrees: Master of Music and Master of Music Education. The Doctor of Philosophy in Musicology is offered jointly with the University of Kentucky. Major subjects in the Master of Music curriculum are music performance, music history, or theory/composition. The Master of Music Education program allows an applied music minor in an instrument, voice, or conducting. The music history and theory departments offer basic instruction for all students at the undergraduate level as well as advanced study for those wishing to pursue graduate work in these fields.

Master's Degrees

Admission Requirements
In addition to the general requirements for admission to the Graduate School, the following specific requirements must be met:

- To be admitted to the Graduate Division of the School of Music, the applicant should possess a baccalaureate degree in the area (or an equivalent one) to be pursued in advanced studies;
- Applicants must meet the specific entrance requirements established by the major department.
- Applicants are required to take entrance examinations in music history, literature, and theory. Students may be required to take, without credit, courses in which they are deficient as indicated by the examination results. All full-time students are required to enroll in Music Bibliography and Research Methods (MUS 607), within their first two semesters of graduate work. Part-time students must enroll in MUS 607 before registering for more than ten (10) hours of graduate work.
- Graduate applicants to the School of Music must submit GRE scores with the application form.

The School of Music provides each student with guidelines to assist in preparation for the entrance exams and a copy of the Handbook for Graduate Music Students. Students are expected to read the School of Music handbook and the University Graduate Catalogue and to follow regulations and procedures regarding their specific degree program at the University of Louisville. In particular, students are advised to observe the request for submitting GRE scores for admission to the Graduate School. Graduate study in music begins with the preparation for the entrance examinations in Music History and Music Theory and concludes with the graduate oral exam that is taken when all requirements have been met.

General Requirements

In addition to the general degree requirements described in the General Information section of the Graduate Catalogue, the following degree requirements must be met:

- The student shall obtain permission from the Graduate Division Committee to begin work at the graduate level;
- All students must qualify for non-conditional status no later than the end of the second semester of full-time residence, or before fifteen (15) semester hours have been completed. To qualify for degree candidacy the student must have: (a) proof that all deficiencies in music history, literature and theory have been removed, (b) an academic record with a minimum of nine (9) hours of graduate credit with a grade point average of 3.0, (c) an inclusive program of studies fulfilling the requirements of a master's curriculum, approved by the major professor and the departmental chairperson; (d) in the case of a program requiring a master's thesis or professional paper, a proposed topic for the thesis or paper and a proposed membership for a reading committee to provide guidance during the writing of the thesis or paper. [See bullet six (6) below];
- As per the Graduate School requirements, at least half of the required credits for the master's degree must be at the 600 level;
- Graduate students must have a 3.0 grade point average in order to receive a

master's degree in music. No more than six (6) hours with any "C" or "C+" grade will be accepted toward a degree, and no grade below a "B-" will be accepted in a major subject;

- Degree candidates in performance are required to give a public recital, normally during the candidate's final semester of study. Preparation and presentation of the recital shall follow the guidelines in the Handbook for Graduate Students;
- Degree candidates in music history or theory and composition are required to submit a thesis or major composition for evaluation by the reading committee. The MM Thesis in music composition takes the form of a musical score. Apart from considerations such as page size and layout, composition theses conform to the guidelines issued by the Graduate School. The deadline for formal approval of MM composition theses is the last day of classes in the semester in which the degree is expected to be conferred. Approval signatures of all members of the thesis committee are required prior to the final graduate oral examination.
- All students are required to pass an oral examination given by the Graduate Committee before the end of the semester in which the degree is to be granted. It may cover all areas of endeavor undertaken by the student in his graduate program or believed essential to the student's background;
- A candidate who fails the oral examination at the end of a semester may not be given a second one before the regular time for such an examination at the end of the next semester or summer session. A candidate who fails in the second oral examination shall not be granted the degree of MM or MME from this university.
- Full-time students are required to participate in an ensemble appropriate to the student's major or principal instrument as specified in the student's degree program.

Master of Music in Music Performance

Major: MUSP
Degree: MM
Unit: GU

Prerequisites

1. Bachelor of Music degree or equivalent.
2. Demonstration, by examination, of skills and capacities in the following fields: (a) written, aural, and keyboard harmony; (b) melodic, harmonic, and rhythmic dictation; sight-singing; (c) elementary counterpoint; and (d) history and literature of music, and analytic understanding of musical forms and genres.
3. Audition in major field, demonstrating a level equivalent to the completion of a Bachelor of Music in Performance degree. Students intending to major in voice must have a reading knowledge of one foreign language and satisfactory diction in two others.
4. GRE scores.

Curriculum	Semester Hours
Music History Review (MUS 500)*	0
Music Theory Review (MUS 400)*	0
Music Bibliography and Research Methods	3
Major Applied Field (MUS 603, 604, 613)	12
Music History Seminar (600-level)	3
Music Theory (500 or 600-level)	4
Major Subject and Electives**	8
Minimum Total	**30**

Notes:
*These courses may be satisfied by passing the entrance examinations in these areas.
**The major subject requirement can be satisfied with courses in pedagogy, literature or applied study in a secondary area; additional study in the major applied field or ensembles will not meet this requirement. Piano and vocal majors should complete a total of four (4) hours of pedagogy and/or literature directly related to their applied major.

Other Requirements

Students are expected to present a public recital that comprises no less than sixty (60) minutes of music and follows the guidelines governing public recitals. Normally this takes place during the candidate's final semester. Full-time students are required to participate in one ensemble each semester.

Master of Music in Music Performance with concentration in Instrumental Conducting

Major: MUSP
Concentration: COND
Degree: MM
Unit: GU

Prerequisites

1. Bachelor of Music degree or equivalent.
2. Demonstration, by examination, of skills and capacities in the following fields: (a) written, aural, and keyboard harmony; (b) melodic, harmonic, and rhythmic dictation; sight-singing; (c) elementary counterpoint; and (d) history and literature of music, and analytic understanding of musical forms and genres.
3. Audition in major field, demonstrating a level equivalent to the completion of the appropriate Bachelor of Music degree.
4. GRE scores.

Curriculum	Semester Hours
Music History Review (MUS 500)*	0
Music Theory Review (MUS 400)*	0
Bibliography and Research Methods	3
Major Applied Field (MUS 601, 602, 611)	6
Seminar in Conducting (MUS 659, 660)	4
Instrumental Conducting and Score Reading (MUS 559)	2
Music History Seminar (600-level)	3
Music Theory (500 or 600-level)	4
Music Electives**	8
Minimum Total	**30**

Notes:
*These courses may be satisfied by passing the entrance examinations in these areas.
**To be chosen from courses in pedagogy, literature, or the student's principal applied instrument.

Other Requirements
Students are expected to present a conducting recital, normally during the candidate's final semester. Full-time students are required to participate in one ensemble each semester.

Master of Music in Music Performance with concentration in Choral Conducting

Major: MUSP
Concentration: COND
Degree: MM
Unit: GU

Prerequisites

1. Bachelor of Music degree or equivalent.
2. Demonstration, by examination, of skills and capacities in the following fields: (a) written, aural, and keyboard harmony; (b) melodic, harmonic, and rhythmic dictation; sight-singing; (c) elementary counterpoint; and (d) history and literature of music, and analytic understanding of musical forms and genres.
3. Audition in major field, demonstrating a level equivalent to the completion of the appropriate Bachelor of Music degree.
4. GRE scores.

Curriculum	Semester Hours
Music History Review (MUS 500)*	0
Music Theory Review (MUS 400)*	0
Bibliography and Research Methods	3
Major Applied Field (MUS 601, 602, 611)	6
Seminar in Conducting (MUS 659, 660)	4
Instrumental Conducting and Score Reading (MUS 559)	2
Choral Literature	4
Music History Seminar (600-level)	3
Music Theory (500 or 600-level)	4
Electives **	4
Minimum Total	**30**

Notes:
*These courses may be satisfied by passing the entrance examinations in these areas.
**To be chosen from courses in pedagogy, literature, or the student's principal applied instrument.

Other Requirements

Students are expected to present a conducting recital, normally during the candidate's final semester. Full-time students are required to participate in one ensemble each semester.

Master of Music in Music Performance with concentration in Jazz

Major: MUSP
Concentration: JAZZ
Degree: MM
Unit: GU

Prerequisites

1. Bachelor of Music degree or equivalent.
2. Demonstration, by examination, of skills and capacities in the following fields: (a) written, aural, and keyboard harmony; (b) melodic, harmonic, and rhythmic dictation; sight-singing; (c) elementary counterpoint; and (d) history and literature of music, and analytic understanding of musical forms and genres.
3. Audition in major field, demonstrating a level equivalent to the completion of the appropriate Bachelor of Music degree and competence in improvisation and jazz keyboard. Refer to the audition requirement page for specific details.
4. GRE scores.

Curriculum	Semester Hours
Music History Review (MUS 500)*	0
Music Theory Review (MUS 400)*	0
Major Applied Field (MUS 605, 606, 615, 616)**	8
Bibliography and Research Methods (MUS 607)	3
Music History (600-level)	3
Music Theory (500 or 600-level to include Advanced Jazz Theory (MUS 539-02)	4
Advanced Jazz Improvisation (MUS 655)	2
Standard Jazz Repertoire (MUS 539-03)	2
Jazz Style and Analysis (MUS 539-01)	2
Concentration Electives ***	4
Music Electives ****	2
Recital	0
Minimum Total	**30**

Notes:
*Students whose focus is composition/arranging may substitute four (4) hours of jazz arranging.
**Electives in the concentration to be chosen from Jazz Arranging, (MUS 656), Film Scoring (MUS 657), Music Industry I, II (MUS 535, 536), Computers in Music I, II (MUS 553, 554).
****For Music Electives, students are encouraged to choose courses in pedagogy and literature.

Other Requirements

Students must participate in one (1) jazz ensemble and one (1) jazz combo each semester.

Master of Music in Music Performance with concentration in Piano Pedagogy

Major: MUSP
Concentration: PPED
Degree: MM
Unit: GU

Prerequisites

1. Bachelor of Music degree or equivalent.
2. Demonstration, by examination, of skills and capacities in the following fields: (a) written, aural, and keyboard harmony; (b) melodic, harmonic, and rhythmic dictation; sight-singing; (c) elementary counterpoint; and (d) history and literature of music, and analytic understanding of musical forms and genres.
3. Audition in major field, demonstrating a level equivalent to the completion of the appropriate Bachelor of Music in Performance or Piano Pedagogy degree.
4. GRE scores.

Curriculum	Semester Hours
Music History Review (MUS 500)*	0
Music Theory Review (MUS 400)*	0
Music Bibliography and Research Methods (MUS 607)	3
Piano Pedagogy (MUS 571, 572, 671, 672)	8
Major Applied Field (MUS 601, 602, 611)	6
Piano Literature (MUS 561 or 562)	4
Music History Seminar (600-level)	3
Music Theory (MUS 500 or 600-level)	4
Music Electives**	4
Minimum Total	**32**

Notes:
*These courses may be satisfied by passing the entrance examinations in these areas.
**The major subject requirement may be satisfied with courses in pedagogy, literature, or applied study in a secondary area; additional study in the major applied field or ensembles will not meet this requirement.

Other Requirements

Students are expected to present a master's recital normally during the final semester of study. Full-time students are required to participate in one ensemble each semester.

Master of Music in Music History and Literature or Theory and Composition

Major: MUHM or MUST
Degree: MM
Unit: GU

Prerequisites

1. Bachelor of Music degree or equivalent.
2. Demonstration, by examination, of skills and capacities in the following fields: (a) written, aural, and keyboard harmony; (b) melodic, harmonic, and rhythmic dictation; sight-singing; (c) elementary counterpoint; and (d) history and literature of music, and analytic understanding of musical forms and genres.
3. Evidence of preparation for advanced work in the area, as follows:

■ Applicants for the degree of Music History must submit a paper to the Department of Music History demonstrating ability to write efficiently and to do elementary research. In addition, applicants must complete the entrance examination in Music History with an average score of seventy (70) for admission to the Music History curriculum. Before admission to candidacy, students in Music History are required to have a reading ability in one foreign language (preferably German, French, or Italian) demonstrated by examination administered in cooperation with the Modern Languages Department (fee $20.00). The examination must be passed before the student is admitted to candidacy.

■ Applicants to the degree in Theory and Composition must submit original works to indicate ability and technical facility in the field of composition. Students should also have a thorough and practical knowledge of piano as well as a thorough knowledge in the areas of string, brass, and woodwind instruments.

4. GRE scores.

Curriculum	**Semester Hours**	**Total**
Music History Review (MUS 500)*	0	
Music Theory Review (MUS 400)*	0	
Music Bibliography and Research Methods (MUS 607)	3	
Music History Seminars (600-level)**	3-6	
Analysis (MUS 647, 648, 651, or 653)	3	
Seminar in Special or Historical Topics in Theory (MUS 652 or 691)	3	
Thesis	4	16-19

Music Theory and Composition Track

Advanced Private Composition	6
Theory	2
Applied Music (including conducting)	2
Electives	4
Minimum Total	**30**

Music History and Literature Track

Music History Seminars (two 600-level)	6
Applied Music (at the major or minor level, including conducting)	4
Electives	4
Minimum Total	**30**

Honors Track in Music History and Literature

Music History Seminar (600-level)	3
Applied Music (at the major or minor level including conducting)	4
Seminars in a Humanities Cognate Area (500 or 600-level)	6
Electives	4
Minimum Total	**36**

Notes:

*These courses may be satisfied by passing the entrance examinations in these areas.

**All students take the core courses and follow one of the tracks as listed.

***Students in the Honors Track in Music History and Literature will take two music history seminars in the core curriculum.

Other Requirements

All full-time students are required to participate in an ensemble each semester; the part-time students must complete one semester of ensemble for each fifteen (15) credits earned. For students in the Music History and Literature Track, the required ensemble is the Early Music or New Music Ensemble; students in the Theory and Composition Track will choose ensembles in consultation with the advisor and departmental faculty. Credit earned for ensemble participation is not applicable to the graduate degree.

Master of Music Education

Major: MUED
Degree: MME
Unit: GU

Prerequisites

1. B.M.Ed. degree or equivalent.
2. Classroom teaching experience (exclusive of practice teaching and prior to, or concurrent with, graduate study).
3. Demonstration by examination, of skills and capacities in the following fields: (a) written, aural, and keyboard harmony; (b) melodic, harmonic, and rhythmic dictation; sight-singing; (c) elementary counterpoint; and (d) history and literature of music, and analytic understanding of musical forms and genres.
4. GRE scores.

Curriculum	**Semester Hours**
Music History Review (MUS 500)*	0
Music Theory Review (MUS 400)*	0
Music Bibliography and Research Methods (MUS 607)	3
Qualitative Research Method (MUS 628)	2
Foundations of Music Methods (MUS 629)	2
Quantitative Research Methods (MUS 630)	2
Learning Theories in Music Education (MUS 639)	2
Music Education and Related Courses	5-6
Applied Music (chosen from major or minor performance fields, including Conducting)	4
Music History (500 or 600 level)	3
Music Theory (500 or 600 level)	2-3
Thesis**	4
Minimum Total	**30**

Notes:

*These courses may be satisfied by passing the entrance examinations in these areas.

**Students are required to prepare either a thesis (4 semester hours of credit) or a professional paper (without credit). In the latter case, 4 hours of coursework will be determined by the student and graduate advisor in order to achieve the 30-hour minimum requirement.

Master of Arts in Teaching in Music Education (Certification in Vocal or Instrumental Music, Grades P-12)

Major: EDMU
Degree: MAT
Unit: GE

Prerequisites

1. Bachelor or Music Education, Pre-certification requirements, or equivalent.
2. Admission to Graduate School.
3. Admission to Teacher Education.
4. Completion of Learning Theory and Human Growth and Development (ECPY 607) and Exploring Teaching Within the Socio-Cultural Context of P-12 Schools (EDTL 502/602).
5. Successful music audition.
6. PRAXIS must be taken prior to admission to the MAT Program
7. ACT of 21 (minimum) or equivalent.
8. GRE scores.

Curriculum **Semester Hours**

Either

Pre-Student Teaching (MUED 605): Orientation and General Methods (Vocal)*

OR

Pre-Student Teaching (MUED 606): Orientation and General Methods (Instrumental)* 3

*Note: Students are strongly encouraged to take either MUED 605 (vocal) or MUED 606 (Instrumental) in accordance with their degree emphasis prior to student teaching.

Qualitative Research Methods (MUED 628) 2
Foundations of Music Education (MUED 629) 2
Quantitative Research Methods (MUED 630) 2
Learning Theories in Music Education (MUED 639) 2
Applied Music (MUED 611) OR Conducting (MUS 659) 2
Applied Music (MUED 612) OR Conducting (MUS 660) 2

Exit Requirement

Student Teaching Seminar (MUED 607).....2
Student Teaching Seminar (MUED 608).....2
Capstone Seminar (MUED 609).....3
Music Student Teaching: Elementary/Secondary I (MUED 610).....4
Music Student Teaching: Elementary/Secondary II (MUED 611).....4

Minimum Total 30

Other Requirement

PRAXIS Exam must be passed for certification and conferral of the MAT degree in Music Education. Passing all KDE-required PRAXIS subtests is necessary for certification.

Doctor of Philosophy

Historical musicology is a humanistic discipline dedicated to the discovery, correlation, appraisal, and exposition of musical concepts. In order to communicate ideas through publications, teaching and performance, the musicologist employs skills developed in applying research methods and techniques, writing, musicianship and musical analysis.

The degree of Doctor of Philosophy is granted by the University of Kentucky at Lexington, Kentucky with residence at the University of Louisville. The faculties and facilities of both universities are available to students.

Prerequisite for Admission

1. Every applicant must apply, pay application fees, and be admitted to the Graduate Schools of both the University of Louisville and the University of Kentucky. The admission applications of both institutions should be sent to the respective admissions offices. Writing samples should be sent to the Director of Graduate Studies, School of Music, University of Louisville and to the Director of Graduate Studies, School of Music, University of Kentucky.
2. Master of Music or Master of Arts in Music or Music History, Bachelor of Music (or equivalent).
3. Demonstration, by examination, of skills and capacities in the following fields: (a) written, aural, and keyboard harmony; (b) melodic, harmonic, and rhythmic dictation; sight-singing; (c) elementary counterpoint; and (d) history and literature of music, and analytic understanding of musical forms and genres.
5. GRE scores.

Admission to Full Graduate Standing

All applicants must provide evidence of competence in research and writing. Applicants with a master's degree must submit the M.A. thesis. If the applicant has not completed a master's degree thesis, paper(s) of acceptable scope and quality, and a major research project undertaken as part of work done at the University of Louisville or the University of Kentucky, must be submitted by the end of the first semester of study.

An applicant may be admitted to full graduate standing in the Ph.D. program after (1) completion and acceptance of the major research project in lieu of the master's thesis, if this requirement is applicable; (2) satisfactory completion of at least nine (9) hours of course work at or above the 600 level, including at least one seminar or special course in musicology; (3) satisfactory completion of a proficiency examination in one of the required foreign languages (see below for language requirement); and (4) meeting the requirements of the Graduate School for admission to full graduate standing, including the removal of all deficiencies in music history, literature, and theory revealed by the graduate entrance examinations.

Admission to full graduate standing must normally be achieved no later than midterm of the third semester. The applicant may be permitted to register for a fourth semester if full graduate standing has not been attained. The formation of the doctoral committee will normally take place at the time full graduate standing is achieved.

A program of study must be approved by the doctoral committee.

Foreign Language Requirements

The foreign languages required for the Ph.D. in musicology are German and either French or Italian, and any other languages required for preparing the dissertation.

All students must take a proficiency examination, as described below, in one foreign language before or during the first month of residence. If the examination is failed, it must be retaken successfully by the midterm of the second semester of residence.

An examination in a second language (and third, if required by the dissertation committee) must be taken prior to the preliminary examinations. This examination may be repeated once.

Each language examination will be given according to the following format:

Part I: One or more passages from a musicological book or article, previously unseen by the student, and having a combined total of approximately 300 words will be translated. Use of a dictionary will be allowed.

Part II: The student will submit, prior to the examination, an article of twenty to fifty pages for approval by a member of the Music History faculty conversant with the language. After an appropriate period of preparation, the student will translate without the use of a dictionary a passage of approximately 500 words chosen by a faculty member of the Department of Classical and Modern Languages.

The time allowed for each part will be limited to two hours. The examination will then be graded as acceptable or unacceptable by two faculty members, one each from the Music History faculty and the Department of Classical and Modern Languages.

Candidates for degrees must be proficient in English.

Course Requirements
Courses taken in musicology should include a representative distribution of both period and literature courses; all periods of music history should be represented. A minimum of three courses taught by faculty members of the University Kentucky on either campus is required.

Residence Requirement
In addition to meeting other residence requirements of the University of Louisville, a doctoral student in musicology must be in residence as a full-time student or the equivalent for a minimum of four semester beyond the master's degree. At least two of these semesters must be consecutive. Courses taken at the University of Kentucky are accepted in fulfillment of residence at the University of Louisville.

Admission to Doctoral Candidacy
The applicant must pass comprehensive preliminary examinations, oral and written, in order to be admitted to candidacy. These qualifying examinations are to be taken preferably no later than one semester after completion of course work. Eligibility for the examination will be attained only after the completion of required course work, the satisfactory completion of two semesters of residency, and the satisfaction of the language requirement.

Students must be registered in the semester in which they take their qualifying examinations. Those who are not registered for courses, must register in one of the following ways:\

If registering at the University of Louisville, students must register for Doctoral Candidacy (DOCT 600) for each semester until graduation. At the University of Kentucky, students must register for two semesters of MUS 769 (nine 9 hours each), after which they register for MUS 769 (0 hours, no fee) for each following semester until graduation.

Doctor of Philosophy in Musicology

Major: MUSC
Degree: PHD
Unit: GU

Course Requirements

Research Methods (MUS 618 at UK; MUS 607 at UL)

Notation (MUS 701 at UK; MUS 583 at UL)

A minimum of six hours of graduate-level advanced analysis

(MUS 671-672 at UK; MUS 651 and 653 at UL)

A minimum of four seminars or special courses

(MUS 702 or 718 at UK; MUS 652, 670, 680, or 685 at UL)

Music History, Collegiate Teaching Practicum (MUS 775-776)

A minor in a field related to musicology must be developed outside the School of Music. Normally this involves a minimum of three courses (500 or 600 level). Undergraduate courses needed by the student in order to participate in graduate level courses in the cognate field will be taken without credit toward satisfying program requirements. At the discretion of the student's special committee, the outside minor may be interdisciplinary.

Active participation (performing, editing, or both) in the Early Music Ensemble is strongly recommended for a minimum of two semesters.

NURSING (NURS)

www.louisville.edu/nursing

Departmental Faculty

Professors
Paulette Adams, Ed.D., RN

Ruth B. Craddock, DNS, RN, Emerita

Linda H. Freeman, DNS, RN

Marianne Hutti, DNS, RNC, OGNP

Mary H. Mundt, Ph.D., RN, Dean, School of Nursing

Kay T. Roberts, Ed.D., RNC, FAAN, FNP

Karen Robinson, DNS, RN, CS, FAAN

Robert Topp, Ph.D., RN, Associate Dean for Research

Sally P. Weinrich, Ph.D., RN, FAAN

Associate Professors
Carla Hermann, Ph.D., RN

Cynthia Logsdon, DNS, ARNP

Rosalie O. Mainous, Ph.D., RNC

Cynthia McCurren, Ph.D., RN, Associate Dean for Academic Affairs

Deborah L. Scott , DNS, RN

Assistant Professors
Deborah Armstrong, Ph.D., RN

Cathy Bays, Ph.D., RN

Vicki Hines-Martin,

Barbara Speck, Ph.D., RN

Cheryl Zambroski, Ph.D., RN

Programs

The School of Nursing offers a Master of Science in Nursing that prepares nurses for advanced clinical practice with preparation as a nurse practitioner or clinical specialist. In addition, the program helps establish collaborative relationships between nurses and members of other health disciplines in education, research, and the delivery of health care.

Admission

Students can be admitted to the program for the Fall or Spring semester. Applications for each term will be reviewed, and students will be contacted regarding their recommended admission status within six weeks after the priority deadline.

Priority deadlines are:
Fall Semester.....May 1
Spring Semester.....October 1

Application materials received after the priority deadline may not be processed in time for registration. Therefore, all applicants are strongly encouraged to apply before the priority deadline.

To be considered for admission to Degree Status, the following items must be submitted: To the Graduate Admissions Office:

1. Completed U of L Graduate School Application, including $50 application fee (available online at: www.graduate.louisville.edu)
2. Transcript verifying completion of an accredited baccalaureate program in nursing, with a cumulative grade point average of at least 3.0 on a 4.0 scale.
3. Graduate Record Examination (GRE) scores.

4. At least two letters of reference from individuals who can speak of academic and/or professional capabilities and potential.

To the School of Nursing, Office of Student Services:

5. Completed Graduate Applicant Data Sheet (available on line at: www.louisville.edu/nursing)
6. A copy of valid Kentucky registered nurse license (without restrictions) or proof of eligibility for that licensure.
7. A personal interview with faculty may be required.

Applications will not be considered for Full or Conditional Degree status until all materials are obtained.

Students may enroll in a non-degree status. Application credentials must include the Graduate School Application including the $50 fee and an undergraduate transcript showing the completion of the baccalaureate program in nursing. Students are allowed to take up to 6 credit hours in non-degree status. Priority enrollment in courses is given to graduate nursing students in Degree status.

Curriculum for MSN

The MSN requires a minimum of 45 semester hours, which may be completed in full-time or part-time study (with full-time study, a student can complete the degree in two calendar years). Completion of a thesis or research project is required. Formal course offerings in the program are divided into two groups: core courses, which all students take, and the advanced nursing practice clinical track component. The majority of MSN courses are offered in a weekend format.

At least one year of relevant clinical experience as a licensed registered nurse is required before beginning clinical courses.

Master of Science in Nursing

Major: NURS
Degree: MSN
Unit: GN

Core Courses	**Semester Hours**	**Total**
NURS 550 Foundations for Advanced Practice	3	
NURS 552 Health Care Systems	3	
NURS 647 Clinical Decision Making: Psychopathology***	3	
NURS 649 Clinical Psychopharmacology***	1	
PHTX 650 Advanced Nursing Pharmacology	3	
NURS 651 Nursing Research	4	
NURS 652 Statistics	3	
NURS 653 Advanced Practice Roles	3	
NURS 654 Informatics in Health Care	2	
NURS 655 Pathophysiology for Clinical Decision Making*	3	
NURS 656 Advanced Clinical Assessment* (includes 42 clinical hours) or NURS 629 Neonatal Advanced Health Assessment (if NNP track)	3	
NURS 657 Interventions for Health Promotion	3	
NURS 698 Research Project	2	
or NURS 699 Thesis	5	
PEDI 851 Genetics**	2	32-36

Advanced Nursing Practice Component:
(one of the following areas)

NURS 615 Advanced Clinical Practice: Women's Health NP

(includes 560 clinical hours)

615-61 (4)

615-62 (5)

615-63 (4) 13

NURS 623 Advanced Clinical Practice Adult CNS

(includes 500 clinical hours)

623-61 (6)

623-62 (7) 13

NURS 625 Advanced Clinical Practice: Adult NP

(includes 560 clinical hours)

N625-61 (4)

N625-62 (5)

N625-53 (4) 13

NURS 635 Clinical Management: Neonatal NP

635-61 (4)

635-62 (3)

635-63 (3) 10

NURS 636 High Risk Clinical: Neonatal NP

(includes 600 clinical hours) 1-8

NURS 645 Advanced Clinical Practice: Psychiatric Mental Health CNS

(includes 532 clinical hours)

645-61 (6)

645-62 (7) 13

NURS 665 Advanced Clinical Practice: Gerontology NP

(includes 560 clinical hours)

665-61 (4)

665-62 (5)

665-63 (4)

(Not accepting new students until Fall 2003)

Advanced Clinical Practice: Family Nurse Practitioner
(includes 812 clinical hours)

Taught collaboratively with the University of Kentucky College of Nursing

NURS 725 (UK) (3)

NURS 660 (1)

NURS 726 (UK) (3)

NURS 661 (3)

NURS 662 (2)

NURS 659 (2)

NURS 663 (6)

Minimum Total 45-56

*Basic pathophysiology knowledge and physical/health assessment skills are necessary for successful progression in Advanced Pathphysiology and Health Assessment courses. The faculty strongly recommend formal basic courses or continuing education programs in pathophysiology and physical/health assessment as pre or corequisites to these advanced courses.

**Additional core course for Neonatal NP track. Credit hours are subject to change. Based on current course offerings.

***Core courses for Psychiatric Mental Health Clinical Specialist who do not take NURS 655.

Post-Master's Nurse Practitioner and Clinical Nurse Specialist Options
Nurses who have already obtained a Master of Science in Nursing degree may apply to one of the Clinical Nurse Specialist or the Nurse Practitioner options for post-master's study. These options are designed to prepare individuals to be eligible for the certification examinations for nurse practitioners or for Clinical Nurse Specialists.

Admissions Requirements:
To be considered for admission to Post-Masters Option, the following items must be submitted:

To the Graduate Admissions Office:
1. Completed U of L Graduate School Application, including $50 application fee (available online at www.graduate.louisville.edu)
2. Transcripts verifying completion of an accredited BSN and MSN programs. Applicants with U of L degrees do not need to send official transcripts.
3. At least two letters of reference from individuals who can speak of academic and/or professional capabilities and potential.

To the School of Nursing, Office of Student Services:
4. A copy of valid Kentucky registered nurse license (without restrictions) or proof of eligibility for that licensure.
5. Completed Graduate Applicant Data Sheet (available online at: www.louisville.edu/nursing)
6. A personal interview with faculty may be required.

Successful completion of the following courses meets the basic requirements for the practitioner examinations for Adult, Family, Gerontology, and Women's Health:

Hours	Semester Total
Advanced Nursing: NP	
NURS 653 Advanced Practice Roles	3
PHTX 650 Advanced Nursing Pharmacology	3
*NURS 655 Pathophysiology for Clinical Decision Making	3
*NURS 656 Advanced Clinical Assessment (includes 42 clinical hours)	3 12
Advanced Clinical Practice	
NURS 615, NURS 625, or NURS 665 (includes 560 clinical hours)	13
Family Nurse Practitioner (includes 812 clinical hours)	20
Total	**25-32**

* Basic pathophysiology knowledge and physical/health assessment skills are necessary for successful progression in Advanced Pathophysiology and Health Assessment courses. The faculty strongly recommend formal basic courses or continuing education programs in pathophysiology and physical/health assessment as pre or corequisites to these advanced courses.

For students interested in the Neonatal Nurse Practitioner, successful completion of the following courses meets the basic requirements for the Practitioner examination:

Hours	Semester Total
Advanced Nursing: Neonatal NP	
PHTX 650 Advanced Nursing Pharmacology	3
NURS 653 Advanced Practice Roles	3
PEDI 851 Genetics	2 8
Advanced Clinical Practice	
NURS 629 Neonatal Advanced Health Assessment	3 21
NURS 635/NURS 636 (includes 600 clinical hours)	18
Total	**28**

Students interested in the Adult or Psychiatric Mental Health CNS track must successfully complete the following courses:

Hours	Semester Total
Advanced Nursing: CNS	
NURS 647 Clinical Decision Making: Psychopathology (Psychiatric- Mental Health track)	3
NURS 649 Clinical Psychopharmacology (Psychiatric- Mental Health track)	1
NURS 653 Advanced Practice Roles	3
NURS 655 Pathophysiology for Clinical Decision Making (Adult Track)	3
NURS 656 Advanced Clinical Assessment (includes 42 hours clinical)	3
PHAR 650 Advanced Nursing Pharmacology	3 12-13
Advanced Clinical Practice	
NURS 645 Advanced Clinical Practice: Adult Psychiatric Mental Health CNS (includes 532 clinical hours)	13 13
NURS 623 Advanced Clinical Practice: Adult CNS (includes 500 clinical hours)	13
Minimum Total	**25-26**

ORAL BIOLOGY (OBIO)

www.dental.louisville.edu/dental/html/postdoc_msoralbio.htm

Departmental Faculty

Director
F. John Firriolo

Professors
Norbert J. Burzynski
Gary A. Crim, Associate Dean
Connie L. Drisko, Associate Dean
Allan G. Farman
Lawrence Gettleman
Allan Gould
Robert M. Greene
Henry Greenwell
Bruce Haskell
B. Edwin Johnson
Zafrulla Khan
Richard L. Miller
Frederick M. Parkins
Michelle L. Pisano
James P. Scheetz
Robert H. Staat
Arthur Van Stewart
John N. Williams, Dean
William W. Young

Associate Professor
Janice M. Butters
Douglas S. Darling
Sven-Ulrik Gorr
Margaret Hill
Regan L. Moore
Abbas Parsian
William Scarfe
Anibal M. Silveira
David Tasman

Assistant Professor
Steven Clark

PROGRAM DESCRIPTION

The School of Dentistry offers a program of study leading to the Master of Science Degree in oral biology. The program is directed toward a general understanding of the biology of the oral cavity and developing craniofacial region, clinical studies and biomechanics associated with dental sciences. Students obtain the scientific knowledge and biomedical skills required to perform contemporary dental research.

Areas for research training include: molecular, cellular and craniofacial biology; craniomaxillofacial diagnostic imaging; neural crest-related craniofacial and cardiovascular disorders; biochemistry of calcium-regulating hormones; regulation of gene transcription; oral microbiology; cellular mechanisms of salivary gland secretion; gene mapping of complex traits and birth defects; infection control; protein glycosylation; protein expression and trafficking; periodontology; dental materials science; orthodontics; endodontics; prosthodontics; and health services research related to dentistry.

A minimum of 30 semester hours is needed for the M.S. degree. Requirements for the degree include courses in introductory and advanced oral biology and in data analysis, participation in seminars, and a thesis.

Other course work may be required as individualized programs are developed by students working with their thesis advisor/director and graduate committees. The graduate committee also approves proposed thesis research, reviews the thesis research, reviews the thesis for acceptance, and administers a final oral examination.

The M.S. degree in oral biology offers training particularly important to persons wishing to pursue a career in academic dentistry. The program is available to students wishing to obtain only the M.S. degree, to students enrolled in Dental Specialty Certificate/ Residency Programs, students enrolled in the D.M.D. degree program, and persons who have previously earned a D.M.D. or M.D. (or equivalent) degree.

Application Credentials

Each of the credentials listed below should be sent to the Office of Graduate Admissions at least eight weeks prior to the beginning of the semester or summer session in which the student wishes to enroll; otherwise the application may not be reviewed in time for registration.

Students currently enrolled in the D.M.D. degree program who wish to apply to the M.S. degree in oral biology program should not do so until after the completion of their first academic year in the D.M.D. program.

Application for Admission

Application forms may be obtained from the Graduate School or the Office of Graduate Admissions. The application must be accompanied by a $50.00 non-refundable application fee. The Graduate School Application may be submitted on-line via the world-wide http://graduate.louisville.edu/app/. However, applications are not processed until the application fee is received.

Transcripts and Grade Point Average

The minimum requirement for admission is the baccalaureate degree or its equivalent from an accredited institution; however, official transcripts showing all degrees awarded on all undergraduate and all graduate and/or professional degree studies completed must be furnished at the time of application. All University of Louisville transcripts will automatically be submitted with the application.

M.S. degree in oral biology program applicants should have attained an overall grade point average (GPA) of 3.0 (on a 4-point scale) or higher attained during undergraduate education, and during graduate education (e.g., Dental School), if applicable. Individuals with a GPA between 2.75 and 3.0 may be accepted on a conditional basis, and will be considered as "on probation", as described by the University of Louisville Graduate School catalogue. This means that if they do not receive a GPA of 3.0 or greater during their first semester, they may be subject to dismissal. No student with a GPA less than 2.75 will be admitted to this program.

Written Personal Statement

Each applicant must submit a written personal statement explaining their reason(s) for seeking admission to the M.S. Degree in oral biology program as well as their educational goals and objectives. The statement should also demonstrate the applicants motivation and desire to earn an advance degree as evidenced by professional achievements, past research, etc.

The written personal statement should be addressed and mailed directly to the M.S. Oral Biology Program Director and not included with the application form.

Recommendations

At least two recent, favorable letters of recommendation from individuals who can speak to the applicant's academic and/or professional capabilities and potential for study in the M.S. in oral biology degree program are required. (Letters of recommendation to other programs, e.g., Dental School, dental specialty residency programs, are not acceptable).

Examination Scores

Each applicant is required to take the General Test Section of the Graduate Record Examination (GRE) and must instruct the Educational Testing Service to forward the results to the Office of Graduate Admissions, Belknap Campus, University of Louisville, Louisville, KY 40292, U.S.A. Applicants applying for non-degree or visitor status are not required to submit test scores.

The M.S. degree in oral biology program requires the applicant's GRE scores to be greater than the 50th percentile for the Quantitative sections of the examination and “4” or higher on the Analytical Writing section.

Alternatively, applicants who are enrolled in, an ADA accredited Dental School may submit their Part I @ National Dental Board Examination scores in place of the GRE. The student's National Dental Board Examination scores may be acceptable to the program if the average of their Part I scores is 80 or higher, and they received a passing score on all sections of the examination.

Students enrolled in the D.M.D. degree program who are applying to the M.S. degree in oral biology program, and have not yet taken Part I of the National Dental Board Examination, may substitute their Dental Aptitude Test (DAT) test scores. The student's DAT scores may be acceptable to the program if they scored at or above the national average in test category #8 (Academic Average).

International Students

International student applications must meet three criteria before they can be granted admission: (1) they must meet the regular admissions standards as applied to all successful applicants, (2) they must show proficiency in English by submitting official TOEFL scores of 550 or higher on the paper-based test or 213 or higher on the computer-based test or successfully completing the exit examination for the advanced level of the Intensive English as a Second Language Program at the University of Louisville, and (3) they must present evidence of financial resources adequate to support their educational and living expenses in the United States for the duration of their studies. The award of a University Fellowship or Graduate Assistantship is considered evidence of adequate financial resources.

TOEFL Examination

This examination is required of all international students from countries in which English is not the native language. Students holding a baccalaureate or advanced degree from an accredited institution in the United States are exempt from this requirement. Information about the times and places for the examination may be obtained from the Educational Testing Service, TOEFL, Princeton, New Jersey 08540, U.S.A.

Applicants who have not scored 550 (paper-based) / 213 (computer-based) or more on the TOEFL Examination may choose to apply to the Intensive English as a Second Language Program. Successful completion of the Advanced Level of this program will be considered adequate proof of the English proficiency required for course work in the M.S. degree in oral biology program. Acceptance to the Intensive English Program does not constitute acceptance to the Graduate School. For information and application forms, write to: IESL, University of Louisville, Louisville, Kentucky 40292, U.S.A.

Test of Spoken English
Students whose native language is not an American or British Dialect of English may not be awarded teaching assistantships unless they present an acceptable score on the Test of Spoken English (TSE) or a locally administered teaching competency demonstration. Applications and information about the times and places for the TSE may be obtained from Test of English as a Foreign Language, P.O. Box 6151, Princeton, N.J., 08541, U.S.A. The teaching competency demonstration is given by appointment at the University of Louisville, Testing Service.

M.S. DEGREE in ORAL BIOLOGY: SPECIFIC COURSE REQUIREMENTS

Major subject required (core) courses:

OBIO 501 Biomedical Data Analysis: Experimental Design and Statistics (Fall Semester) (3 semester hours)

OBIO 601 Introduction to Oral Biology Research (Fall Semester) (2 semester hours)

OBIO 606 Oral Biology Seminar (Spring Semester, Prerequisite: OBIO 601) (1 semester hour)

OBIO 619 Research (minimum of 8 semester hours required) (8 semester hours)

OBIO 620 Thesis (minimum of 6 semester hours required; the student must register for at least 1 semester hour of

OBIO 620 in the same semester as their thesis defense) (6 semester hours)

Major subject selective courses
At least 4 semester hours must be in courses selected from the group identified

below: (4 semester hours)

OBIO 600 Concepts in Oral Biology (4 semester hours)

OBIO 602 Bone and Calcium Physiology (3 semester hours)

OBIO 604 Oral Microbiology (3 semester hours)

OBIO 611 Craniofacial Osteology (1-3 semester hours)

OBIO 612 Craniomaxillofacial Diagnostic Imaging (2-4 semester hours)

OBIO 613 Diagnosis and Treatment of Temporomandibular Disorders (1 semester hour)

OBIO 614 Advanced Oral Diagnosis/Oral Medicine (1 semester hour)

OBIO 615 Advanced Clinical Pharmacology (1 semester hour)

OBIO 616 Overview of Medical Genetics in Oro-facial Disease (1.5 semester hours)

OBIO 617 Advanced Oral Pathology (1 semester hour)

OBIO 670 Dental Gross Anatomy (6 semester hours)

OBIO 671 General and Oral Histology (5 semester hours)

OBIO 675 Advanced Head and Neck Anatomy (2 semester hours)

Additional approved course semester hours

These courses may be chosen from any 600-level courses offered by the Graduate School that are deemed to be relevant and applicable to the student's program of study and thesis research, and must be approved by the student's thesis advisor/director and the Program Director: (6 semester hours)

*Note: OBIO 610 Advanced Topics in Oral Biology (1-4 semester hours) is strongly recommended in partial fulfillment to these 6 semester hours.
Total semester hours required for M.S. degree: 30 semester hours

PUBLIC ADMINISTRATION (PADM)

http://cbpa.louisville.edu/academicprograms/mpa.htm

Departmental Faculty

Program Director
Steven G. Koven (Urban and Public Affairs), Professor

Professors
Steven C. Bourassa (Urban and Public Affairs), School Director

Betty C. Brown (Accountancy)

John I. Gilderbloom (Urban and Public Affairs)

Thomas S. Lyons (Urban and Public Affairs)

Peter B. Meyer (Urban and Public Affairs)

H. V. Savitch (Urban and Public Affairs)

Ronald K. Vogel (Political Science)

Paul J. Weber (Political Science)

Associate Professors
Dewey M. Clayton (Political Science)

Carrie Donald (Urban and Public Affairs)

Wyatt McDowell (Accountancy)

Nathan H. Schwartz (Political Science)

Assistant Professors
Jasmine L. Farrier (Political Science)

David M. Simpson (Urban and Public Affairs)

Sherri L. Wallace (Political Science)

Program

The School of Urban and Public Affairs offers a Master of Public Administration degree in cooperation with the Department of Political Science. The program focuses on general administration, human resource management, nonprofit management, policy analysis, budgeting, research methods, and organization theory. It is multidisciplinary and aimed at providing recent college graduates, public sector practitioners, and persons in related fields with theoretical knowledge and practical skills that prepare them for nonprofit sector and public service careers, or complement their past professional experiences. Classes are held in the evenings and on weekends to meet the scheduling requirements of persons holding full-time jobs. The MPA program is also offered in a format that allows students to complete the entire degree on-line.

The Master of Public Administration offers three areas of specialization, each providing an opportunity to develop a focus through formal studies and professional career development. The Public Policy and Administration specialization (available on campus and on-line) emphasizes program review, analysis and evaluation, within a traditional public administration framework. The Labor-Public Management Relations (on campus only) specialization emphasizes the resolution of disputes in the workplace and the development of partnerships between labor and management. The Nonprofit Management specialization (on campus only) focuses on financial management, strategic planning, and grantsmanship for nonprofit organizations.

Public Administration Program
The Program requires a minimum of 42 credit hours for completion: a core curriculum of 27 hours, including 6 hours of practicum or internship, or 6 hours of thesis, and 15 hours from one of the areas of specialization. The core curriculum encompass studies in public administration, budgeting, statistics and organization and management. Students are permitted to simultaneously pursue core and elective courses.

Admission Requirements
Applicants must have a bachelor's degree (any major is acceptable), must have taken the Graduate Record Examination, and must submit two letters of reference and a statement of purpose. Admission is competitive and generally requires a minimum combined quantitative and verbal GRE score of 1000 and minimum undergraduate GPA of 2.75 (B).

Financial Aid
The School of Urban and Public Affairs administers a number of Graduate Research Assistanships (GRAs) that are awarded competitively and are intended to support full-time study. Students in the MPA Program may receive a maximum of two years of support as a GRA. The GRAs provide a stipend of at least $10,000 for 20 hours of work per week over a ten-month period. They also provide for remission of tuition and health insurance. Early application is encouraged.

Master of Public Administration

Major: PADM
Degree: MPA
Unit: GB

Core Courses .....Semester Hours.....Total
PADM 600 Public Administration and Organizational Theory.....3
PADM 601 Statistics for Public Affairs 3
PADM 602 Applied Research Methods.....3
PADM 603 Policy Analysis and Program Evaluation 3
PADM 604 Public Budgeting and Finance 3
PADM 606 Public Policy 3
PADM 642 Human Resources Management 3
PADM 682 Practicum/Internship
or PADM 695 Thesis .....6.....27

Public Policy and Administration Specialization
Five courses (15 hours) from the following:
PADM 605 Strategic Management and Planning.....3
PADM 607 Planning Theory.....3
PADM 608 e-Government.....3
PADM 610 Administrative Law and Process.....3
PADM 611 Financial Management for Public Administration.....3
PADM 620 Intergovernmental Relations.....3
PADM 621 Politics of Urban Development 3
PADM 623 Comparative Urban Development 3
PADM 624 Ethics in Public Administration.....3
PADM 625 Advanced Organizational Behavior 3
PADM 626 Housing and Community Development 3
PADM 627 Environmental Policy 3
PADM 640 Urban Economics 3
PADM 680 Independent Research in Public Administration.....3
PADM 683 Topical Seminar in Public Administration 3
PADM 688 Land Use and Planning Law .....3.....15

Labor-Public Management Relations Specialization
Five courses (15 hours) from the following:
PADM 605 Strategic Management and Planning 3
PADM 610 Administrative Law and Process 3
PADM 625 Advanced Organizational Behavior 3
PADM 640 Urban Economics 3
PADM 644 Collective Bargaining.....3
PADM 647 Arbitration 3
PADM 648 Mediation and Dispute Resolution.....3
PADM 649 Legal Aspects of Labor Relations.....3
PADM 651 Trade Unions 3
PADM 652 Equal Opportunity and the Workplace.....3
PADM 654 Special Topics in Worker Management Relations.....3
PADM 680 Independent Research in Public Administration.....3
Minimum Total.....42

Nonprofit Management Specialization
Five courses (15 hours) from the following:
PADM 606 Strategic Management and Planning.....3
PADM 608 e-Government.....3
PADM 609 Introduction to Nonprofit Management 3
PADM 610 Administrative Law and Process.....3
PADM 611 Financial Management for Public Administration.....3
PADM 612 Nonprofit Gransmanship.....3
PADM 620 Intergovernmental Relations.....3
PADM 624 Ethics in Public Administration.....3
PADM 625 Advanced Organizational Behavior 3
PADM 626 Housing and Community Development 3
PADM 640 Urban Economics 3
PADM 647 Arbitration 3
PADM 648 Mediation and Dispute Resolution.....3
PADM 680 Independent Research in Public Administration.....3
POLS 620 Topics in Public Policy.....3
SW 622 Issues in Policy and Service Delivery.....3

Minimum Total 15

PAN-AFRICAN STUDIES (PAS)

www.louisville.edu/a-s/pas

Departmental Faculty
Chair
J. Blaine Hudson, Associate Professor

Professor
Robert L. Douglas

Associate Professor
Lateef O. Badru

B. Folasade Iyun

Ricky L. Jones

Yvonne Jones

The Pan-African Studies Department offers courses that may be applied toward graduate degrees in other areas. Students must obtain their program advisor's permission before enrolling in these courses. Students who are interested in more information on these courses should contact the Chair of the Department.

Master of Arts in Pan-African Studies

The Department of Pan-African Studies has developed a Master of Arts program to provide an opportunity for structured graduate studies in the multi-disciplinary field of Pan-African Studies. Students will have the opportunity of choosing between two concentrations:

1. African American Studies; or
2. African and Diaspora Studies.

This broad concentration areas reflect sub-disciplines within the larger field of Pan-African Studies and will enable students to focus more intensively on their particular area(s) of interest. Each will be offered with a thesis or examination option.

Admission

Qualification

Students apply for admission to the Master of Arts in Pan-African Studies program must meet the following standards:

- a minimum 2.75 undergraduate cumulative grade point average;
- the submission of an official transcript reflecting previous degree earned;
- at least two letters of recommendation; and
- a combined score of a least 900 on the Graduate Record Examination Verbal and Quantitative sections

The Department of Pan-African Studies will consider exceptions to these standards using grades and GRE scores on a sliding scale (i.e, a higher g.p.a can off-set a lower GRE score, and vice versa) and admission in probationary status may be recommended for promising students with undergraduate g.p.a or GRE score below the stated minima. The PAS Director of Graduate Studies will serve as Graduate Advisor and will be responsible for handling routine admissions cases. The Chair may convene a "Graduate Programs Committee" (comprised of three PAS faculty, one representative from the College of Education and Human Development and one from another Arts and Science Department) to deal with extraordinary cases as they arise.

The files of applicants for admission to the Master of Arts in Pan-African Studies program will be evaluated by the PAS Director of Graduate Studies. No applicant will be permitted to register for courses until all required materials have been submitted to, and he or she has been admitted official by, the Graduate School.

In order to be retained in the Master of Arts in Pan-African Studies program students will be expected to maintain a minimum g.p.a of 3.0 in all course work taken for graduate credit any student whose cumulative quality point total falls to six fewer than three times the number of hours attempted will not be retained

Thesis Option

Core Courses.....15

PAS 601: Graduate Research Methods

PAS 602: Theories and Issues in Pan-African Studies.

Nine (9) credit hours of PAS courses for graduate credit distributed as follows:

Three (3) credit hours in Historical Studies;

Three (3) credit hours in Cultural Studies;

Three (3) credit hours in Social Studies;

Concentration Areas.

African American Studies.....12

Nine (9) credit hours of PAS courses for graduate credit focusing on African Americans distributed as follows:

Three (3) credit hours in Historical Studies;

Three (3) credit hours in Cultural Studies;

Three (3) credit hours in Social Studies;

Three credit hours in any PAS area focusing on African Americans.

Or

African and Diaspora Studies 12

Nine (9) credit hours of PAS courses for graduate credit focusing on African and Diaspora Studies distributed as follows:

Three (3) credit hours in Historical Studies;

Three (3) credit hours in Cultural Studies;

Three (3) credit hours in Social Studies;

Three credit hours in any PAS area focusing on Africa and/or Diaspora.

Thesis: PAS 604 3

Elective in related field (with advisors approval).....3

Minimum Total.....33

Examination Option

Core Courses 15

PAS 601: Graduate Research Methods

PAS 602: Theories and Issues in Pan-African Studies.

Nine (9) credit hours of PAS courses for graduate credit distributed as follows:

Three (3) credit hours in Historical Studies;

Three (3) credit hours in Cultural Studies;

Three (3) credit hours in Social Studies;

Concentration Areas.

African American Studies 12

Nine (9) credit hours of PAS courses for graduate credit focusing on African Americans distributed as follows:

Three (3) credit hours in Historical Studies;

Three (3) credit hours in Cultural Studies;

Three (3) credit hours in Social Studies;

Three credit hours in any PAS area focusing on African Americans.

Or

African and Diaspora Studies.....12

Nine (9) credit hours of PAS courses for graduate credit focusing on African and Diaspora Studies distributed as follows:

Three (3) credit hours in Historical Studies;

Three (3) credit hours in Cultural Studies;

Three (3) credit hours in Social Studies;

Three credit hours in any PAS area focusing on Africa and/or Diaspora.

Electives in related field (with advisors approval 6

Minimum Total..... 33

(Note: Satisfactory completion of a comprehensive examination will be required of all student who do not complete a thesis.)

The Graduate Certificate in Pan-African Studies

Admission

Admission to the graduate certificate in Pan-African Studies is open, potentially, to any student who has completed at a minimum. Post-baccalaureate students wishing to pursue the certificate outside the framework of a graduate degree program must apply for admission through and meet the general requirements for admission to the Graduate School. These requirements include the submission of:

- an official transcript reflecting previous degrees earned;
- at least two letters of recommendation; and
- scores on the General Test Section of the Graduate Record Examination.

If resource limitations necessitate the imposition of restrictions, the PAS Graduate Programs Committee will select students based on the following criteria: 1) undergraduate record; 2) letters of recommendation; 3) personal interview; and 4) GRE scores.

Graduate students wishing to pursue the certificate program in Pan-African Studies in conjunction with a graduate degree must meet the requirements for admission to that degree program and should then apply for the certificate program by consulting the PAS Director of Graduate Studies

after admission. Depending on the structure of the degree program, coursework toward the certificate may be either additional hours beyond those required for the degree or elective hours toward the degree, or a combination of the two. The PAS Director of Graduate Studies shall then inform the student's degree program chair and work to coordinate the completion of degree and graduate certificate program requirements.

Exceptions
Exceptions to these standards are not anticipated. However, a "Graduate Programs Committee" (comprised of three PAS faculty, one representative from the College of Education and Human Development and one from another Arts and Sciences department) will be responsible for dealing with exceptional cases as they arise.

Responsibility
The Department of Pan-African Studies Director of Graduate Studies will review and evaluate each applicant's qualifications for admission and make recommendations to the Chair. The Graduate Programs Committee referenced above will be convened only to review exceptional cases.

Requirements for the Graduate Certificate in Pan-African Studies

1. A total of fifteen (15) hours in courses approved for graduate credit in accordance with the policies of the Graduate School.
2. Nine (9) credit hours must be chosen from the list of "Approved PAS Courses" (available in the Department of Pan-African Studies): three (3) credit hours from the "Historical Studies" area; three (3) credit hours from the "Cultural Studies" area; and three (3) credit hours from the "Social Studies" area. Substitutions must be approved by the Director of Graduate Studies.
3. Six (6) credit hours must be chosen from the list of "Approved Electives" (available in the Department of Pan-African Studies"). For students pursuing graduate degrees, at least one course must be outside of the department in which the student is pursuing the degree. Substitutions must be approved by the Director of Graduate Studies.
4. At least three hours must be at the 600 level.
5. A single course may satisfy more than one of these requirements.
6. Course work toward the graduate certificate in Pan-African Studies may also count toward the student's graduate degree.

Note: Students may not apply 500-level courses taken for undergraduate credit.

PHARMACOLOGY AND TOXICOLOGY (PHTX)

www.louisville.edu/medschool/pharmacology/

Departmental Faculty

Professor and Peter K. Knoefel Chair
David W. Hein - Molecular pharmacogenetics; molecular epidemiology; genetic predisposition to cancer and drug toxicity; functional genomics; molecular genetics; environmental toxicology.

Professor and Graduate Program Director
William M. Pierce, Jr. - Mechanisms of bone formation and resorption; design of novel drugs for management of osteoporosis; biomolecular mass; spectrometry; proteomics in structural biology.

Professors
George R. Aronoff - Effects of uremia on drug disposition in humans, drug nephrotoxicity, renal drug metabolism, artificial intelligence.

Frederick W. Benz - Biochemical pharmacology and toxicology; biochemical mechanisms of drug action and toxicity.

Aruni Bhatnagar – Cardiovascular toxicology; oxidative mechanisms of cardiovascular disease; lipid peroxidation in athersclerosis; gene expression; secondary complications of diabetes.

Theresa S. Chen - Biochemical toxicology; role of glutathione in aging toxicology; general and specific toxicity of environmental pollutants.

Nicholas A. Delamere - Electrolyte transport mechanisms in epithelia; second messenger regulation of Na,K-ATPase activity; fluorscence imaging studies on cytoplasmic calcium; cellular proton transport.

John W. Eaton – Biological oxidation/reduction reactions with special emphasis on inflammatory diseases and neoplasia.

Paul N. Epstein - Molucular mechanisms of diabetogenesis. The use of transgenic animals to study genetics and molecular mechanisms in vivo.

David Gozal - Signal transduction mechanisms underlying ventilatory response to hypoxia; neuronal adaptions to intermittent hypoxia; growth factors, intracellular signaling, and genomic implications.

Ramesh C. Gupta – Cancer etiology and prevention using molecular markers (DNA damage, DNA repair, gene array). Oxidative stress and degenerative diseases. Aging. Environmental toxicology.

Theo Hagg – Neurotrophic factor receptors and endogenous stem cells as drug targets to develop repair strategies for neurological disorders, including spinal cord injury.

Harrell E. Hurst - Analytical toxicology and kinetics with emphasis on qualitative and quantitative techniques, including gas chromatography, high pressure liquid chromatography, and GC/mass spectrometry.

Y. James Kang - Molecular and cardiac toxicology; transgenic and knock out animal models to study oxidative injury and antioxidant assistance in the heart; biological functions and toxicological significance of metallothionein and glutathione in vivo.

Craig J. McClain - Role of cytokines in liver injury and other forms of hypotoxcity and other interactions between nutrition and toxicology.

Donald M. Miller – Molecular and clinical oncology; modulation of oncogene expression; triplex DNA based gene therapy; treatment of melanoma.

Donald E. Nerland - Biochemical toxicology; metabolism of drugs and environmental pollutants.

M. Michele Pisano – Molecular developmental toxicology; gene environment interactions in normal and abnormal embryonic development; growth factor directed cellular signal transduction in embryonic cell growth and differentiation.

George C. Rodgers, Jr. - Toxicokinetics in drug overdoses and pharmacokinetics in pediatric disease states.

Peter P. Rowell - Neuropharmacology; effect of drugs on brain neurotransmitters and receptors.

Daniel I. Sessler – Outcomes research; effects of anesthetics on thermoregulation; perioperative heat balance; adverse effects of mild hypothermia; effects of supplemental perioperative oxygen on wound infections, nausea and vomiting.

David J. Tollerud – Occupational and environmental medicine; Occupational toxicology; molecular epidemiology.

Leonard C. Waite - Endocrine pharmacology; mechanism of action of hormones; pharmacological modulation of hormone action; mineral homeostasis.

Walter M. Williams - Studies of drug elimination (metabolism and excretion).

John L. Wong - Biological chemistry, molecular dosimetry in environmental health, preparation of monoclonal antibodies in biomarker studies.

Associate Professors
Shirish Barve – Effects of alcohol on molecular mechanisms of cytokine action, gene expression and liver injury.

Bodduluri Haribabu – Signal transduction and chemoreceptors. Role of leukotriene receptors in inflammation and host response.

Teresa Whei-Mei Fan – Stress metabolism and contaminant biotransformation; use of metabolomics and proteomics for probing environmental stress metabolism and adaptation; ecotoxicology and bioremediation.

W. Glenn McGregor - Molecular biology of DNA damage, repair and mutagenesis; molecular mechanisms of mutagenesis induced by model carcinogens; molecular mechanisms of replication of DNA templates containing well-defined site specific damage.

Steven R. Myers - Drug metabolism, metabolism of xenobiotics and chemical carcinogens; use of hemoglobin as a biomarker in exposure to xenobiotics.

J. Christopher States - Molecular biology and molecular genetics of DNA damage and repair in humans; mechanisms of chemoresistance; arsenic toxicity and cell cycle disruption.

Janice E. Sullivan – Clinical pharmacology with a focus on developmental pharmacokinetics and pharmacodynamics.

Wolfgang Zacharias - Ribozymes for gene therapy in rheumatoid arthritis; involvement and roles of cathepsins in oral cancers; gene expression profiling with DNA microarray clip technology.

Assistant Professors
Gavin E. Arteel – Mechanisms of oxidative stress; mechanisms of alcohol-induced hepatitis, pancreatitis, and hepatocellular carcinoma.

Jason A. Chesney – Novel regulators of cancer cell metabolism; identification of emerging viruses and the development of immune-based therapies agains widely metastatic cancers.

David E. Clouthier – Function of endothelin-A receptor signaling during craniofacial and cardiovascular development. Mouse models of human birth defect syndromes.

Evelyne Gozal - Signal transduction pathways involved in neuronal cell survival and neuronal cell death during hypoxia; cellular mechanisms underlying brain adaptation to chronic and intermittent hypoxia; identification of the kinases and transcription factors activated by hypoxia, leading to gene induction and to adaptation to oxygen deprivation.

Michael Hetman – Role of signaling kinases in neuronal repair and demise.

Zhao-Hui (Joe) Song - Molecular pharmacology; cloning and functional characterization of novel G protein-coupled receptors; molecular mechanisms of action and structure-function relationships of cannabinoid (marijuana) receptors.

Yang Wang – Molecular and cellular regulation of genes implicated in hypoxic/ischemic injury and protection in the cardiovascular system.

Instructor
Jian Cai – Application of mass spectrometry in biomedical research. Drug and metabolite identification and quantification. Protein identification and post-translational modification. Hemoglobin adducts as biomarkers of chemical exposure and pathogenesis.

Michael E. Brier - Mathematical modeling in pharmacokintics and drug disposition.

James E. Jumblatt – Biochemical pharmacology of secretory mechanisms in ocular epithelia.

Ye Qi Liu – Pathogenesis of type 2 diabetes mellitus. Biochemical and molecular mechanisms of pancreatic beta cell adaptation in genetic and transgenic animal models. Adaptive mechanism of pancreatic beta cells in the offspring of diabetic and malnourished mothers.

Frederick N. Miller – Microvascular control mechanisms, macromolecular leakage, inflammatory mediators and tumor biology.

Abbas Parsian - Gene mapping of rare autosomal recessive disorders and mental retardation; role of brain-derived neurotrophic factor in the development of Parkinson's disease; quantitative trait loci mapping in animal models of human disorders.

Avital Schurr - Hypoxic mechanisms in central nervous system injury and methods for protection.

Guang Jian Wong – Mechanisms and prevention of nerve cell death and neurodegeneration. Role of glutamate neurotoxicity, calcium dysregulation and mitochondrial function in neuronal death in models of central nervous system injury, aging and neurodegenerative diseases.

William W. Young – Molecular glycobiology; glycosyltransferase structure and expression.

Emeritus/Emerita
Laurence A. Carr

Rose Dagirmanjian

Thomas D. Darby

Charles H. Jarboe

Thomas G. Scharff

William J. Waddell

Thom J. Zimmerman

Doctor of Philosophy in Pharmacology and Toxicology

Major: PHTX
Degree: PHD
Unit: GM

General Information

These guidelines represent the policies of the Department of Pharmacology and Toxicology regarding the doctoral (Ph.D.) program. The doctoral program is administered by the Graduate Committee consisting of the Graduate Program Director, three additional faculty members elected by the faculty, and a doctoral candidate selected by the graduate students. This committee is responsible for reviewing the progress of the students, administering the qualifying exams and recommending changes in the programs for approval by the faculty. In addition, the Department Chairman, the Graduate Committee, and all members of the faculty are available to assist students in their progress towards successful completion of the Ph.D. degree and in obtaining outstanding research positions following graduation.

A copy of these guidelines will be given to all students upon arrival and following any changes. Students are expected to read and be familiar with all of the policies and requirements outlined herein. These guidelines are not meant to supersede the academic policies of the University as outlined in the Graduate Bulletin. Students are expected to familiarize themselves with the Graduate Bulletin, the policies on academic standing, the statement of student ethics, and the requirements for obtaining graduate degrees at the University of Louisville.

Many students will matriculate into the Pharmacology and Toxicology graduate program through the School of Medicine's Integrated Programs in the Biomedical Sciences (IPIBS) gateway. The Pharmacology and Toxicology graduate program is designed to facilitate matriculation from the IPIBS gateway. Some students may wish to apply for the genetics and molecular medicine track within the pharmacology and toxicology graduate program. This track, for which fellowship support is available from the Center for Genetics and Molecular Medicine, requires that the student take Advanced Eukaryotic Genets (BIOC 641; 4 credits) in addition to the other required courses.

Student Financial Support
Students accepted into the Ph.D. program will be considered for financial aid. Since all Ph.D. students and candidates are considered to be full-time students, they generally are not permitted to seek outside employment while enrolled in the doctoral program. In cases where financial aid is limited and additional support is essential, students needing outside employment must apply in writing for departmental faculty approval. The faculty must also approve any change in employment, as well as approving continued outside employment on an annual basis.

Laboratory Research and Selection of Advisor
Students in the Ph.D. program receive training in both the classroom and laboratory. It is most important that students begin work in the laboratory as soon as possible. During the summer of the first year, incoming students attend an orientation program to introduce them to the facilities and the research activities of the faculty. During this time, each student will choose

or be assigned to participate in a research laboratory, although this may not be the laboratory in which the dissertation research is completed.

During the first semester, students will take a research methods course designed to familiarize them with basic pharmacological research techniques and practices. During the first quarter, students also will meet more formally with those faculty members of the department with whom the student may wish to work. Students will participate in laboratory rotations in order to familiarize themselves with a variety of possible research projects and faculty mentors. Students will receive a letter grade for their research effort and performance every semester prior to becoming a doctoral candidate.

As soon as possible, but no later than the end of the first year, students must select Graduate Research Advisors. Early selection of research projects and advisors will permit students to spend a maximum amount of time pursuing their research goals and thus shorten the time required for completion of their dissertation research. The selections of the graduate advisors must be approved by the Graduate Committee. Students are expected to begin working diligently in the laboratory of their research advisors as soon as the selections are made. Although students normally remain in the laboratories of these advisors for all Ph.D. training, if it is decided by either an individual student or his/her advisor that a change of research advisors is desirable, then the student has the option of selecting a new research advisor with the approval of the Graduate Committee.

Selection of Dissertation Committee

Once an advisor has been selected and the research project is underway, the advisor in consultation with the student will submit to the Graduate Committee names of five faculty members willing to serve on the student's Dissertation Committee. Since this dissertation committee must approve the student's research proposal, the committee should be appointed as soon as possible. Committees must be approved by the Graduate Committee, the Chair of the Department and the Dean of the Graduate School.

Course

Students will normally complete all of the required courses for graduation during the first 18 months of study. The required courses are listed below, and the normal schedule for taking these courses is outlined in the timetable at the end of these guidelines. Any changes to this schedule must be approved in advance by the Graduate Committee.

Course.....Title

5280-665..... Research Methods in Pharmacology & Toxicology

5210-645, -647.....Biochemistry I and II

5285-605, -606 .....Systemic Physiology I and II

5280-660 .....Principles of Drug Action

5280-667.....Cell Biology

5210-668 .....Molecular Biology

5280-601.....Principles of Medical Pharmacology

5280-606.....Pharmacology & Toxicology Seminar

5280-619Research in Pharmacology & Toxicology

In addition to these required courses, a variety of electives are offered by this and other departments, which may be taken with the permission of the student's research advisor.

Seminars and Research Conferences

All students are expected to attend departmental seminars, research conferences and journal clubs and will register for 5280-606 (Pharmacology Seminar, one hour credit) each semester. Students will also give one presentation per year. Following these presentations, students will be given written evaluations which will be discussed with them by a member of the departmental Seminar Committee. Doctoral candidates will normally have meetings with their Dissertation Committees following their annual seminars in which their accomplishments and progress towards the Ph.D. degree will be discussed. All students are expected to participate actively in the questions and discussion following seminars. Students will receive grades based both on their individual presentations as well as their participation in the other departmental seminars.

Qualifying Exams

Ph.D. students will take a series of monthly Qualifying Exams, formulated by the faculty members of the department and administered by the Graduate Committee. Each exam will be designed to assess the ability of students to apply their knowledge to various research situations.

Evaluation of Student's Progress toward the Ph.D. Degree

At the end of every semester, the progress of each Ph.D. student will be evaluated by the departmental faculty. Ph.D. students are expected to maintain a GPA of at least 3.0, satisfactory research performance, active participation in department activities and seminars, and acceptable performance on the Qualifying Exams (for second year students). Students who receive grades of C or below in two or more courses will be considered for dismissal. Students must also maintain a satisfactory level of research performance in order to retain their research assistantship.

NIH Grant and Research Progress Reports

As part of the doctoral training program, students must complete and submit to their Dissertation Committees and the departmental faculty a dissertation research proposal in the form of an NIH grant application. A copy will be placed in the departmental office. After faculty and committee members have had at least two weeks to read the student's grant application, the proposal will be presented and defended by the student during a scheduled seminar period. The student's dissertation committee must give written approval of the proposal prior to advancement to candidacy.

The NIH grant application may be submitted at any time during the second year of study, but normally will be submitted before April 1 and presented by the end of May. One hour of Independent Study credit will be given during the Spring semester of the second year for work on the grant application, and a grade will be assigned for the quality of the application.

Masters Candidacy and Thesis

After successful completion of all required course work and successful completion of qualifying exams, the student will be admitted to Master's candidacy. Once candidacy is achieved, presentation and successful defense of a thesis will be the remaining requirement for the MS degree (see Master's degree guidelines).

Doctoral Candidacy

After successful completion of all required course work, successful completion of the qualifying exams (accumulation of 24 points), approval of the NIH grant application, and acceptable performance in the laboratory, a student will become a Doctoral Candidate. The M.S. degree and doctoral candidacy should normally be achieved no later than the summer following the second year. The remaining requirement is to demonstrate to the student's Dissertation Committee his/her ability to plan, conduct, analyze, and present original research.

Each year of candidacy, students will present updates of their research progress at regularly scheduled departmental seminars. Student Dissertation Committees must provide annual written certification of satisfactory progress toward the Ph.D. Failure to make satisfactory progress towards the Ph.D. degree, documented by unsatisfactory reports from the student's Dissertation Committee, is grounds for dismissal from the program.

Dissertation

The writing and defense of a Doctoral Dissertation is the final requirement for the Ph.D. degree. Dissertation committee members must have had at least two weeks to read a student's Dissertation before a defense can be scheduled. The dissertation must present data of sufficient quality and quantity so as to convince the Dissertation Committee that the student

possesses the ability to pursue independent and original research. The student must defend the research protocol, results, and conclusions at an oral Dissertation Defense. To satisfactorily pass the dissertation defense, a student may not receive more than one unfavorable vote from a member of the Dissertation Committee. Upon passing the dissertation defense, the department will recommend to the Dean of the Graduate School that the Doctor of Philosophy be awarded to the student by the University of Louisville.

Typical Course Schedule and Timetable

FIRST YEAR:
Summer
Orientation

Qualifier 1A exam

Fall (Credit hours)
Research Methods in Pharmacology and Toxicology (2)

Biochemistry I (4)

Systemic Physiology I (3)

Research in Pharmacology and Toxicology (2)

Seminar in Pharmacology and Toxicology (1)

Qualifier 1B exam

Spring (Credit hours)
Biochemistry II (4)

Systemic Physiology II (3)

Cell Biology (3)

Seminar in Pharmacology and Toxicology (1)

Research in Pharmacology and Toxicology (2)

Appoint Dissertation Committee

SECOND YEAR
Summer (Credit hours)
Research in Pharmacology and Toxicology (3)

Principles of Drug Action (3)

Qualifier 1C exam

Fall (Credit hours)
Principles of Medical Pharmacology (6)

Molecular Biology (4)

Seminar in Pharmacology and Toxicology (1)

Research in Pharmacology and Toxicology (4)

Qualifier 1D Exam

Spring
Research

Enter MS candidacy and write thesis

Submit PhD proposal in NIH grant format

Seminar presentation and defense of PhD proposal

Approval of Doctoral Candidacy and Award of M.S. degree

THIRD & FOURTH YEARS:
Full-time laboratory research

Register as Doctoral Candidate

Seminar (annual research presentations and Dissertation Committee meetings)

FINAL YEAR:
Complete and submit Doctoral Dissertation

Dissertation defense

Award of Ph.D. degree at University graduation ceremony

Master of Science in Pharmacology and Toxicology

Major: PHTX
Degree: MS
Unit: GM

General Information

These guidelines represent the policies of the Department of Pharmacology and Toxicology regarding the Masters (M.S.) program. The graduate program of the Department is administered by a Graduate Committee consisting of the Graduate Program Director, three additional faculty members elected by the faculty, and a doctoral candidate selected by the graduate students. This committee is responsible for reviewing the progress of the students and recommending changes in the Masters program for approval by the faculty. In addition, the Department Chairman, the Graduate Committee, and all members of the faculty are available to assist students in their progress towards successful completion of the M.S. degree.

A copy of these guidelines will be given to every entering masters candidate upon arrival. Each student is expected to read and be familiar with all of the policies and requirements outline herein. These guidelines are not meant to supersede the academic policies of the University as outlined in the Graduate Bulletin. Students are expected to familiarize themselves with the Graduate Bulletin, the policies on academic standing, the statement of student ethics, and the requirements for obtaining graduate degrees at the University of Louisville.

Masters Track

Two tracks are available to students interested in obtaining the M.S. degree in the Department of Pharmacology and Toxicology. These are the M.S. - Laboratory Research Track (Track 1), and the M.S. -Academic Research Track (Track 2).

The M.S. - Laboratory Research Track requires that the student work extensively in a research laboratory under the direction of a faculty Research Advisor throughout the two-years of matriculation. During the summer of the first year, incoming students in this track of the Masters Program will attend an orientation program to introduce them to the various laboratories and research activities of the faculty. During this time, but not later than the end of the Fall semester, each student must choose (or will be assigned) a Research Advisor under whose direction and in whose laboratory the research project will be conducted. Students in Track 1 of the Masters program are expected to begin working diligently in the laboratory of the advisor as soon as the selection is made. Students will register and receive a grade for laboratory research every semester. Students who successfully complete the M.S. degree in the Laboratory Research track could be considered for advanced standing into the Ph.D. program, usually at the level of Doctoral Candidacy, pending submission of an NIH grant proposal and successful completion of a written qualifying examination.

The M.S.-Academic Research Track, while not requiring extensive laboratory work, requires the student to research an area of pharmacological or toxicological importance under the direction of a faculty advisor. This research must result in the generation of a comprehensive treatise which reviews, critically analyzes and assimilates a body of knowledge into a Masters thesis approved by the student's Thesis Committee. Students in Track 2 of the Masters program are expected to begin working diligently on this project as soon as they have chosen the faculty advisor and research topic. Students will register and receive a grade for work on their research project every semester. Students who obtain the M.S. degree in the Academic Research Track will normally not

have attained sufficient laboratory experience to be admitted to advanced standing in the Ph.D. program.

Research Advisor
As indicated above, as soon as possible, but no later than the end of the first semester, each student must select (or be assigned) a Research Advisor with whom the student will conduct their laboratory or academic research project. Early selection of the advisor and research project will permit the student to complete sufficient work to obtain the Masters degree within the usual two-year period. Although this advisor will normally be the faculty member with whom the student completes the M.S. degree, if it is decided by either the student or the advisor that a change of advisors is desirable, then the student has the option of selecting a new research advisor, with the approval of the Graduate Committee, although this may delay achieving the M.S. degree within the expected two-year period.

Once an advisor has been selected and the research project is underway, the advisor in consultation with the student will submit to the Graduate Committee the names of three faculty members willing to serve on the student's Thesis Committee. Since this committee must approve the students research project, this committee should be appointed as soon as possible.

Course Work
Each student in the Masters program is expected to complete all of the required courses for graduation during the first two years of study. The required courses are listed below, and the schedule for taking these courses is outlined in the timetable at the end of these guidelines. Some of the courses may be exempted with the approval of the Graduate Committee if the student provides convincing evidence of an adequate background in the subject area. Any change to the normal schedule of courses must be approved in advance by the Graduate Committee.

Course.....Title
5280-665Research Methods in Pharmacology & Toxicology

5210-645, -647.....Biochemistry I and II

5285-605, -606 .....Systemic Physiology I and II

5280-660 .....Principles of Drug Action

5280-667.....Cell Biology

5280-668 .....Molecular Biology

5280-601.....Principles of Medical Pharmacology

5280-606.....Pharmacology & Toxicology Seminar

5280-619Research in Pharmacology & Toxicology

Seminars and Research Committees
All students are expected to attend departmental seminars, research conferences and journal clubs and will register for 5280-606 (Pharmacology Seminar, one hour credit) each semester. All students are expected to participate actively in the discussion following each seminar. Students will receive a grade at the end of the year based both on their attendance and participation.

Evaluation of Student's Progress toward the M.S. Degree
At the end of every semester, the progress of each Masters student will be evaluated by the departmental faculty. Students are expected to maintain a GPA of 3.0, have actively participated in department activities and seminars, and to have demonstrated satisfactory progress on their research project each semester. Students who receive a grade of C or below in two or more courses will be considered for dismissal.

Master's Thesis
Each student in the M.S. Program will be required to write and defend a Master's Thesis. The thesis must be a work of sufficient quality to convince the Thesis Committee that the student possesses the ability to either participate actively in a laboratory environment or to contribute significantly as an academician in the broad discipline of pharmacology and toxicology. Each student must present and defend their Masters Thesis at an oral thesis defense. To satisfactorily pass the thesis defense, a student may not receive more than one unfavorable vote from a member of the Thesis Committee.

After successful completion of all required course work and the successful defense of their thesis, the Department will recommend to the Dean of the Graduate School that the degree of Master of Science be awarded to the student by the University of Louisville.

Typical Course Schedule and Timetable
FIRST YEAR:
Summer
Orientation

Fall (Credit hours)
Research Methods in Pharmacology and Toxicology (2)

Biochemistry I (4)

Systemic Physiology I (3)

Research in Pharmacology and Toxicology (2)

Seminar in Pharmacology and Toxicology (1)

Spring (Credit hours)
Biochemistry II (4)

Systemic Physiology II (3)

Cell Biology (3)

Seminar in Pharmacology and Toxicology (1)

Research in Pharmacology and Toxicology (2)

Appoint Thesis Committee

SECOND YEAR:
Summer (Credit hours)
Research in Pharmacology and Toxicology (3)

Principles of Drug Action (3)

Fall (Credit hours)
Principles of Medical Pharmacology (6)

Molecular Biology (4)

Seminar in Pharmacology and Toxicology (1)

Research in Pharmacology and Toxicology (4)

Spring
Research

Enter MS candidacy and write thesis

Seminar presentation and defense of thesis

Summer
Award of M.S. Degree

Further information regarding the Department and the graduate programs is available at the Department of Pharmacology and Toxicology website.

PHYSICS (PHYS)

www.physics.louisville.edu

Departmental Faculty

Chair
Joseph S. Chalmers, Professor

Professors
C. R. L. Davis

Peter W. France

Wei-Feng Huang

C. S. Jayanthi

John F. Kielkopf

P. J. Ouseph

Shi-Yu Wu

Associate Professors
David N. Brown

John C. Morrison

Assistant Professors
Shudun Liu

Gamini Sumanasekera

Adjunct Professors
Peter Almond

V. K. Henner

Emeritus Professors
John A. Dillon, Jr.

Joel A. Gwinn

Roger E. Mills

Manuel Schwartz

John J. Sinai

Programs

Master of Science
The Department of Physics, in the College of Arts and Sciences, offers a program leading to the Master of Science with a major in Physics.

General requirements for admission are listed in the General Information section of this catalogue.

Departmental requirements for admission are as follows:

1. A baccalaureate degree with at least 24 hours in physics, or the equivalent.
2. A minimum quality-point standing of 3.0 (base 4.0) in physics courses.
3. Mathematics course work through differential equations. (MATH 405 or equivalent)
4. Submission of the Graduate Record Examination scores.

Doctor of Philosophy in Chemistry/Chemical Physics
Students in certain research areas may pursue the Ph.D. in Chemistry in the area of Chemical Physics. Contact the Chair of the Department of Chemistry or the Chair of the Department of Physics for details.

Joint Doctoral Program
The Department also participates in a joint doctoral program with the Department of Physics and Astronomy of the University of Kentucky leading to a Ph.D. in Physics from the University of Kentucky. Contact the Chair of either department for details.

Master of Science in Physics

Major: PHYS
Degree: MS
Unit: GA

General requirements for the M.S. degree are set forth in the General Information section of this catalogue. For the M.S. degree, at least 21 of the required hours must be in courses open to graduates only.

Specific requirements for the M.S. degree in physics are as follows:

Thesis option: (30)

1. Required courses in physics (12 hours):
605, Theoretical Mechanics (3);
611, Electromagnetic Theory I (3);
621-622, Quantum Mechanics I & II (6).
2. Physics electives (6-9 hours): courses numbered 500 and above.
3. Courses in one minor field (3-9 hours): Mathematics is the usual minor, but another field may be chosen with the approval of the department.
4. Graduate Research (6 hours).

Non-thesis option: (33)

1. Required courses in physics (12 hours):
605, Theoretical Mechanics (3);
611, Electromagnetic Theory I (3);
621-622, Quantum Mechanics I & II (6).
2. Physics electives (12 hours): courses numbered 500 and above.
3. Courses in one minor field (3-9 hours): Mathematics is the usual minor, but another field may be chosen with the approval of the department.
4. Graduate Research (0-3 hours).
5. At least 17 credit hours, numbered 600 and above.

PHYSIOLOGY AND BIOPHYSICS (PHY)

www.louisville.edu/medschool/physiology

Departmental Faculty

Research interests of the faculty are indicated after each name.

Chair
Irving G. Joshua, Professor - microcirculation: calcium mechanisms in hypertension

Vice Chair
William B. Wead, Associate Professor – cardiac and cardiopulmonary function

Professors
Patrick D. Harris - microvascular control mechanisms

Frederick N. Miller - microcirculation: permeability

John C. Passmore - renovascular physiology and aging

Richard W. Stremel – Associate Dean of Graduate School

David L. Wiegman, Vice Dean for Academic Affairs, Medical School

Associate Vice President for Health Affairs

Associate Professors
Ayotunde S. O. Adeagbo - endothelial factors and vascular control

Gary L. Anderson - microvascular functions associated with reconstructive surgery

Stanley D' Souza – mechanisms of blood cell and endothelium interaction

Jeff C. Falcone – microvascular blood flow, Ca_+ imaging, hypertension, and aging

John T. Fleming – microcirculation, diabetes and bone blood flow

Andrew M. Roberts - cardiopulmonary system, and pulmonary microcirculation control

Emeritus/Emerita
James C. Moore

X. J. Musacchia

Master of Science in Physiology and Biophysics

Major: PHY
Degree: MS
Unit: GM

Programs

The Department of Physiology and Biophysics is located in the Health Sciences Center of the University of Louisville. Our graduate program offers a Master of Science to provide several career options: 1) to develop competences in directed research for advanced technical positions in industry, government, and university medical research laboratories; 2) to prepare students with good general knowledge of human physiology to enable them to communicate physiological concepts to future students; 3) to better prepare students for successful admission into medical-related professional schools, and 4) to explore the possibility of a future career as an independent scientist in medically-related research.

The typical Master of Science Program includes a directed research emphasis and consists of thirty six (36) semester hours (CH) typically over a twenty four month period to include the following: 8 CH of basic medical sciences, 6 CH of basic physiology concepts, and at least 9 CH of directed physiological research.

I. ADMISSION

Please proceed to our web site for complete directions for admission into our MS Program: www.louisville.edu/medschool/physiology
http://graduate.louisville.edu/physbiop.htm

III. MINIMAL REQUIREMENTS FOR THE MS DEGREE

A. Advisory System
A full-time graduate faculty member of the Department or an associate with mentoring privileges will be selected to be the Principal Advisor by the student, with approval of the Departmental Director of Graduate Studies and the Department Chair. The selection of a mentor must be made prior to registration for the second semester. In cases where the Principal Advisor holds a primary appointment in a department other than the Department of Physiology and Biophysics, the Principal Advisor and the student must select one of the Departmental faculty members as Co-Advisor. The Principal Advisor will have responsibility for determining the required program of academic studies for the MS degree with minimal requirements as defined below.

B. Minimum Course Requirements
The MS Program must include the following courses taken on a grade basis:

Courses
Biochemistry (BIOC 645 and 647) or equivalent

Systemic Physiology I and II (PHY 605 and 606)

Research (PHY 619)

Credit can be given for one or more courses if the applicant has taken the course prior to admission to the Department and received a grade of "B" or better.

C. Academic Performance
A student must have at least a 3.0 accumulated GPA to be graduated with a degree of Master of Science in Physiology and Biophysics. In general, a student with a GPA less than 3.0 at the end of the second semester will require a 2/3 majority vote of the Departmental faculty members to continue in the Program. A grade of "B" or better must be obtained in the Systemic Physiology courses.

D. Final Examination
The student will take a Final Examination during the last semester of the MS Program. The Final Examination shall consist of a written and/or oral presentation of the completed research. This exam may take the form of an oral presentation of an authored manuscript, a detailed review of a selected topic, a detailed doctoral research proposal or an examination demonstrating the student's use and depth of knowledge of physiology.

A positive recommendation for the Master of Science shall require a majority vote of the Final Examination Committee (consisting of at least the Principal Advisor(s) and two additional members of the Graduate Faculty, one of whom is from outside the Department). The Director of Graduate Studies, the Department Chair, and the Dean of the Graduate School must have approved the Committee, prior to the Final Examination. This recommendation shall be made to the Dean of the Graduate School at least one week before graduation.

In the event of an unfavorable vote of the Final Examination Committee, the student may be considered for re-examination only by a recommendation of a 2/3 majority of the Departmental faculty.

Doctor of Philosophy in Physiology and Biophysics

The doctoral program of the Department of Physiology and Biophysics is offered through the Graduate School of the University of Louisville. As such, one major goal of the Department is to provide students with advanced training that leads to the Ph.D. Degree in Physiology and Biophysics. The research interests of the Department provide each student with a wide selection of possible research and graduate education opportunities. The doctoral graduate program is designed primarily to prepare students for an independent research career in basic and applied physiology.

I. ADMISSION

Please proceed to our web site for complete directions for admission into our Ph.D. Program: www.louisville.edu/medschool/physiology or http://graduate.louisville.edu/physbiop.htm

II. FACULTY ADVISING

The Director of Graduate Student Advising will meet with the new student to discuss the student's academic and research interests. The Director of Graduate Student Advising will serve as a Temporary Advisor until a Permanent Advisor is selected.

Beginning with the first semester as a graduate student, each student will begin rotations in research laboratories. The Department Chair and the Director of the Graduate Advising will assign students to the research laboratory of a Departmental faculty member for at least an eight (8) week period. During the remainder of the first semester, the student may either continue to conduct research in the same lab as was initially selected/assigned or the student may rotate to another laboratory for an additional research experience. First-year students matriculating with advanced degrees (D.M.D., D.V.M., M.D., or equivalent) will be allowed to undergo principal advisor selection without rotations. In both cases, the selection process involves approval by the student, the Principal Advisor, the Director of Student Advising, Director of Graduate Studies, and the Department Chair.

After selection of the Principal Advisor, the student's Advisory Committee (Form 2) will be determined. This Committee must have at least five members and will include as a minimum: the Principal Advisor (as Chair), at least three Departmental faculty members, and at least one graduate faculty member from outside the Department. In cases where the Principal Advisor holds a primary appointment in a department other than the Department of Physiology and Biophysics, the Principal Advisor and the student must select one of the Departmental faculty members as Co-Advisor. Approval of the Committee membership by the Director of Graduate studies and the Departmental Chair will be contingent upon the potential role of each Committee member in the program, in the training, or in the career plans of the student.

III. MINIMAL REQUIREMENTS FOR THE DOCTOR OF PHILOSOPHY DEGREE IN PHYSIOLOGY AND BIOPHYSICS.

A. General

The Ph.D. degree is designed for the student who wishes a professional life that involves original, independent research, and who desires knowledge that will permit competent advanced teaching in a physiology area. The Ph.D. degree requires that the student reach a high level of creativity and expertise. Therefore, mere competition of a prescribed number of courses is not adequate for receipt of the doctoral degree. All Ph.D. students are expected to make steady and satisfactory progress toward the completion of the degree.

B. Minimal Program Requirements

The Ph.D. degree requires at least 72 semester hours beyond the Baccalaureate Degree. A maximum of 36 semester hours (CH) of this requirement may be credited for post-baccalaureate work from other professional or graduate degree programs. A minimum of one year (18 CH) shall be taken in full-time residence at the University of Louisville. By the end of the program, the student must demonstrate the ability to conduct independent research.

C. Minimum Course Requirements

The required program of academic studies must include the following courses taken on a grade basis (if not taken with a grade of "B" or better prior to admission to the Department):

Systemic Physiology I and II (PHY 605 and 606), or equivalent

Biochemistry I and II (BIOC 645 and 647), or equivalent

Advanced Human Physiology (PHY 611)

Cell Biology (MBIO 667), or equivalent

At least two additional graduate 600- level courses.

D. Academic Performance

A student must have at least a 3.00 accumulated GPA (on a 4.0 scale) in order to take the Ph.D. Qualifying Examination and to qualify for the Ph.D. degree. A grade of "B" or greater must be obtained in Systemic Physiology and Advanced Human Physiology Courses. In general, a student with a GPA of less than 3.00 after two consecutive semesters, will require a 2/3 majority vote of the Departmental faculty members to continue in the Ph.D. Program. For Department purposes, pass grades will not be included in the GPA calculation; however, a fail grade in a pass/fail-graded course will be included in the GPA calculation at 0 quality points per credit hour.

E. The Ph.D. Qualifying Examination

Requirements: The graduate student should have completed all course requirements prior to taking the Qualifying Examination.

Examination Format:

A paper is to be written in a research proposal format. It is to include a critical literature review that incorporates the pertinent scientific literature for at least the past 10 years. The organization of the written research proposal should be: INTRODUCTION, LITERATURE REVIEW, OVERALL HYPOTHESIS, (with rationale based on the literature review), EXPERIMENTAL DESIGN (that includes SPECIFIC AIMS, with EXPERIMENTAL PLAN and PROPOSED TREATMENTS/STUDY-GROUPS for each specific aim), and SPECIFIC METHODS (with general descriptions of animal models, planned measurements, proposed calculations on the measurements, and types of statistical analyses to be performed on the calculated and measure variables). The proposal should also provide an estimation of the time needed to complete the dissertation research and draft of the dissertation.

The Qualifying Exam Committee shall consist of the graduate student's Advisory Committee members. No less than two weeks following submission of this written report, the graduate student shall present an oral defense of the proposal to the Qualifying Exam Committee. This defense should investigate the depth of the student's understanding of the proposed research area and the pertinent physiological principles. Following the oral defense, the Qualifying Exam Committee shall conduct a ballot and make a recommendation of Pass, Deferred for a re-written proposal, Deferred for a re-take of the Oral Defense, or Fail, without the opportunity for re-write of the proposal or retake of the Oral Defense.

F. Maintenance of Graduate Status

The Ph.D. student will become Ph.D. Candidate and receive a MS degree upon successful completion of the Qualifying Examination. The Ph.D. Candidate may register for "DOC 600" to maintain candidacy until the degree is awarded. Yearly progress meeting will continue to be expected.

G. Dissertation

The dissertation shall represent a scholarly achievement which embodies results of independent research and which demonstrates a thorough understanding of research concepts in the field of inquiry. The completed dissertation must be approved by a Reading Committee which includes the candidate's Principal Advisor, and two additional readers, one who is a graduate faculty member of the candidate's Advisory Committee, and one who is a graduate faculty member from outside the Department. Then, at least two weeks before the scheduled dissertation defense and at least 30 days before the expected date of graduation, the dissertation shall be submitted to a Dissertation Defense Committee (consisting of at least the Reading Committee and two additional Departmental faculty members). Prior to the Final Examination, the Director of Graduate Studies, the Department Chair, and the Dean of the Graduate School must approve the Dissertation Defense Committee, selected by the Principal Advisor. Two unbound copies of the accepted dissertation, signed by the Dissertation Defense Committee must be deposited with the Dean of the Graduate School and one copy must be given to the Department Chair before graduation.

H. Dissertation Defense

The dissertation defense is an oral defense of the dissertation and a demonstration of mastery of the candidate's research field. The Dissertation Defense Committee administers it. The defense of the dissertation is a public examination and the Graduate School will notify all faculty members of the Graduate School that they are invited to the Dissertation Defense, but only members of the Dissertation Defense Committee will vote on the student's performance. For the student to pass the Dissertation Defense, the vote of the Dissertation Defense Committee may not include more than one negative vote. The Dissertation Defense must take place at least 14 days before the end of the semester in which the degree is anticipated.

I. Manuscript Submission

The Department will not approve the granting of the Ph.D. degree until the student has submitted at least one, first-authored manuscript on the dissertation research for publication in a refereed journal. The Principal Advisor must approve the manuscript and the choice of journal, before manuscript submission.

J. Requirement Restrictions

In any case where the Departmental requirements are less restrictive than those of the Graduate School, the Graduate School regulations will apply.

IV. Exceptions

A. The above statements are minimum Departmental requirements. However, it is recognized that there could be special and unusual cases in which rare exceptions should be allowed. The student and advisor should consult with the Department Chair if an exception is desired.

B. In the above guidelines, the Director of Graduate Studies has considerable responsibility for program quality. To avoid any possibility of a potential conflict of interest, the Department Chair (or designate) will fulfill the role of Director of Graduate Studies for any Ph.D. or M.S. student who has the Director of Graduate Studies as their Principal Advisor.

Public Health and Information Sciences

The School of Public Health and Information Sciences academically, is organized into five departments.

Department of Environmental and Occupational Health Services

Courses will be listed as:

- PHEH – Public Health, Environmental Health
- PHOM – Public Health, Occupational Medicine

Currently there is no degree program offered but courses may be applied toward graduate degrees in other areas. Students must obtain their program advisor's permission before enrolling in these courses.

The Department of Environmental and Occupational Health Sciences focuses on research, education, and service in the prevention of adverse health effects related to environmental and occupational exposures. Initial activities will be in three major areas: health effects of air pollution; environmental health for susceptible populations, especially children, the elderly and asthmatics; and prevention of workplace injuries and illness. The Department will be partnering with local, state, and national agencies and universities in addressing these areas and in developing the resources to do so. Ongoing funded projects include health effects of occupational exposures among workers at the Paducah, Kentucky Department of Energy facility in collaboration with the University of Kentucky, and workplace injuries in a large municipal workforce in partnership with the University of Pittsburgh. A newly developing collaboration will be focused on application of sophisticated biomonitoring equipment and principles of exercise physiology and ergonomics to prevent workplace injuries.

Graduate Program Faculty:
David J. Tollerud, MD, MPH, Acting Chair
Department of Bioinformatics and Biostatistics
The Department of Bioinformatics and Biostatistics, which also includes decision science, biometry, and computational biology, conducts pure and applied research and trains professionals in its several but closely related disciplines. Both research and training are done in collaboration with other areas of the University. At the present time, the Department has programs for both masters and doctoral degrees in biostatistics and decision science, preparing graduates for positions in academic settings, pharmaceutical companies, government agencies, and healthcare organizations.

Public Health – Biostatistics-Decision Science (PHDA)

http://www.louisville.edu/hsc/publichealth/biostat/

Departmental Faculty

Professors
Richard D. Clover, M.D.

Martin C. Weinrich, Ph.D.

Assistant Professors
Steven J. McCabe, M.D., M.Sc., Assistant Director

L. Jane Goldsmith, Ph.D.

William R. Rising, Ph.D.

Tonya M. Smoot, Ph.D.

Associates
(Faculty in other programs, departments, and schools serving as research mentors or an graduate student committees)

Troy D. Abell, Ph.D., M.P.H.

Richard D. Blondell, M.D., Professor of Family and Community Medicine

Patricia Cerrito, Ph.D., Professor of Mathematics

Joseph D. Cole, Ph.D., Professor of Electrical and Computer Engineering

Stephen Edgell, Ph.D., Professor of Psychological and Brain Sciences

Adel S. Elmaghraby, Ph.D., Professor of Computer Engineering and Computer Science

Robert J. Esterhay, M.D., Associate Professor of Family and Community Medicine

Gerald W. Evans, Ph.D., Professor of Industrial Engineering

Stephen F. Gohmann, Ph.D., Professor of Economics

Richard I. Haddy, M.D., Professor of Family and Community Medicine

Inessa Levi, Ph.D., Professor of Mathematics

W. Paul McKinney, M.D., Professor of Medicine

Kelly M. McMasters, M.D., Ph.D., Assistant Professor of Surgery

Lisa B. Markowitz, Ph.D., Assistant Professor of Anthropology

Peter B. Meyer, Ph.D., Professor of Urban Policy and Economics

Steven Myers, Ph.D., Associate Professor of Pharmacology and Toxicology

Julie M. Peteet, Ph.D., Associate Professor of Anthropology

Mark P. Pfeifer, M.D., Professor of Medicine

Greg Rempala, Ph.D., Associate Professor of Mathematics

Mark Rothstein, J.D., Professor of Medicine

Paul D. Simmons, Ph.D., Th.M., Clinical Professor of Family and Community Medicine

R. Prasaad Steiner, M.D., M.P.H., Ph.D., Professor of Family and Community Medicine

Howard Stone, J.D., L.L.M., Assistant Professor of Family and Community Medicine

David J. Tollerud, M.D., M.P.H., Professor of Medicine

Christine Seel Ritchie, M.D., M.S.P.H., Assistant Professor of Medicine

Peter L. Walton, M.D., Assistant Professor of Family and Community Medicine

Jacez M. Zurada, Ph.D., Professor of Electrical and Computer Engineering

Programs

The Department of Family and Community Medicine, through its Biostatistics-Decision Science Program in the School of Medicine offers programs of study and investigation leading to the award of Master of Science in Public Health (MSPH) and Doctor of Philosophy (PhD) degrees. Currently a student is able to complete the MSPH in either a Biostatistics or Decision Science Concentration, with the PhD being available in the Decision Science Concentration.

Admissions

Applicants must meet the general requirements of the Graduate School as outlined in the General Information section of this catalogue concerning application credentials, transcripts, GPA, recommendations, GRE scores, and TOEFL requirements. Students with a prior earned doctorate (DMD, JD, MD, PhD, etc.) may petition to have the GRE requirement waived. The Program Director and the Dean of the Graduate School will make all decisions concerning modifications to the admissions process. In addition, students seeking the Biostatistics Concentration in the MSPH program must have completed the following courses (or their equivalent) with a grade of "C" or better prior to entering the program: Elementary Statistics (MATH 109), Calculus III (MATH 301), Introduction to Linear Algebra

(MATH 325), and Program Design (Computer Engineering and Computer Science 121). Students seeking either concentration in the MSPH program who have inadequate preparation in mathematics, statistics, or computer science may be admitted conditionally. Remedial courses for those students entering the Biostatistics Concentration may be available, but these courses will not be counted toward the credit hours needed to fulfill the degree requirements.

In addition to the Graduate School admission requirements, applicants seeking the PhD degree will be required to have at least a 3.5 grade point average (out of 4.0) in any previous graduate work and a combined score of 1100 on the verbal and quantitative components of the Aptitude Test of the GRE and a combined score of 1200 on the quantitative and analytical components.

Outstanding applicants may be admitted directly to the PhD degree program in the Decision Science Concentration, complete the MSPH course work requirements, waive the masters theses, and complete the PhD requirements; such students will be awarded the MSPH and PhD simultaneously upon the successful completion of the PhD degree.

Financial Support

Financial support for graduate study is currently provided by stipends on individual research grants in Health Sciences Center and by the Institute of Public Health Research (IPHR) research assistantships.

Doctor of Philosophy in Biostatistics: Decision Science

Major: BDSC
Degree: PhD
Unit: GSPH/HIS

Requirements for the PhD degree in Biostatistics-Decision Science: Decision Science Concentration

1. The program is an eighty-four (84) hour program with an embedded 36 hour MSPH program (48 hours beyond the 36-hour MSPH program in Decision Science).
2. Required PhD course work (12 hours) includes: PHDA 602 Biostatstics-Decision Science Seminar (1 hr x 2 semesters = 2 hours), PHDA 673 Biostatstics-Decision Science Research (3 hours), PHDA 690 Utility Theory and Assessment (2 hours), PHDA 691 Bayesian Inference and Decision (3 hours), and PHDA 703 Advanced Economic Analysis in Decision Science (2 hours).
3. Twelve (12) credit hours of electives. The doctoral student will develop an area of specialization in consultation with and approval of the student's doctoral committee. Approved elective course work will reflect this specialization. Students may find course work in the following areas of especially helpful: mathematical modeling, computation and artificial intelligence, operations research, participant observation and other qualitative approaches in anthropology, cognitive psychology, and health policy, law, and ethics.
4. Dissertation Research (24 hours). The major emphasis in the doctoral program is mentored research – training beyond accumulated course credit. Successful passage of Comprehensive Doctoral Exams makes a student a Doctoral Candidate. A doctoral candidate must develop and defend a Dissertation Proposal that describes an original, independent research project. Dissertation research can be taken for up to 24 credit hours. Upon successful defense of the Dissertation, the students receive the PhD degree.

Master of Science in Public Health (MSPH) in Biostatistics-Decision Science

Major: BDSC
Degree: MSPH
Unit: GSPH/HIS

Requirements for the MSPH in Biostatistics-Decision Science

The MSPH in Biostatistics-Decision Science is a thirty-six (36) hour program that requires a thesis (thesis can be waived for students admitted directly into PhD program).

Core Courses	**Semester Hours**	**Total**
PHCI 611, Introduction to Public Health and Epidemiology	2	
PHCI 631, Social and Behavioral Sciences in Health Care	2	
PHCI 651, Introduction to Environmental Health	2	
PHCI 662, Health Economics	2	
PHDA 602, Biostatistics-Decision Science	4	
PHDA 661, Probability	3	
PHDA 662, Mathematical Statistics	3	18
Decision Science Concentration Requirements (beyond core)		
PHDA 605, Ethical Issues in Decision Making	2	
PHDA 663, Decision Analysis	3	
Biostatistics Concentration Requirements beyond core)		
PHDA 680, Biostatistical Methods I	3	
PHDA 681, Biostatistical Methods II	3	
Electives		
Varies by concentration (Biostatistics or Decision Science)	6-9	
Masters Thesis Research		
PHDA 666, Masters Thesis	2-4	
Minimum Total		**36**

Department of Health Knowledge and Cognitive Sciences

Courses will be listed as:

- PHKC – Public Health, Knowledge and Cognitive Sciences

Currently there is no degree program offered but courses may be applied toward graduate degrees in other areas. Students must obtain their program advisor's permission before enrolling in these courses.

The Department of Health Knowledge and Cognitive Sciences represents a unique and innovative approach to key aspects of health information sciences, including health informatics. The Department's research focus is on health information utilization by and effects on individuals, including traditional and automated techniques in such areas as semantics and vocabularies, information access and integration, risk communication, and decision-making. Partnerships exist or are being formed with local healthcare organizations, other departments and schools in the University, and government and commercial entities.

Departmental Faculty
Peter L. Walton, MD, Acting Chair

Department of Health Management and Systems Sciences

Courses will be listed as:

- PHMS – Public Health, Management Systems Sciences

Currently there is no degree program offered but courses may be applied toward graduate degrees in other areas. Students must obtain their program advisor's permission before enrolling in these courses.

The Department of Health Management and Systems Sciences focuses on health systems structures, properties, and behaviors, including effects of and on people and organizations and methods for implementing change. Interest areas include health information management, health services research, health economics, and health regulations and policies related to information management and systems. The Department is collaborating with other groups in University, Jefferson County Health Department, Kentucky Department for Public Health, and local healthcare institutions. The Department is participating with the Department of Health Knowledge and Cognitive Sciences in an introductory course in health informatics.

Department of Epidemiology and Clinical Investigation Sciences (PHCI)

The Department of Epidemiology and Clinical Investigation Sciences currently offers the Clinical Research, Epidemiology and Statistics Training (CREST) Program. The CREST Program focuses on training the next generation of clinical research scientists. In the future, the Department plans to offer an MPH in epidemiology. In addition to Department members, the teaching faculty include faculty from other departments in the School of Public Health and Information Science, the School of Medicine, and from the Departments of Philosophy, Sociology, and Economics in the College of Arts and Sciences. Department faculty research includes studies of oral health and systemic disease, occupational-radiation exposures and cancer, women and cardiovascular disease, and as the Data Coordinating Center for a national trial of congestive heart failure management.

Departmental Faculty

Director
Carlton A. Hornung, PhD, MPH – Acting Chair, Department of Epidemiology and Clinical Investigation Sciences School of Public Health, Department of Medicine and CREST Program Director

Professors
Stephan Gohmann, PhD – Department of Economics, College of Business and Public Administration

W. Paul McKinney, MD – CREST Associate Director, VV Cooke Professor or Medicine, Chief, Division of General Internal Medicine and Director, Center for Health Services and Policy Research

Mark Rothstein, JD – Department of Medicine, Herbert F. Boehl Chair of Law and Medicine, Director of the Institute for Bioethics, Health Policy and Law

Osborne Wiggins, PhD – Chairman Department of Philosophy

Associate Professors
Timothy Aldrich, MPH, PhD – Department of Epidemiology and Clinical Investigation Sciences

T. Howard Stone, JD, LLM – Institute for Bioethics, Health Policy and Law

Steven Myers, PhD – Department of Pharmacology and Toxicology

Assistant Professors
Nanette Elster, JD, MPH – Institute for Bioethics, Health Policy and Law

L. Allen Furr, PhD – Arts and Sciences Sociology

Susan E. Kelly, PhD – Arts and Sciences Sociology

Susan Muldoon, MPH, PhD – Department of Epidemiology and Clinical Investigation Sciences

Christine S. Ritchie, MD, MPH – CREST Associate Director, School of Medicine, Department of Epidemiology and Clinical Investigation Sciences

Tonya Smoot, PhD – Department of Biostatistics and Decision Science

Barbara A. Stetson, PhD – Department of Psychological and Brain Sciences

Jamie Studts, PhD – Brown Cancer Center

Lecturers
Bruce Gale, MS, MAT – Executive Director, College of Business and Public Administration, Urban Studies Institute

Knowlton Johnson, PhD – Pacific Institute for Research

Stephen Kennedy, MD, MPH – Project Manager The Helix Group, Inc.

W. Edward Miller, MHA – President Partners in Research

Cathy Whalen, PharmD. – University of Louisville Hospital

Programs
The Department of Epidemiology and Clinical Investigation Sciences at the University of Louisville offers a Clinical Research, Epidemiology and Statistics Training Program (CREST) this is supported by a "Clinical Research Curriculum Award" (K30) from the National Institutes of Health. This three-tiered program consists of a Graduate Certificate in Clinical Investigation Sciences, an MSPH and a PhD in Epidemiology-Clinical Investigation Sciences. Both the MSPH and the PhD can be done jointly with the MD degree.

The Graduate Certificate in Clinical Investigation Sciences provides individuals with skills required for a career in a clinical research setting. The MSPH degree program provides physicians, dentists, nurses, and other health professionals an opportunity to acquire the clinical research skills necessary for a career in an academic health center. The PhD in Epidemiology-Clinical Investigation Science prepares scientists for work on the cutting edge of patient-oriented, population-based translational research or health services and outcomes research.

The CREST curriculum integrates biostatistical and epidemiologic methods in a problem-based learning format with additional instruction in bioethics, health economics, health services and outcomes research and social and behavioral science. Students pursuing the masters and doctoral degrees take didactic courses while they engage in mentored and independent research that culminates in the preparation of a professional paper or research thesis (MSPH) and dissertation for the PhD degree.

Graduate Certificate in Clinical Investigation Sciences

Major: CCI
Degree: Graduate Certificate
Unit: GH

The Graduate Certificate in Clinical Investigation Sciences includes 15 credit hours of didactic instruction with required courses in epidemiology, biostatistics, the responsible conduct of research, evaluating the health care literature and an elective in behavioral and social science, health economics or health services and outcomes research plus a 1 credit hour research paper. The Certificate Program can be completed in 1 year and is designed for those who want a career in a clinical research setting as well as those who want to upgrade their research skills. Courses taken in the certificate program can be applied toward the MSPH and PhD degrees.

Graduate Certificate in Clinical Investigation Sciences

Fall Semester
PHCI 611 – Introduction to Epidemiology (2)

PHCI 621 – Fundamentals of Biostatistics (2)

Elective Courses (Select One)

PHCI 631 – Behavioral and Social Science in Health Care (2)

PHCI 662 – Health Economics (2)

PHCI 602 – Health Services and Outcomes Research (2)

Spring Semester
PHCI 622 – Design and Analysis of Case Control Studies (2)

PHCI 623 – Design and Analysis of Cohort Studies (2)

PHCI 624 – Clinical Trials I (2)

PHCI 632 – Ethical Conduct of Health Research (2)

Summer Semester
PHCI 601- Evaluating Health Care Literature (1)

PHCI 699 – Mentored Research Paper (1)

Master of Public Health: Epidemiology, Clinical Investigation Sciences

Major: PHCI
Degree: MSPH
Unit: GH
The 24 hours of required course work provide students with a broad base of knowledge in epidemiologic research methods, biostatistics, bioethics and the methodologies of health services and outcomes research. Early in their first semester students identify a faculty member who will serve as a mentor. The MSPH in Epidemiology-Clinical Science can be completed in two years. However, a three-year option is also available.

Two Year MSPH Option
Year I
Summer Semester
PHCI 661 – Introduction to Public Health Informatics (1)

OR

PHCI 501 – From Bench to Bedside: Introduction to Clinical Research (1)

Fall Semester
PHCI 611 – Introduction to Epidemiology and Public Health (2)

PHCI 621 – Fundamentals of Biostatistics (2)

PHCI 631 – Social and Behavioral Science in Health Care (2)

PHCI 651 – Introduction to Environmental Health Science (2)

OR

PHCI 610 – New Drug and Device Development (2)

PHCI 699 – Mentored Research

Spring Semester
PHCI 622 – Design and Analysis of Case-Control Studies (2)

PHCI 623 – Design and Analysis of Cohort Studies (2)

PHCI 624 – Clinical Trials I (2)

PHCI 632 – Ethical Conduct of Health Care Research (2)

PHCI 699 – Mentored Research

Year 2
Summer Semester
PHCI 601 – Evaluating the Health Care Literature (1)

PHCI 699 – Mentored Research

Fall Semester Year
PHCI 625 – Clinical Trials II (2)

PHCI 662 – Health Care Economics (2)

PHCI 602 – Health Services and Outcomes Research (2)

PHCI 699 – Mentored Research

Spring Semester*
PHCI 699 – Mentored Research

*Students enrolled in the PhD degree program may begin advanced courses. This option is also available for MSPH students enrolled in the 3 year program.

Three Year MSPH Option
Year 1
Fall Semester
PHCI 611 – Introduction to Epidemiology and Public Health (2)

PHCI 621 – Fundamentals of Biostatistics (2)

PHCI 699 – Mentored Research

Spring Semester
PHCI 623 – Design and Analysis of Cohort Studies (2)

PHCI 622 – Design and Analysis of Case Control Studies (2)

OR

PHCI 624 – Clinical Trials I (2)

PHCI 699 – Mentored Research

Year 2
Summer Semester
PHCI 661 – Introduction to Public Health Informatics (2)

OR

PHCI 501 – From Bench to Bedside: Introduction to Clinical Research (1)

PHCI 699 – Mentored Research

Fall Semester
PHCI 651 – Introduction to Environmental Health (2)

OR

PHCI 610 – New Drug and Device Development (2)

PHCI 631 – Social and Behavioral Science in Health Care (2)

PHCI 699 – Mentored Research

Spring Semester
PHCI 632 – Ethical Conduct of Health Care Research (2)

PHCI 624 – Clinical Trials I (2)

OR

PHCI 622 – Design and Analysis of Case Control Studies (2)

PHCI 699 – Mentored Research

Year 3
Summer Semester
PHCI 601 – Evaluating Health Care Literature (1)

PHCI 699 – Mentored Research

Fall Semester
PHCI 625 – Clinical Trials II (2)

PHCI 662 – Health Care Economics (2)

PHCI 602 – Health Services and Outcomes Research (2)

PHCI 699 – Mentored Research

Spring Semester
PHCI 699 – Mentored Research

Joint MD-MSPH Degree Program

Students admitted to the University of Louisville School of Medicine can pursue a joint MD-MSPH degree program with only one additional year of study beyond the traditional four-year medical school curriculum. Medical students pursuing the joint MD-MSPH degree begin the MSPH course work after completing one year of clinical training (i.e., the third year of medical school). Joint degree students spend the fall and spring semesters of their fourth year and the summer and fall semesters of their fifth year completing the MSPH course work. They complete their professional paper/thesis for the MSPH degree and their clinical rotations for the MD degree in the spring semester of their fifth year. Graduates of the program can expect to be highly competitive for residency and fellowship positions at prestigious institutions.

MD-MSPH Option:

M4 Year, Fall/Summer Semester Graduate School
Choice of 3, all 4 weeks, 5 credits each

- In-Patient Medicine (IPM)
- AHEC
- Neurology
- In-Patient Surgery (IPS)
- Ambulatory Care (AR)
- Ambulatory Primary Care (APC)

AND REQUIRED

- Anesthiology, 2 weeks, 2 credits

M4 Year, Fall/Fall Semester Graduate School
PHCI 611 – Introduction to Epidemiology and Public Health (2)

PHCI 621 – Fundamentals of Biostatistics (2)

PHCI 631 – Social and Behavioral Science in Health Care (2)

PHCI 651 – Introduction to Environmental Health (2)

OR

PHCI 610 – New Drug and Device Development (2)

M4 Year, Spring/Spring Semester Graduate School
Clinical Electives (2-10 credits). Need to take a minimum of 2 credits.

PHCI 622 – Design and Analysis of Case Control Studies (2)

PHCI 623 – Design and Analysis of Cohort Studies (2)

PHCI 624 – Clinical Trials I (2)

PHCI 632 – Ethical Conduct of Health Care Research (2)

M5 Year, Fall/Summer Semester Graduate School
PHCI 601 – Evaluating Health Care Literature (1)

PHCI 661 – Introduction to Public Health Informatics (1)

OR

PHCI 501 – From Bench to Bedside: Introduction to Clinical Research (1)

M5 Year, Fall/Fall Semester Graduate School
PHCI 625 – Clinical Trials II (2)

PHCI 662 – Health Care Economics (2)

PHCI 602 – Health Services and Outcomes Research (2)

PHCI 699 – Mentored Research (6 credits)**

**The student has the choice of when to take these hours based on what financial assistance they want to receive. Options 1) take all in the fall 2) take all in the spring or 3) split the hours up between semesters. If all hours are taken in the fall the student must register for 1 hour of masters candidacy in the spring.

M5 Year, Spring/Spring Semester Graduate School
Choice of 3 and remaining electives, all 4 weeks, 5 credits each

- In-Patient Medicine (IPM)
- AHEC
- Neurology
- In-Patient Surgery (IPS)
- Ambulatory Care (AR)
- Ambulatory Primary Care (APC)

MSPH Courses – See above**

USMLE Step 2 exam must be scheduled no later than block 8 of the M5 year.

PhD in Epidemiology: Clinical Investigation Sciences

Major: PHCI
Degree: PhD
Unit: GH

The doctoral program in Epidemiology: Clinical Investigation Sciences prepares students for a career in patient oriented research. The curriculum enables students to concentrate in either translational research (e.g., drug/device development) or health services and outcomes research. A guiding principle that informed the development of the doctoral program of study was that students should learn the essential "technical" aspects of clinical research in the Master's program and then, in the doctoral course work, the more advanced and specialized transdisciplinary substantive knowledge (i.e., pharmacology-molecular biology-genetics, pertaining to drug/device development) necessary to ask and answer "cutting edge" questions in their dissertation and in their future work as clinical research scientists.

Translational Research Concentration

Major: PHCI
Degree: PhD
Unit: GH

Students who focus on the area of translational research will study the development and testing of new pharmaceutical agents and biomechanical devices (i.e., the historical definition of clinical research). They will be trained to become research scientists capable of participating in all phases of the development and testing of new investigational drugs and biomedical devices. They will be able to identify promising new chemical compounds or devices, conduct initial tests for safety, seek FDA approval for clinical use, conduct Phase IV clinical trials of health outcomes, and establish "clinical guidelines" for their use in practice. The Translational Research curriculum consists of 20 hours of required courses, 10 hours of elective courses, and 18 hours of dissertation research beyond the Master's. It is expected that a significant portion of elective hours will be in independent study or seminar hours in discipline related to the student's research interests and that these courses will include significant research experiences.

PhD Degree in Epidemiology – Clinical Investigation Sciences: Translational Research Concentration

Year 1
Fall Semester
BIOC 641 – Advanced Eukaryotic Genetics (4)

PHCI 633 – Legal Aspects of Biomedical, Behavioral and Public Health Research (2)

PHCI 799 – Dissertation Research (2)

Electives* - (4)

Spring Semester
PHAR 601 – Principles of Medical Pharmacology (7)

PHCI 799 – Dissertation Research (2)

Year 2
Summer Semester
PHCI 799 – Dissertation Research (6)

Fall Semester
PHCI 626 – Clinical Trials III: Organization and Management (4)

PHAR 660 – Principles of Drug and Chemical Action (3)

PHCI 799 – Dissertation Research (2)

Electives* - (3)

Spring Semester
PHCI 799 – Dissertation Research (6)

Electives* (3)

*Electives courses are to be taken from the basic biomedical sciences at the 600 level and above. In addition, students may take 500 level courses offered through the CREST Program. Independent study courses that involve a research experience are strongly recommended.

Health Services and Outcomes Research Concentration

Major: PHCI
Degree: PhD
Unit: GH

Students pursuing the health services and outcomes research concentration will be trained to conduct patient oriented, population based clinical research, to assess the effectiveness and efficacy of alternative health service delivery systems or treatment modalities and to design and/or evaluate Federal and State health programs to improve the health status of specific populations. Because of the broad array of foci in health services and outcomes research, the curriculum for this concentration is designed with maximum flexibility in mind. The curriculum consists of 18 credit hours of required course work and 12 credit hours of electives beyond the Masters. Students will select, with the approval of their faculty advisor, elective course work from among the graduate level courses offered within the clinical research program or from relevant health related courses offered in other departments of the University. It is expected that a significant portion of elective hours will be in independent study or seminar hours in a discipline related to the student's research interests and that these courses will include significant research experiences.

PhD Degree in Epidemiology-Clinical Investigation Sciences: Health Services and Outcomes Research Concentration

Year 1
Fall Semester
PHCI 603 – Program Evaluation (2)

HADM 620 – Introduction to the Business of Health Care Systems (3)

PHCI 671 – Preventive Medicine I: Community Health (2)

PHCI 799 – Dissertation Research (2)

Electives* (3)

Spring Semester
PHCI 604 – Quality Assessment in Health Care (2)

PHCI 605 – Survey Research Methods (2)

PHCI 672 – Preventive Medicine II: Individual Health Assessment and Risk Factor Modification (2)

Select 1 of the following:

- PHCI 613 – Epidemiology of Cancer (1)
- PHCI 612 – Epidemiology of Cardiovascular Disease (1)
- PHCI 614 – Epidemiology of Infectious Disease (1)

PHCI 799 – Dissertation Research (2)

Electives* (3)

Year 2
Summer Semester
PHCI 799 – Dissertation Research (6)

Fall Semester
Select 2 of the following:

- PHCI 642 – Programs and Research in Maternal and Child Health (1)
- PHCI 643 – Programs and Research in Adult Health (1)
- PHCI 644 – Programs and Research in Geriatric Health (1)
- PHCI 645 – Programs and Research in Women's Health (1)
- PHCI 646 – Programs and Research in Minority Health (1)
- PHCI 647 – Programs and Research in Urban Health (1)

PHCI 799 – Dissertation Research (4)

Electives* (6)

Spring Semester
Select 2 of the following:

- PHCI 642 – Programs and Research in Maternal and Child Health (1)
- PHCI 643 – Programs and Research in Adult Health (1)
- PHCI 644 – Programs and Research in Geriatric Health (1)
- PHCI 645 – Programs and Research in Women's Health (1)
- PHCI 646 – Programs and Research in Minority Health (1)
- PHCI 647 – Program and Research in Urban Health (1)

PHCI 799 – Dissertation Research (4)

*Electives courses should be taken from among the listings in the Clinical Investigation Sciences Program or relevant course work. The student is advised to select elective courses that will expand his/her research skills and experience.

Students completing the required course work for the MSPH degree must apply for admission into the doctoral program. The MSPH degree will be awarded upon satisfactory completion of the doctoral course work and the doctoral comprehensive examinations.

In keeping with the research emphasis of the CREST Program MSPH students will be expected to participate in research projects throughout their course of study prior to the preparation of a professional paper, thesis or dissertation. Students are expected to present the findings of their research at the meetings of their professional societies and are required to submit their research for publication in scientific peer reviewed journals.

CREST Program Admission Requirements
Graduate Admission Requirements
Interested students may apply either to the certificate program, master's of science in public health or the doctoral degree program in Epidemiology: Clinical Investigation Sciences. Students seeking the MSPH degree must

have a professional degree (e.g., DMD, DO, MD or PhD), a terminal degree in a health field, or a graduate degree with appropriate experience in health care or clinical research. Students seeking to enter directly into the doctoral program in either translational research or health services and outcomes research must have a MSPH in Clinical Investigation Sciences or comparable training at the Master's level.

Applicants must complete all forms for admission to the University of Louisville Graduate School and must meet the Graduate School's requirements for admission which are:

- Formal application
- Application fee
- At least 2 letters of recommendation
- Official transcripts of all college work

*The GRE is not required.

These items are required no later than thirty days before the first day of classes of the semester in which the applicant plans to enroll.

Additional Admission Requirements

To meet CREST Program admission requirements, all applications are required to submit the following items with their application:

- Resume/CV
- Evidence of graduation from an accredited medical or dental school, or a PhD program in Public Health or other health related discipline e.g., social or behavioral science, or a terminal degree in a health field with relevant experience;
- A statement describing the applicant's qualifications, including prior experience in clinical research or health care, proposed (general) area of research, career paths, and two letters of reference from individuals knowledgeable about the applicant's qualifications, abilities, and potential for a successful career in clinical research and academic medicine.

Students seeking to begin their program of study with the advanced doctoral course work must meet the following additional requirement for admission:

- Completion of a master's degree program in Clinical Investigation Sciences or a comparable master's program which is approved by the Program Director.

POLITICAL SCIENCE (POLS)

www.louisville.edu/a-s/polsci

Departmental Faculty

Chair

Charles E. Ziegler, Professor

Professors

Philip G. Laemmle

Susan M. Matarese

Ronald K. Vogel

Paul J. Weber

Okbazghi Yohannes

Associate Professors

Julie M. Bunck

Dewey M. Clayton

Michael R. Fowler

David L. Imbroscio

Rodger A. Payne

Laurie A. Rhodebeck, Director of Graduate Studies

Nathan H. Schwartz

Assistant Professors

Anne Caldwell

Jasmine L. Farrier

Shiping Hua

Sherri L. Wallace

Programs

The Department of Political Science, in the College of Arts and Sciences, offers graduate training leading to the Master of Arts degree. In addition, the Department participates in the Master of Public Administration program.

The M.A. and the M.P.A. are designed to allow a student to pursue a degree either full or part time. Most graduate-level courses are offered in the evening. The M.P.A. is oriented toward those who want an applied job in the public, private, or non-profit sector. The M.A. is oriented toward those who wish to pursue advanced training in political science. For additional information on the M.P.A. program, see the catalogue section titled Public Administration.

The Department of Political Science also offers its undergraduate majors an opportunity to earn both a B.A. (or B.S.) degree and an M.A. degree in five years of study. This program allows students to earn an M.A. degree at an accelerated pace (approximately one calendar year).

The Department of Political Science also offers a joint MA/JD program in partnership with the Brandeis School of Law. This program allows the student to obtain the MA and JD degrees in a four-year course of study.

Areas of Concentration

Students in the Master of Arts program are encouraged to organize their programs around one, or perhaps two, of the following areas:

American Politics

The focus of this specialty is on basic American political institutions and the theory and practice of their operation in the American political milieu.

Urban Politics

This specialty examines the social, administrative, political, and economic forces affecting the formation and implementation of public policy in and for urban areas, primarily American.

Comparative Politics and International Relations

Students interested in the international area can build a program with guidance from faculty members in the Political Science Department and other departments emphasizing either a theoretical or area-specific approach to subfields.

Policy and Administration

Study in this specialization focuses on the basic principles of administration, such as organization theory, budgeting, and personnel, as well as the analysis of public policy formation and implementation.

Admission

Applicants must meet the general requirements for admission to the Graduate School and must submit an application to the Department of Political Science. Applicants should have an undergraduate major in social sciences or have sufficient preparation in the social sciences.

The Department requires a 3.0 undergraduate GPA overall or a 3.2 undergraduate GPA in the last 60 semester hours or the equivalent. Applicants must present a combined GRE score of 1000 (Verbal, Quantitative). All applicants must take the GRE and hold a BA or BS (or foreign equivalent) before admission to the program can be granted. In addition, applicants must submit two letters of recommendation and a statement of purpose (approximately 300-500 words in length) to the Department. This statement should detail an applicant's educational and professional experiences and goals and relate these goals to the pursuit of graduate study in political science at the University of Louisville. The Department may accept applicants who do not meet these requirements on a conditional basis if sufficient additional evidence of promise of success in the graduate program can be shown. No student will be admitted unconditionally until all materials listed above have been received.

Deadlines

Application deadlines for receipt of all materials are August 1 for the fall semester, December 1 for the spring semester, and May 1 for summer sessions.

Master of Arts in Political Science

Major: POLS
Degree: MA
Unit: GA

Thesis Option

Candidates must complete 24 credit hours of class work and a six-credit thesis, making a total of 30 credits required for the degree. The total may not include more than 6 hours of independent readings and research.

Core Courses	**Semester hours**	**Total**
POLS 670 Scope of Political Science	3	
POLS 671 Methods of Political Research	3	
Three of the following five courses:		
POLS 619 Seminar in Public Policy	3	
POLS 625 Seminar in Public Administration	3	
POLS 629 Seminar in American Politics	3	
POLS 639 Seminar in International Relations	3	
POLS 649 Seminar in Comparative Politics	3	15
Electives (with approval of advisor)	9	9
POLS 699, Thesis	6	6
Minimum Total		**30**

Nonthesis Option Candidates must complete 36 credit hours of classwork. Of this, 27 credits must be in 600-level courses and 24 credits must be taken in the Political Science Department. The total may not include more than 6 credits of independent readings and research. POLS 695, Directed Research, must be taken in the last semester of the candidate's course of study.

Core Courses	Semester hours	Total
POLS 670 Scope of Political Science	3	
POLS 671 Methods of Political Research	3	
Three of the following five courses:		
POLS 619 Seminar in Public Policy	3	
POLS 625 Seminar in Public Administration	3	
POLS 629 Seminar in American Politics	3	
POLS 639 Seminar in International Relations	3	
POLS 649 Seminar in Comparative Politics	3	15
Electives		
Political Science	6-18	
Other graduate courses (with approval of advisor)	0-12	18
POLS 695, Directed Research	3	3
Minimum Total		**36**

Dual Degree Program Juris Doctor and Master of Arts in Political Science JD/MA

The Louis D. Brandeis School of Law and the Department of Political Science of the College of Arts and Sciences and the Graduate School have developed a program for interdisciplinary studies that will result in dual degrees in Law and Political Science. The program recognizes the many connections among politics, government, and law. Students interested in these connections will have a unique opportunity to explore them in the course of completing the dual degree program. Students enrolled in the program will also acquire interdisciplinary skills in research and writing. The program will prepare students to pursue a wider variety of career options than either the JD or the MA alone would provide.

Admission Requirements

The JD/MA program is open to all students who have successfully completed a baccalaureate degree at an accredited college or university. To be admitted into the program, the student must 1) apply to, 2) meet the admission requirements of, and 3) be accepted by both the School of Law and the Graduate School. In addition, students currently enrolled only in the Political Science MA program must apply to the School of Law prior to completing 18 credit hours of MA course work. Students currently enrolled only in the School of Law must apply to the MA program prior to completing the first semester of the second year of law school.

Upon admission to both schools, students must submit a letter of intent and a proposed course of study to the School of Law or to the Department of Political Science, depending on where they first intend to take courses, or in which they are currently taking courses. A copy of the letter must also be sent to the appropriate office of the other program. Students will need to plan their four-year course of study carefully, taking into account the sequence and availability of course offerings in each program. Successful applicants will be notified of the procedures to follow in pursuing the JD/MA course of study.

Curriculum Requirements

Candidates in the JD/MA program must complete 81 hours in the JD curriculum (instead of the normal 90 hours) and either 21 hours in the MA curriculum (instead of the normal 30 hours) for the Thesis Option, or 27 hours in the MA curriculum (instead of the normal 36 hours) for the Non-Thesis Option. Nine hours from each program can be counted as electives in the other program to give the student the requisite hours for both the JD and MA degrees. MA credit will be applied to the JD degree on a pass/fail basis only. JD credit will be applied to the MA degree on a graded basis. Only MA courses approved by the Law Dean's Office may be applied to the JD degree. Likewise, only JD courses approved by the Director of Graduate Studies in Political Science will be applied to the MA degree.

Students must complete the requirements for both degrees before either degree is awarded.

Full-time JD/MA students must be enrolled in the Brandeis School of Law for a minimum of six semesters and must be enrolled in a minimum of 10 credit hours each semester. Part-time JD/MA students must be enrolled in a total of eight credit hours each term for a minimum of eight semesters.

Participating students must complete the standard first-year Law curriculum in the traditional manner. Students may enroll in Political Science courses prior to beginning the first year Law curriculum and may combine Law and Political Science courses after completing the first-year Law curriculum.

Students are encouraged to take advantage of the unique strengths of the Department of Political Science and the School of Law when planning their course of study in the dual degree program. In particular, the department enjoys strong complements of faculty in two broad areas: International Studies and American Politics. A student participating in the dual degree program will be able to combine Law courses and Political Science courses to create a well-defined concentration of study. Examples of such concentrations include environmental law and politics; negotiations and dispute resolution; administrative law and politics; federalism, international law, and politics; comparative law and politics; civil rights and liberties; constitutional law and politics; and race, law, and politics.

For more information, contact:

Office of Admissions: Louis D. Brandeis School of Law, University of Louisville, Louisville, KY 40292, (502) 852-6364/6365, www.louisville.edu/brandeislaw

Director of Admissions: Graduate School, University of Louisville, Louisville, KY 40292, 502)852-3101, www.gradadmit.louisville.edu

Director of Graduate Studies: Dr. Laurie Rhodebeck, Department of Political Science, University of Louisville, Louisville, KY 40292, (502) 852-1009/6834, l.rhodebeck@louisville.edu

PSYCHOLOGICAL AND BRAIN SCIENCES (PSYC)

www.louisville.edu/a-s/psychology

Departmental Faculty

Chair
Dennis Molfese, Professor

Professors
Barbara M. Burns

Stephen E. Edgell

Edward A. Essock

Richard Lewine

Suzanne Meeks

Carolyn B. Mervis

Robert G. Meyer

Stanley A. Murrell

Heywood M. Petry

Janet Woodruff-Borden

Associate Professors
Paul J. DeMarco

ZiJiang He

Maureen McCall

John R. Pani

Paul G. Salmon

Assistant Professors
Charlotte F. Manly

Benjamin Mast

Tamara L. Newton

Edna Ross

Barbara Stetson

Emeritus/Emerita
Joseph F. Aponte

Martin R. Baron

John C. Birkimer

Ray H. Bixler

James M. Driscoll

Samuel Z. Himmelfarb

John A. Robinson

Richard P. Smith

General Information

The Department of Psychological and Brain Sciences, in the College of Arts and Sciences, offers Ph.D. programs in experimental psychology and clinical psychology and a separate M.A. program in general psychology. The Ph.D. programs usually require four years of full-time course work and research activities. Each Ph.D. student in clinical psychology must also complete a one-year approved internship. Students in the M.A. program in general psychology may complete their degree as part-time students.

Financial Support

Financial support for graduate students in the Ph.D. programs is available in the form of research assistantships, Graduate School fellowships and part-time job and placements in laboratories and community service settings. Information regarding these various awards can be obtained from Ms. Carolyn Mask, Graduate Admissions in PBS, Department of Psychological and Brain Sciences.

Admission

Students admitted to the MA program or to the Ph.D. programs in experimental and clinical psychology must have earned an undergraduate degree from an accredited college or university, a minimum grade point average of 3.0 for all undergraduate and prior graduate work, must take the Graduate Record Examination. Those for whom English is not their native language must also submit TOEFL scores.

In addition to meeting Graduate School requirements for a doctoral degree, (see section on General Requirements) each student must meet departmental requirements such as, core courses, research exercises, the Preliminary Examinations, a thesis or other research portfolio, and a dissertation. More detailed information on programs and requirements can be obtained from Ms. Carolyn Mask, Graduate Admissions in PBS, Department of Psychological and Brain Sciences.

Doctor of Philosophy in Clinical Psychology

Major: CPSY
Degree: PHD
Unit: GA

The clinical program adheres to a scientist-practitioner model and is designed to provide training in research, psychological assessment, psychological intervention, and legal and professional issues. The program covers basic theories, current state of knowledge, and skill training in clinical psychology. Faculty expertise is strongest in the areas of anxiety disorders, mental health and adjustments of older adults, stress management and behavioral medicine, and ethnic mental health. Clinical emphases include interpersonal and behavioral-cognitive approaches.

Doctor of Philosophy in Experimental Psychology

Major: EPSY
Degree: PHD
Unit: GA

The Experimental program offers three areas of specialization:

Cognition and Development: Which focuses on memory, conceptual behavior, problem solving, language, judgment, decision making, attention, cognitive development, and mathematical models.

Vision Science: Which focuses on visual perception and visual neuroscience.

All students must complete a general core curriculum, the courses and research experiences specified in their area of concentration, and a dissertation. Equivalence of graduate work in psychology at another institution will be evaluated on an individual basis. Active and continuous involvement in research is essential. Accomplishments in research are evaluated separately from performance in courses. To remain in good standing, students must maintain a B average in all courses and demonstrate appropriate progress in research.

Master of Arts in Psychology

Major: PSYC
Degree: MA
Unit: GA

A minimum of 30 hours of graduate courses (courses numbered 500 level and above) is required. This degree is a non-thesis degree tailored for students who wish to increase their knowledge of multiple sub-fields within psychology. MA students are required to complete 4 core content courses, two courses in statistics, methods and history of psychology; and four electives related to their degree.

Social Sciences (SS)

www.louisville.edu/a-s/soc/

Graduate Program Faculty
Chair
Wayne Usui, Professor

The Division of Social Sciences offers neither a graduate degree program no a graduate certificate program. However, courses offered by the Division may be applied toward graduate degrees in other areas. Students must obtain their program advisor's permission before enrolling in these courses. Students who are interested in course in Social Sciences should contact the Chair of the department.

KENT SCHOOL OF SOCIAL WORK (SW)

www.louisville.edu/kent/

Departmental Faculty
Dean
Terry L. Singer

Associate Dean of Research
Riaan Van Zyl

Associate Dean for Academic Affairs
Annatjie Faul

Associate Dean for Student Services
Pamela Yankeelov

Professors
Gerard Barber

Joseph H. Brown

Dana N. Christensen

Ruth Huber, Director of Doctoral Program

Thomas R. Lawson, Director of the International Programs

Carol Tully

Associate Professors
Stanley R. Frager

Sharon Moore

Bibhuti K. Sar

Sally St. George, Co-Director of the Marriage and Family Therapy Program

Dan Wulff, Co-Director of the Marriage and Family Therapy Program

Associate Professor of Research

Anita Barbee

Assistant Professors
Richard Cloud

Wanda Collins

Annatjie Faul

Andy Frey

Tangerine-Ann Holt

Pamela Yankeelov

Assistant Professors of Research
Becky Freeman Antle

Linda Bledsoe

Mavin Martin

Ramona Stone

Instructor (Term)
Lisa Barrett

Martha Fuller, Director of Field Education

Kim Wadlington

Master of Science in Social Work (MSSW)

Major: SW
Degree: MSSW
Unit: Kent School

Accreditation of MSSW
The Master of Science in Social Work program is accredited by the Council on Social Work Education. The Master of Science in Social Work with a Specialization in Marriage and Family Therapy Program and the Post-Masters Certificate Family Therapy program is accredited by the Commission on Accreditation for Marriage and Family Education.

Admission to Kent School of Social Work's Masters Program
Persons interested in admission to the Kent School should contact the Admissions Office, Kent School of Social Work, Oppenheimer Hall, University of Louisville, Louisville, Kentucky 40292 (502/852-6402), FAX: (502)852-0422. We encourage potential applicants to visit the Kent School and ask that you simply call to make an appointment for an interview. Kent School seeks mature students with a demonstrated ability to work with people, emotional stability, good interpersonal skills, good health, and the ability to perform well academically. To ensure that entering students meet these standards, the faculty has set the following requirements:

1. A bachelor's degree from an accredited institution of higher learning.
2. A minimum of 27 credit hours in liberal arts: Communications (6), Natural Sciences (3), Humanities (9), and Social Sciences (9).
3. Applicants must have completed a course in statistics, a course in research methodology, and a course in human biology as prerequisites for admission. Applicants must show evidence of successful completion of such courses and must submit a course description(s). A student who needs to complete any of these three may be granted a conditional admission, and must successfully complete prerequisites by the end of the first semester at Kent. Upon such completion the conditional status will be removed. Students who have not completed the prerequisites by the end of the first semester will not be allowed to enroll in any additional social work courses.

4. Each applicant must submit a 700-1000 word personal statement. Submit a carefully written personal statement (double-spaced type written pages-12 point.) that addresses the following four topics:
   (1) describe a social problem or program strategy that is of greatest interest to you;
   (2) describe your commitment to engage in social work roles that involve social welfare, institutions, and systems most likely to have an effect on major social problems;
   (3) describe in detail how you would ensure that you work is relevant to the most economically and socially disadvantaged groups in our society;
   (4) describe the intellectual and personal qualifications that will enable you to practice social work successfully.

Note: If there are gaps or deficiencies in your academic record, please address these in an addendum to your statement.

5. At least three reference forms are required and supplemental letters are encouraged. A reference from each supervisor of the applicant during work or field instruction experiences is needed. If these include more than three persons, the most recent supervisors should be used. One reference should be from a person familiar with the applicant's academic ability and recent performance. If the applicant has not enrolled in classes within the past five years, this requirement may be waived and an additional work reference substituted. The School reserves the right to request additional supportive material from persons acquainted with the applicant's academic and/or prior practice capabilities.
6. Miller Analogies Test (MAT) scores or Graduate Record Exam (GRE) test scores is requiredfrom applicants with a grade point average of less than 2.75.
7. For all applicants whose native language is not English, Kent School requires the Test of English as a Foreign Language (TOEFL). A score of 550 on the paper-based TOEFL or 213 on the computer based TOEFL is required. Scores must be submitted before a decision will be made on an application.

Admission Procedures for MSSW Program

The application file is complete when all of the following are received by the Kent School Admissions Office:

1. A completed application form (may be sent on-line www.graduate.louisville.edu).
2. A $50.00 processing fee.
3. One official transcript from each institution of higher learning attended must be mailed directly to the University Office of Graduate Admissions, U of L, Louisville, KY 40292.
4. An personal statement, typewritten and signed must be mailed directly to the University Office of Graduate Admissions, U of L, Louisville KY 40292.
5. Each applicant is required to add the following statement to their personal statement accompanied by the applicant's signature and date of the signature. Academic dishonesty is prohibited at the University of Louisville, in keeping with this policy, I certify the material contained in this application is solely my work and I have neither cheated nor plagiarized in its creation Applicant's signature_____ Date_____.
6. Three references (one academic and two employment, which can include field instruction or volunteer work) must be sent directly to the University Office of Admissions, U of L, Louisville, KY 40292.
7. Evidence of satisfactory completion (grade + course description) of statistics, research methodology, and human biology prerequisites must be submitted along with the application.
8. MAT or GRE and TOEFL scores, when applicable, must be sent directly to the University Office of Admissions, U of L, Louisville, KY 40292. Tests may be taken at the nearest university or through the University of Louisville Testing Service.

The University Admission's staff will do everything possible to facilitate completion of the applicant's file. However, it is the applicant's responsibility to request the items needed and to check with the Graduate Admissions Office to determine whether they were, in fact, received. No faxes will be accepted. The Kent School Admissions Committee will review the application only when all credentials are on file.

Admission Application Date for the MSSW Program

Consideration of applications begins in November. The final deadline for applications is May 15th for the following fall semester, but because entry into the program is highly competitive, applicants are encouraged to submit their applications early to ensure a space. All materials must be received before an admissions decision can be made.

Social Work MSSW Curriculum

The graduate social work curriculum is guided by the precepts of the mission of the Kent School to prepare competently trained social workers who practice from a strong professional value base to serve the metropolitan mission of the University. This education is directed to engage learning that develops skills and understanding in practice with individuals, families, and communities and to promote social justice. The foundation year of the curriculum prepares student for generalist practice within the context of a structural approach to social work. The advanced or concentration year provides two avenues of concentration for students to develop specialized skills and knowledge. Students choose one of these two options; either one in advanced direct practice or one in advanced macro practice.

MSSW Foundation Curriculum

The foundation year of study prepares students for generalist practice with multi-level systems; individuals, families, groups, organizations, and communities. It is built upon a liberal arts base that provides students with a perspective that society is a complex organization of diverse people and ideas, each of which includes strengths upon which society may prosper and grow. The Kent School approaches foundational learning through the lens of a structural model of practice that is based on an awareness of systematic inequalities in the distribution of society's resources. It further purports a belief in distributive justice that holds as primary each person's need for and right to a fair share of the benefits of society. Students who complete this first year of study will be able to assess social problems in a multi-dimensional framework that allows them to create strategies for intervening in complex problem-solving at various levels of systems and that builds upon the strengths inherent in those systems.

MSSW Concentration Curriculum

In the advanced year of the curriculum, students may elect to enroll in a concentration of either advanced direct practice or advanced macro practice. Each concentration develops on the strength of the liberal arts base and foundational generalist perspective from the first year of the curriculum. Both of these practice concentrations take a social constructionist perspective, particularly the idea that there are multiple realities, and that these realities are socially constructed. In each of these concentrations, students enroll concurrently in a designated practice course and a field practicum assignment that parallels the practice interests of the concentration. In addition, advanced research courses provide the student with additional skills in measuring practice of effectiveness at this advanced level of practice.

MSSW Advanced Direct Practice

The advanced direct practice curriculum emphasizes the interrelatedness of environmental conditions and individual, family, and group dynamics as they relate to personal, interpersonal, and social problems. The populations specifically targeted by this approach transect all socio-economic classes; however, special attention is given to high-risk client populations. Various models are examined with appropriate intervention modalities. Psychosocial and structural theory are emphasized with respective intervention techniques and skills. Advanced direct practice provides content related to smaller systems such as individuals, families, and is guided by a narrative framework. Narrative social work practice is neither pathology-based, nor victim-blaming, and operates from the assumption that there are many ways to interpret lived experience. The Kent School Advanced Direct Practitioner understands the profound role of power in all human relationships, the role of history in creating meaning, that negotiated meanings influence the actions available to us, and maintains respect for the diverse lives and experiences of clients.

MSSW Advanced Macro Practice

The growing complexity and cost of contemporary social welfare services demand able administrators, social planners, and policy analysis. These professionals must be skilled in modern management, policy analysis, and strategic planning techniques, and be capable of monitoring and evaluating the impact of social policies, programs, and services. Administration, policy, and planning methods include those areas of professional social work practice commonly referred to as agency administration, management, and staff development; policy analysis; program design, implementation and evaluation; organizational development; and community planning and organization. The courses emphasize development of strategies and skills for effective practice in the roles of health and welfare planner and developer, program consultant, policy analyst, middle manager, supervisor, staff trainer, program director, and

grass-roots organizer. The advanced macro practice curriculum is directed at organizational systems and seeks to provide specialized knowledge and skills that increase students' abilities to work with contemporary problems, issues and practices in the administration of human service delivery systems. Management and critical analysis skills are honed in content related to policy development and organizational effectiveness. Multiple realities as reflected in a competing values paradigm, that affect organizational life parallel the process of smaller system intervention. In that regard, advanced macro practice prepares students to understand organizational complexity and to develop effective administrative tools to manage service delivery.

MSSW Advanced Standing
Students who have graduated within the previous five years from an undergraduate social work program accredited or in candidacy by CSWE with a cumulative grade point average of 3.0. who have demonstrated good academic performance in their social work courses may be eligible for up to 30 credit hours of Advanced Standing. Grades of B or better in the comparable social work content areas will be required for advanced standing. If a grade of B was not achieved, the students will be required to take the comparable content in the Kent School of Social Work curriculum. Only foundation coursework may be waived for students who are eligible.

MSSW Electives
The Kent School of Social Work provides electives as enrichment to the specialized learning in the concentration year. Social work jobs call for skills and knowledge that are broader than any narrowly defined specialization. For example, mental health workers are asked to know psychopathology, substance abuse, managed care, AIDS, and a range of other substantive areas. Many school social workers share the need for the same content. In addition, it is noted that social workers frequently change jobs, often to another field of practice. Social work education seeks to teach students to think critically, analyze systematically, and know where to find information and resources within the context of social work history, development and values. It is this type of education that best prepares students to function in a rapidly changing society.

In this curriculum paradigm, electives are considered enrichment. Some of this enrichment is in the form of very specific course content that aligns with a concentration. For example, a person in a direct practice concentration may elect to take a course in psychopathology to prepare for work in a mental health center or private practice. In another case, the enrichment may take the form of a complementary course such as a direct practice student taking a management course to prepare for career possibilities or the administrative student taking a course in family intervention to understand the complexities of family practice. Or, the enrichment may take the form of exploration as in the case of the student taking an aging or child welfare course to better understand those fields of practice and to prepare for various job prospects. Finally, the enrichment may include a course of general interest such as a women's issues course which crosses numerous concentration lines, but may not correspond specifically to the direct focus of the advanced practice.

Students are eligible to take electives as outlined by their chosen curriculum module. Please refer to the Kent School web site for complete descriptions of the various curriculum modules: www.louisville.edu/kent/futurestudents.html.

MSSW Dual Degree Programs

Master of Science in Social Work/Master in Divinity
The joint MSSW/MDiv program recognizes the value of professional education in two interrelated fields and encourages students who have an interest in both ministry and social work to pursue these degrees simultaneously. A student may enter the dual degree program from social work or theology. Applications must be submitted independently to each academic institution. For a more complete description of this program, please refer to the Kent School website: www.louisville.edu/kent/futurestudents.html.

Master of Science in Social Work/Juris Doctor Dual Degree Program

The dual MSSW/JD program recognizes the value of interdisciplinary study and encourages students having an interest in both social work and law to pursue these degrees simultaneously. Social workers and lawyers often seek to address identical or related societal concerns, albeit from different perspectives; understanding both disciplines enhances one's effectiveness in both professional capacities. Law courses strengthen the social worker's understanding of legal doctrine and structures that have impact on social institutions and human conditions; social work courses help lawyers to better understand human behavior, conflict resolution and social welfare institutions. For a more complete description of this program, please refer to the Kent School website: www.louisville.edu/kent/futurestudents.html.

MSSW Specializations

Marriage and Family Therapy
Students may complete the Specialization in Marriage and Family Therapy program as part of the MSSW degree. The program prepares students for clinical practice with families in the context of their communities, particularly those families who are disadvantaged and/or typically underserved. Completion of the program prepares students for licensure as a marriage and family therapist in Kentucky and for clinical membership in the American Association for Marriage and Family Therapy. The MSSW/MFT specialization requires 14 graduate credit hours in addition to the 60 hours required for the MSSW. For a more complete description, see below.

School Social Work
MSSW students who want to practice social work in a school setting can earn a school social work specialization within the Kent School master's curriculum. Student's who select this specialization learn how to help children and families overcome barriers to learning through home intervention. Those who complete the specialization meet the Kentucky Council on Teacher Education's requirements for certification as a school social worker. The specialization is open to students in both the macro and direct practice concentrations. For a more complete description, please refer to the Kent School website: www.louisville.edu/kent/futurestudents.html.

Curriculum Modules

60 Credit Hour Curriculum
(all courses are 3 credit hours each)

MSSW FOUNDATION COURSEWORK

601 Human Behavior in Social Environment I

619 Human Behavior in Social Environment II

602 Social Welfare Institutions, Policies, and Services

622 Issues in Policy & Service Delivery

603 Human Diversity

604 Social Work Practice I

605 Social Work Practice II

670 Practicum I (16 clock hours per week)

671 Practicum II (16 clock hours per week)

626 Research Methodology and Design

MSSW ADVANCED COURSEWORK (pre-requisite all Foundation courses)
640 Adv Direct Practice I or 691 Adv Macro Practice I

641 Adv Direct Practice II or 692 Adv Macro Practice I

668 Adv Research Practice I

669 Adv Research Practice II

672 Adv Practicum I (16 clock hours per week)

673 Adv Practicum II (16 clock hours per week)

Electives (4 electives are required - 12 credit hours)

30 Credit Hour Curriculum
Applies to Advanced Standing Placement ONLY

(Students admitted with BSW)

(all courses are 3 credit hours each)

MSSW ADVANCED COURSEWORK
640 Adv Direct Practice I or 691 Adv Macro Practice I

641 Adv Direct Practice II or 692 Adv Macro Practice II

668 Adv Research Practice I

669 Adv Research Practice II

672 Adv Practicum I (16 clock hours per week)

673 Adv Practicum II (16 clock hours per week)

Electives (4 electives are required - 12 credit hours)

Family Therapy Program

Faculty
Joe Brown, Ph.D.

Dana Christensen, Ph.D.

Sally St. George, Ph.D., Co-Director

Dan Wulff, Ph.D., Co-Director

The Family Therapy Program is located within the Raymond A. Kent School of Social Work. This program is dedicated to the study of Marriage and Family Therapy (MFT) at the Masters and Post-Masters levels. Completion of all program requirements prepare students for licensure (LMFT) in the Commonwealth of Kentucky and clinical membership within the American Association for Marriage and Family Therapy (AAMFT). The program requires coursework and supervised clinical practice. Coursework focuses on the theoretical foundations and practical applications of marriage and family therapy, the therapist's ethical responsibility, and the integration of research and practice. At the Masters level, the Family Therapy Program offers the MSSW-MFT specialization and at the Post-Masters level, a Post-Masters Certificate in MFT.

MSSW-MFT Specialization
The MSSW-MFT specialization offers the opportunity for those pursuing their Masters degree in Social Work to specialize in clinical practice with families in the context of their communities. The Specialization fulfills its mission by combining the systemic foundational principles of Marriage and Family Therapy with the goals and values of Social Work. This specialization deliberately prepares students to utilize family therapy with those families who are disadvantaged and/or typically undeserved.

The MSSW-MFT specialization is integrated within the Kent School Masters curriculum. The MSSW-MFT specialization requires fourteen (14) hours in addition to the sixty (60) hours required for the Masters Degree in Social Work. These additional hours are accumulated through four (4) semester hours of MFT Supervision concurrent with social work practica and two courses taken in summer semester along with a special four semester hour practicum/supervision experience.

This specialization was awarded national accreditation in 2002 through the Commission on Accreditation for Marriage and Family Therapy Education (COAMFTE).

Application materials for the MSSW-MFT Specialization should be included with the application materials required by the Graduate School and the Kent School of Social Work. More detailed information may be found at the Family Therapy website: www.louisville.edu/kent/family. Prospective students are advised to contact Dr. Sally St.George, Co-Director of the Family Therapy Program, for information prior to application completion. Consideration for admission into the specialization is dependent upon acceptance into the Kent School's MSSW program.

\Post-Masters Certificate in MFT
The Post-Masters Certificate in MFT offers the opportunity for those who already hold a Masters Degree in a Human Services field to pursue advanced study and supervised practice in Marriage and Family Therapy. Prerequisites for entry into this program may be required depending upon the student's Masters Program.

This Certificate Program is designed for the student to complete the requirements in two (2) calendar years, a new cohort of students beginning in the summer semester each year. Requirements include six (6) courses concurrent with five hundred (500) hours of supervised clinical practice and one hundred (100) hours of approved supervision in cooperation with Family and Children's Counseling Centers.

The Post-Masters Certificate in MFT has been accredited since 1991 by COAMFTE.

Application materials for the Post-Masters Certificate in MFT should be included with the application materials required by the Graduate School of the University of Louisville. Prospective students are advised to contact Dr. Sally St. George, Co-Director of the Family Therapy Program, for information prior to application completion. Deadline for completed applications is February 1. More detailed information may be found at the Family Therapy website: www.louisville.edu/kent/family.

MSSW-MFT Specialization

Major: SW
Degree: MSSW
Unit: GK
The MSSW-MFT Specialization requires 14 hours in addition to the 60 hours required for the Masters Degree in Social Work. The 14 hours are accumulated through four semester hours of MFT supervision concurrent with social work practica and two courses taken in summer semester along with a special four semester hour practicum/supervision experience.

MSSW-MFT Specialization Core Courses	Credit Hours
SW 651, Foundations of Family Therapy	3
SW 659, Introduction to Family Therapy Practice	3
SW 701, Family Therapy Applications	3
SW 702, Professional Issues and Ethics in MFT	3
SW 703, Systemic Diversity: Theory and Practice	3
SW 704, Integrating Family Therapy Theory and Practice	3
SW 721, Family Therapy Supervision	1
SW 722, Family Therapy Supervision	1
SW 723, Family Therapy Supervision	4
SW 724, Family Therapy Supervision	1
SW 725, Family Therapy Supervision	1

Two-Year Full-time Schedule

First Year

Fall	Spring	Summer
601, HBSE I	619, HBSE II	603, Diversity
602, Macro I	622, Macro II	659, Intro to Family Therapy Practice
604, Practice I	605, Practice II	723, Family Therapy Supervision
651, Foundations of Family Therapy	626, Research I	
670, SW Practicum	671, SW Practicum	
721, Family Therapy Supervision	722, Family Therapy Supervision	
16 credits	**16 credits**	**10 credits**

Second Year

Fall	Spring
640, Adv Practice I	641, Adv Practice II
668, Research II	669, Research III
672, SW Practicum	673, SW Practicum
701, Family Therapy Applications	703, Systemic Diversity
702, Family Therapy Ethics	704, Integrating MFT
724, Family Therapy Supervision	725, Family Therapy Supervision
16 credits	**16 credits**

Doctor of Philosophy in Social Work

Major: SW
Degree: PhD
Unit: GK

The Commonwealth's first doctoral program in social work offers the opportunity for academically motivated master's level social workers to continue their studies at the doctoral level. Graduates will be prepared to serve as a) faculty members in social work programs in Kentucky colleges and universities and institutions nationally, or b) administrators, planners, policy analysts, and program evaluators in a broad range of social service agencies.

Application to the Doctoral Program

Prospective students should apply to the institution where they plan to matriculate. The combined University of Louisville/University of Kentucky (UL/UK) program faculty will make admission recommendations to the prospective Deans of Graduate Schools.

To apply to the doctoral program in Social Work through the University of Louisville, send the following materials by February 1 to:

Director
Ph.D. Program in Social Work
Kent School of Social Work
University of Louisville
Louisville, KY 40292

1. Completed Graduate School Application (on-line at www.graduate.louisville.edu).
2. Application for Admission to the UL/UK Ph.D. in Social Work Program.
3. Official transcripts from each college/university attended, and documentation of the receipt of a Master's Degree in Social Work, e.g. MSW, MSSW.
4. Official report of GRE scores.
5. Three recommendations from the Graduate School Application (at least two from academicians).
6. Application fee of $50 (unless U of L is the most recent school you attended).
7. A current resume.
8. A sample of scholarly or professional writing.
9. A personal statement of career goals, research interests, and reasons for pursuing doctoral studies (no more than 3 pages).

The admission process involves the following:

a) Review of application materials by the doctoral admissions committee, b) admission committee interviews with those recommended, c) review by the combined UL/UK admission committee, and d) review by the Graduate School of the university where the candidate plans to matriculate.

Doctoral Admission Requirements

Those with master's degrees in social work will be considered for admission.

Doctoral Curriculum

The program requires a total of 44 post-master's credits of course work plus a minimum of two full-time semesters of dissertation research, or a total of at least 62 credit hours. The curriculum consists of three components:

I. Core Curriculum (29 credit hours): These are required courses that include research, statistics, theory development, policy analysis and behavior change theories, ethics, teaching in social work, and professional seminars.
II. Individualized Plan of Study (at least 15 credit hours): these credit hours are devoted to students' individual interests in areas in which expertise is to be developed.
III. Dissertation (at least 6 credits): The dissertation includes the design and implementation of a major research project, the results of which are expected to contribute to the social work knowledge base.

Doctoral Qualifying Examination

The purpose of the qualifying examination is to provide a vehicle through which students can demonstrate their abilities to integrate the whole of their educational experiences by adequately addressing complex questions pertinent to the current and developing knowledge base of social work. A student is eligible to take the qualifying examinations upon successful completion of 44 credits of core and other course work. Students are expected to provide answers that integrate knowledge from all required courses. Following the passage of the qualifying examination, students are admitted to Candidacy Status.

Doctoral Dissertation

After admission to candidacy, students proceed to propose, complete, and defend their dissertations. The dissertation must represent independent research and should be based on original research questions or hypotheses. Dissertation committees have at least five members, one of whom is from the University of Kentucky. Otherwise, the program at each university follows the policies and procedures of their respective institutions regarding the formation and membership of dissertation committees.

Doctoral Curriculum	**Semester Hours**	**Total**
Human Behavior and Change Theories in Social Work Practice	3	3
Advanced Analysis of Social Welfare Problems	3	3
Theory Development in the Social Work Profession	3	3
Teaching in Social Work	3	3
Ethics, Social Work, and Society	3	3
Social Work Research I and II	3	6
Statistics for Social Work I and II	3	6
Professional Seminar I and II	2	12
Individualized Plan of Study (15 credit hours)		15
Dissertation Credit Hours	6	6
Minimum Total		**50**

SOCIOLOGY (SOC)

www.louisville.edu/a-s/soc/

Departmental Faculty

Chair
Wayne M. Usui, Professor

\Professors
Jon H. Rieger

J. Allen Whitt

\Associate Professors
D. Mark Austin

Lateef O. Badru

John A. Busch

Melissa Evans-Andris

Allen Furr

Patricia Gagné

Cynthia Negrey

Shawn L. Schwaner

Assistant Professor

Susan E. Kelly

Emeritus/Emerita
Badr-El-Din Ali

James E. DeBurger

K. Robert Durig

Programs

The Department of Sociology, in the College of Arts and Sciences, offers graduate training leading to the Master of Arts.

The M.A. program is designed to allow a student to pursue a degree either full-or part-time. Many courses are offered in the evening so that those employed full-time can also pursue graduate education. Full-time students

can normally complete the program in two years; those who are employed full-time typically require three years to complete the program.

The program is designed to fill the needs of students wishing to pursue the Ph.D. in sociology, as well as those who are planning careers in the public and nonprofit sectors. The program also provides skills for those seeking employment in private research firms or in the field of information technology and program evaluation.

This program offers both thesis and non-thesis options (applied practicum or comprehensive examination). Please contact the Department for specific information.

In addition to the traditional MA in sociology, the department also offers a MA in sociology with a concentration in Communication, Geography and Geosciences, or Pan-African studies. These concentrations are offered in conjunction with their respective departments. For further information concerning these programs, contact the Sociology Department and/or the department of concentration interest.

Admission

Applicants must submit to the Office of Graduate Admissions: a graduate application; official copies of transcripts from all colleges attended; two letters of recommendation, preferably from current or former instructors; Graduate Record Examination (GRE) scores; and TOEFL scores (for international students). Applicants must also submit to the Department of Sociology a "Sociology Graduate Admissions Questionnaire" available from the Department or online at http://www.louisville.edu/a-s/soc/grad0/020qstnnaire.html

Those applying to the MA program must have: a minimum undergraduate GPA of 3.0; a combined verbal/quantitative GRE score of 900; and previous course work in statistics, research methods, and social theory. (Students may be allowed to make up deficiencies in previous course work, but credit for such courses cannot be applied toward graduate degree requirements.) International students should also have a quantitative GRE subscore of 450 and a score of 550 on the paper-based TOEFL or 213 on the computer based TOEFL is required.

Graduate Assistantships

The Sociology Department has available annually a limited number of graduate assistantships. Applicants wishing to compete for one of these must submit all materials for admission, including GRE scores, not later than February 1 for the fall semester and October 1 for the spring semester. Announcement of awards is normally made on or about March 15.

Enrollment and Program Guidance

The Graduate Program Coordinator serves in an advisory capacity to students for enrollment and program planning until such time as an advisor and/or a committee chairperson has been formally designated. At this point the thesis advisor and/or committee chair assumes the primary responsibility for guidance of the student.

Academic Standards

In order to be retained in the program, graduate students must receive a grade of 3.0 or better in each of the department's core courses and must maintain an overall average of at least a 3.0 in all course work taken for graduate credit. Any student whose cumulative quality-point total falls to three fewer than three times the number of credits attempted will receive a warning in writing from the chair of the Graduate Program Committee. Any student whose cumulative quality-point total falls to six fewer than three times the number of credits attempted shall not be retained in the program.

Master of Arts in Sociology

Major: SOCI
Degree: MA
Unit: GA

SOCI 510 Computer Data Analysis .....3 credit hours

SOC 510 Proseminar in Scoiology .....1 credit hour

SOC 610 Seminar in Statistics .....3 credit hours

SOC 615 Seminar in Research Methodology.....3 credit hours

SOC 620 Seminar in Sociological Theory .....3 credit hours

The student then takes the appropriate number of electives corresponding to the completion option chosen: (1) writing a thesis; (2) conducting an applied practicum (internship); or (3) completing a comprehensive examination. (For students who believe they might want to pursue a Ph.D. or a career in a research-related field, the thesis option is highly recommended). The three options have differing credit requirements.

Option	Core Elective Courses	Thesis Hours	Applied Hours	Practicum Hours	Total Hours
Thesis	13	12	6	-----	31
Applied Practicum	13	18	-----	6	37
Examination	13	24	-----	-----	37

No more than six credit hours of 500-level courses may be applied toward the master's degree. Given that all sociology graduate students must take SOC 510 Computer Data Analysis, students are allowed to take one other 500-level course toward the graduate degree.

Up to six credit hours of course work, with approval from the department, may be taken outside the sociology department. Students may also elect to take up to six credits of course work in independent study (independent readings or research). Additional credits of course work outside the department or of independent study used toward degree requirements require special permission from the department.

Five-Year BA-BS/MA Program in Sociology

The program is designed to allow motivated undergraduates with a high GPA to earn a BS/BA and an MA in Sociology in five years. Students will apply for the program during their junior year and will begin the program in their senior year.

During their senior year, students accepted into the program will be allowed to take three 600-level Sociology courses or Sociology 510 and two 600-level sociology courses. The credits earned in these courses will meet both the undergraduate degree requirements and will be counted toward the hours required for the MA. Upon completion of the undergraduate degree, students will begin the graduate program and take the appropriate number of hours remaining for the degree option they select. Students accepted into the program will be eligible to apply for Graduate Assistantships. Assistantships will be awarded for the year following completion of the undergraduate degree.

Admission Requirements

3.35 overall undergraduate GPA at time of application and a combined total GRE score of 900 on the Verbal and Quantitative sections and a 3.5 GRE score on the Analytical Reasoning section. Applicants also will be expected to submit two letters of recommendation and a completed Graduate Admission Questionnaire. Students must be admitted to the Graduate School.

Master of Arts in Sociology With Concentration in either Communication, Geography and Geosciences, or Pan African Studies

The Master of Arts degree in Sociology requires completion of the following core courses (13 credit hours):

SOC 510 Computer Data Analysis 3 credit hours

SOC 604 Proseminar Sociology 1 credit hour

SOC 610 Seminar in Statistics 3 credit hours

SOC 615 Seminar in Research Methodology 3 credit hours

SOC 620 Seminar in Sociological Theory 3 credit hours

Students interested in pursuing a concentration in either Communication, Geography and Geosciences, or Pan African Studies then take the appropriate number of electives within their chosen concentration department:

Option	Core Courses	Sociology Elective Hours	Elective Hours in Concen. Dept. (Comm., Geo or PAS)	Thesis Hours	Applied Practicum Hours	Total Hours
Thesis	13	0	12	6	-----	31
Applied Practicum		13	6	12	-----	6
37						
Examination	13	9	15	-----	-----	37

No more than six credit hours of 500-level course may be applied toward the master's degree. Given that all sociology graduate students must take SOC 510 Computer Data Analysis, students are allowed to take one other 500-level course toward the graduate degree.

Up to six credit hours of course work, with approval from the department, may be taken outside the sociology department. Students may also elect to take up to six credits of course work in independent study (independent readings or research). Additional credits of course work outside the department or of independent study used toward degree requirements require special permissions from the department.

THEATRE ARTS (TA)

www.louisville.edu/a-s/tas/

Departmental Faculty

Chair
Russell Vandenbroucke, Professor

Professors
Albert J. Harris

Michael Hottois

Associate Professors
Garry Brown

Nefertiti Burton

Rinda Frye

Lendeana M. Thomas

James Tompkins

Instructor
Zhanna Goldentul

Programs

The Department of Theatre Arts offers a Master of Fine Arts. Concentrations are in Acting/Performance or Design/Production. A Certificate in African American Theatre is also offered. The department fosters creativity, collaboration, discipline, and artistic. It embraces the theatre as a means of creative expression, cultural understanding, and social development. The African American Theatre Program, founded in 1993, is integral to the department. All students are exposed to the diversity of multicultural theatre.

Admission

Prerequisites for admission to the program are a baccalaureate degree from an accredited college or university and admission to the Graduate School. The department requires that a resume of theatrical experience accompany the application.

Unconditional admission requires completion of basic undergraduate course work in each of the following areas: theatre history, dramatic literature, design/technical theatre, acting/directing. To accomplish this purpose, students may be required to take preparatory courses not to be counted toward the degree.

Applicants for admission to the M.F.A. program must demonstrate theatrical skill that indicates their potential for excellence: Students planning to concentrate on Acting/Performance must audition; those wishing to focus on Design/Production must present a portfolio. Most students are also interviewed to determine their level of preparation and commitment.

The Master of Fine Arts

Objectives of the M.F.A. program:

1. To train professional theatre artists in a program featuring a sound academic base. The curriculum has been designed so that a student may acquire the broad range of complex skills required of a professional theatre artist. In keeping with the "educated artist" philosophy of the department, the artist-in-training will simultaneously acquire professional skills and the rigorous academic education a university is uniquely equipped to offer.
2. To train teachers of theatre to teach at the college and university level.

The M.F.A. degree in theatre is recognized by the vast majority of colleges and universities as a terminal teaching degree. Any graduate of an M.F.A. program who decides to teach in a college theatre program will be fully certified to do so; because of the academic component of this program, that teacher will be better prepared for the collegiate intellectual environment than will the M.F.A. graduate of many other schools.

The general requirements for the Master of Fine Arts degree are completion of 72 semester hours of graduate level work and of a final artistic project and monograph that demonstrate the artistic and intellectual quality expected of professional artists and technicians at all levels of theatre.

In accordance with the philosophy of the program, the 72 hours of course work must include each of three basic areas: skill courses in one or more areas of theatrical production (42 hours), academic courses providing an intellectual background in the art (18 hours), and practicum credit for artistic projects undertaken to apply acquired skills (18 hours, including the monograph).

In addition, students in the program are encouraged to undertake an internship experience for course credit. Many of Louisville's professional arts organizations have agreed to participate in this internship program; the credit hours earned for an internship may be applied to the requirement in practicum projects or in skills courses, or may be divided between the two, depending upon the nature of the experience and the student's training needs.

Options and Requirements for the MFA

Two options are available to the student in the M.F.A. program. These options place emphasis on Performance (acting), or on Production (including design and technical theatre). These options differ only in the selection of specific skills courses and practical projects undertaken.

Program Requirements and Procedures: Acting

Students pursuing the M.F.A. in acting must complete 72 semester hours of graduate work. The three-year curriculum consists of the following courses:

Academic Area (14 credits)

- Graduate Seminar 2
- Script Analysis and Interpretation....3
- Theory and Practice I 3
- Tools for a Multicultural Theatre....3
- Approaching African American Theatre 3

Performance Concentration (42 credits)

- Graduate Movement I-IV 12
- Graduate Voice I-IV....12
- Graduate Acting I-V....15
- Actors Theatre of Louisville Workshop....3

Project Area (10 hours)

- M.F.A. Performance Projects 7
- Thesis Guidance (monograph)....3

Electives (3 credits)....3

Community Service in the Arts (3 credits)

- Independent Study 3

Please observe that the sequence of graduate movement and voice classes, as well as the theory sequence, alternates years.

NOTE: Some candidates may enter the program with insufficient knowledge in basic areas that may be important to their future success in the program. These students will be required by their Graduate Advisory Committee to complete additional courses. For example, many students enter without sufficient knowledge of Theatre History and are then required to take Theatre History during their first year of residence.

Program Requirements and Procedures: Design

M.F.A. in Design candidates must complete a minimum of 72 hours of course work and selected design assignments. The Graduate Advisory Committee must approve substitutions for any course. Typical course requirements are as follows:

Academic Area (11 credits)

- Graduate Seminar 2
- Script Analysis and Interpretation....3
- Design Theory 3
- Tools for a Multicultural Theatre....3

Area of Concentration (36 credits)

- Black Aesthetic on Stage 3
- Scene Design I-II....6
- Costume Design I-II....6
- Lighting Design I-II 6
- One of the following:....3
  - Life Drawing (Department Fine Arts)
  - Sketching & Rendering: Scenery
  - Sketching & Rendering: Costumes
- Electives 12

Project Area (13 credits)

- Production Projects (1st and 2nd year) 7
- Final Project and Thesis....6

Professional Internship (9 credits)

Internships are approved by the Advisory Committee for the 4th or 5th semester.

Community Service in the Arts (3 credits)

- Independent Study 3

Performance/Production Project Requirements

All students enrolled in the M.F.A. Program are expected to be active in performance or production projects during each semester in which they are enrolled. TA 625 (Performance Project) and TA 645 (Production Project) provide a mechanism for implementing this expectation and for assessing the quality of the projects undertaken. The number of credits granted for TA 624/625 varies depending on the student's concentration and year of study.

Certificate in African American Theatre

(minimum 15 credits)

History, Theory, and Literature (6 credits)

- Advanced African American Theatre History 3

One of the following:

- Approaching African American Theatre 3
- Advanced African American Women in Theatre 3
- Advanced Theatre of the African World 3

Performance/Design (3 credits)

One of the following:

- Advanced Directing the Black Experience 3
- Advanced Black Aesthetic on Stage 3
- Performance Project in an approved play 3
- Production Project on an approved production 3

Electives (3 credits)

One of the following:

- Theatre Internship 3
- Independent Study on an approved topic....3
- Approved courses in Pan African Studies....3

Community Service in the Arts (3 credits)

- Independent Study 3

Urban Planning (URPL)

http://cbpa.louisville.edu/supa

Departmental Faculty

Program Director
Thomas S. Lyons (Urban and Public Affairs)

Professors
Steven C. Bourassa (Urban and Public Affairs), School Director

Arthur W. Dakan (Geography and Geosciences)

John I. Gilderbloom (Urban and Public Affairs)

Steven G. Koven (Urban and Public Affairs)

Peter B. Meyer (Urban and Public Affairs

H. V. Savitch (Urban and Public Affairs)

Associate Professors
Carrie G. Donald (Urban and Public Affairs)

Clara A. Leuthart (Geography and Geosciences)

Assistant Professors
David M. Simpson (Urban and Public Affairs)

Program

The School of Urban and Public Affairs offers a Master of Urban Planning (MUP) degree in cooperation with the Department of Geography and Geosciences. The MUP Program prepares students to work in a wide variety of fields, including land use and environmental planning, parks and recreation planning, urban design, historic preservation, transportation planning, open space planning, regional planning, and in the development of geographic information systems. With the continuing expansion of Louisville and the nation's other metropolitan areas, urban planning is one of the leading professional fields in terms of demand and job satisfaction, according to surveys by Jobs Rated Almanac and Encyclopedia of Careers and Vocational Guidance.

Students can specialize in one or two of three areas: land use and environmental planning; administration of planning organizations: housing and community development; and spatial analysis for planning. Students have the opportunity to benefit from working on real planning problems through the required internship and studio courses. Studio courses are taught at the Urban Design Studio, located in downtown Louisville and operated by the MUP Program in cooperation with the City of Louisville and the College of Architecture of the University of Kentucky.

The degree requires 48 hours (two years of full-time study or the equivalent in part-time study), although up to 12 hours of relevant graduate course work may be transferred into the program. Students may enroll on a part-time or full-time basis. Classes are held in the evenings and on weekends to meet the scheduling requirements of persons holding full-time jobs.

Admission Requirements

Applicants must have a bachelor's degree (any major is acceptable), must have taken the Graduate Record Examination, and must submit two letters of reference and a statement of purpose. Admission is competitive and generally requires a minimum combined quantitative and verbal GRE score of 1000 and a minimum undergraduate GPA of 3.0 (B).

Financial Aid

The School of Urban and Public Affairs administers a number of Graduate Research Assistantships (GRAs) which are awarded competitively and are intended to support full-time study. Students in the MUP Program may receive a maximum of two years of support as a GRA. The GRAs provide a stipend of at least $10,000 for 20 hours of work per week over a ten-month period. They also provide for remission of tuition and health insurance. Early application is encouraged.

Master of Urban Planning

Major: PLAN
Degree: MUP
Unit: GB

	Semester Hours	Total
Core Courses		
PLAN 500 Foundations of Economics	3	
PLAN 600 Planning History and Issues	3	
PLAN 601 Planning Theory	3	
PLAN 602 Statistics for Public Affairs	3	
PLAN 603 Urban Economics	3	
PLAN 604 Applied Research Methods	3	
PLAN 605 Land Use and Planning Law	3	
PLAN 606 Professional Practice	3	24
One Speciality Area (listed below)	9	9
Other Electives	9	9
PLAN 649 Planning Internship	3	3
PLAN 650 Capstone Studio	3	3
Minimum Total Hours		**48**

Specializations

The courses available for each specialization are as follows. Other courses not listed below may be substituted with the permission of the Program Director.

Specialization in Land Use and Environmental Planning
Three courses (9 hours) from the following:

PLAN 501 Urban Environmental Quality	3	
PLAN 607 Land Use and Environmental Planning	3	
PLAN 608 Geographic Information Systems	3	
PLAN 612 Mediation and Dispute Resolution	3	
PLAN 620 Environmental Policy	3	
PLAN 621 Urban Infrastructure	3	
PLAN 622 Urban Design	3	
PLAN 623 Environmental Policy and Natural Hazards	3	
PLAN 651 Urban Design Studio	3	
PLAN 652 Neighborhood Planning Studio	3	9

Specialization in Administration of Planning Organizations
Three courses (9 hours) from the following:

PLAN 608 e-Government	3	
PLAN 612 Nonprofit Grantsmanship	3	
PLAN 609 Public Budgeting and Finance	3	
PLAN 610 Strategic Management and Planning	3	
PLAN 611 Human Resources Management	3	
PLAN 612 Mediation and Dispute Resolution	3	
PLAN 613 Public Administration and Organizational Behavior	3	9

Specialization in Spatial Analysis for Planning
Three courses (9 hours) from the following:

PLAN 608 Geographic Information Systems	3	
PLAN 614 Retail Site Analysis	3	

PLAN 615 Spatial Statistics	3	
PLAN 616 Analytical Urban Geography	3	
PLAN 618 Urban Demography	3	
PLAN 619 Urban Geographic Information Systems Applications	3	
PLAN 621 Urban Infrastructure	3	
PLAN 624 Urban Transportation Planning	3	
PLAN 628 Economic Conditions and Forecasting	3	9

Specialization in Housing and Community Development
Three courses (9 hours) from the following:

PLAN 614 Retail Site Analysis	3	
PLAN 617 Housing and Community Development	3	
PLAN 621 Urban Infrastructure	3	
PLAN 622 Urban Design	3	
PLAN 625 Historic Preservation	3	
PLAN 626 Economic Development	3	
PLAN 629 Real Estate Principles	3	
PLAN 630 Real Estate Investment	3	
PLAN 631 Real Estate Development	3	
PLAN 651 Urban Design Studio	3	
PLAN 652 Neighborhood Planning Studio	3	9

URBAN AND PUBLIC AFFAIRS (UPA)

http://cbpa.louisville.edu/supa

Departmental Faculty

Program Director
Ronald K. Vogel (Urban and Public Affairs and Political Science), Professor

Professors
Steven C. Bourassa (Urban and Public Affairs), School Director

John I. Gilderbloom (Urban and Public Affairs)

Steven G. Koven (Urban and Public Affairs)

Thomas S. Lyons (Urban and Public Affairs)

Peter Meyer (Urban and Public Affairs)

H.V. Savitch (Urban and Public Affairs)

Wayne M. Usui (Sociology)

J. Allen Whitt (Sociology)

Associate Professors
D. Mark Austin (Sociology)

Carrie G. Donald (Urban and Public Affairs)

David Imbroscio (Political Science)

Cynthia Negrey (Sociology)

Assistant Professors
David M. Simpson (Urban and Public Affairs)

Program

The School of Urban and Public Affairs offers a doctoral degree in Urban and Public Affairs. The program prepares students for careers in university teaching, public and non-profit administration in the fields of environmental policy and planning, urban planning and development, and urban policy and administration.

Students are required to complete 48 credit hours of study. This requires a sequence of core courses consisting of 18 credit hours. Students must complete 18 credit hours in one specialty area, including 3 required courses. Three specialty areas are offered: Environmental Policy and Planning, Urban Planning and Development, and Urban Policy and Administration. Twelve credit hours of dissertation research are also required. Students must pass qualifying examinations on the core and specialty area before commencing formal dissertation work. Students should consult the Program Guidelines for details.

See department web-page for more information:
http://cbpa.louisville.edu/AcademicPrograms/UPA.htm

Admission Requirements

Admission is competitive. Successful applicants should, at minimum:

- hold a master's degree or equivalent professional degree in an appropriate field with a grade point average (GPA) of at least 3.0 (on a 4.0 scale); preference is given to applicants with GPAs of 3.5 or better; and
- achieve a score of at least 1500 (verbal, quantitative, and analytical) on the Graduate Record Examination.

These admissions requirements are currently under review; for updated criteria, please see the program's website. Exceptions may be made to these criteria for applicants who otherwise have strong applications. The program gives preference to applicants who intend to study full-time and who can be supported with financial aid (a Graduate Research Assistantship or a Fellowship). However, a small number of places are reserved each year for highly capable students who intend to study part-time. Such students should note that the Graduate School requires every PhD student to complete at least one year of full-time study.

Doctorate in Urban and Public Affairs

Major: UPA
Degree: PhD
Unite:GB

	Semester Hours	Total
Core Courses		
UPA 602 Urban Policy and Governance	3	
UPA 603 Urban Economics	3	
UPA 606 Research Methods	3	
UPA 610 Urban Theory & Public Affairs	3	
UPA 621 Policy Analysis and Program Evaluation	3	
SOC 610 Seminar in Statistics	3	18
One Specialty Area (listed below)	18	18
UPA 700 Dissertation Research	12	12
Minimum Total Hours		**48**

Students with no prior study of statistics are required to take PADM 601/PLAN 602 Statistics for Public Affairs and SOC 510 Computerized Data Analysis prior to enrolling in SOC 610. Students with previous study of basic statistics, but no experience with statistical software, are required to take SOC 510 prior to enrolling in SOC 610. Students with no prior study in economics are recommended to take an introductory course in that subject, such as PLAN 500 Foundations of Economics. These courses do not count toward the 48-semester-hour requirement.

Specialty Areas:
Students must pursue one of the three specialty areas, including 9 hours of required courses and 9 hours of elective courses. Elective courses from other specialty areas, programs, or departments may be taken with the approval of the Program Director.

Environmental Policy and Planning Specialization

Required Courses

UPA 678 Land Use and Planning Law 3
UPA 679 Environmental Policy 3
UPA 683 Land Use Planning 3

Elective Courses

PLAN 612 Mediation and Dispute Resolution 3
PLAN 615 Spatial Statistics.....3
PLAN 619 Urban Geographic Information Systems Applications.....3
SOC 616 Advanced Multivariate Modeling.....3
SOC 618 Qualitative Field Research Methods.....3
UPA 627 Decision Models.....3
UPA 629 Geographic Information Systems.....3
UPA 632 Independent Study.....1-6
UPA 672 Strategic Planning and Management.....3
UPA 680 Special Topics in Urban and Public Affairs 3
UPA 684 Planning Theory.....3
UPA 687 Environmental Policy and Natural Hazards.....3
UPA 696 Urban Infrastructure 3

Urban Planning and Development Specialization

Required Courses

UPA 623 Comparative Urban Development.....3
UPA 683 Land Use Planning.....3
UPA 684 Planning Theory 3

Elective Courses

PLAN 612 Mediation and Dispute Resolution 3
PLAN 616 Analytical Urban Geography 3
PLAN 618 Urban Demography.....3
PLAN 619 Urban Geographic Information Systems Applications.....3
SOC 616 Advanced Multivariate Modeling.....3
SOC 618 Qualitative Field Research Methods.....3
UPA 624 Economic Conditions and Forecasting.....3
UPA 627 Decision Models.....3
UPA 629 Geographic Information Systems.....3
UPA 632 Independent Study.....1-6
UPA 640 Economic Development 3
UPA 648 Housing and Community Development.....3
UPA 651 The Politics of Urban Development.....3
UPA 672 Strategic Planning and Management.....3
UPA 678 Land Use and Planning Law 3
UPA 679 Environmental Policy.....3
UPA 680 Special Topics in Urban and Public Affairs.....1-6
UPA 682 Urban Design 3
UPA 687 Environmental Policy and Natural Hazards.....3
UPA 690 Urban Transportation Planning 3
UPA 696 Urban Infrastructure 3

Urban Policy and Administration Specialization

Required Courses

UPA 630 Politics of Urban Policy 3
UPA 660 Advanced Organizational Behavior 3
UPA 661 Public Administration and Organizational Theory 3

Elective Courses

PADM 648 Mediation and Dispute Resolution 3
SOC 616 Advanced Multivariate Modeling.....3
SOC 618 Qualitative Field Research Methods.....3
SOC 634 Social Network Analysis 3
SOC 640 Seminar in Urban Sociology 3
UPA 623 Comparative Urban Development.....3
UPA 624 Economic Conditions and Forecasting.....3
UPA 625 Macroeconomic Theory.....3
UPA 627 Decision Models.....3
UPA 628 Microeconomic Theory.....3
UPA 632 Independent Study.....1-6
UPA 640 Economic Development 3
UPA 643 Inequality in Public Policy.....3
UPA 646 Urban and Public Finance.....3
UPA 647 Public Budgeting and Finance 3
UPA 648 Housing and Community Development.....3
UPA 651 Politics of Urban Development.....3
UPA 662 Administrative Law and Processes 3
UPA 667 Human Resources Management 3
UPA 672 Strategic Planning and Management.....3
UPA 679 Environmental Policy.....3
UPA 680 Special Topics in Urban and Public Affairs 3

WOMEN'S STUDIES (WMST)

www.louisville.edu/a-s/ws/

A Graduate Certificate in Women's Studies is offered to students pursuing degrees in other areas, to students who already hold the Master's degree, or to post-baccalaureate students. Courses in Women's Studies may also be applied toward graduate degrees in other areas. Students must obtain their program advisor's permission before enrolling in these courses. Students who are interested in more information on these courses should contact Dr. Nancy M. Theriot in Women's Studies.

Departmental Faculty

Chair

Nancy Theriot, Professor of Women's Studies/History

Assistant Professors

Karen Christopher, Women's Studies/Sociology

Dawn Heinecken, Women's Studies

Women's Studies courses are taught by faculty throughout the University, but primarily from departments in the College of Arts and Sciences. The following faculty members have been accepted as Women's Studies Affiliated Faculty, which means they teach Women's Studies courses, participate in Women's Studies meetings and committee work, and advise students interested in Women's Studies.

Affiliated Faculty

Professors

Ann Allen, History

Barbara Burns, Psychology

Thomas B. Byers, English

Julia Dietrich, English

Susan Griffin, English

Suzette Henke, English

Marianne Hutti, Nursing

Kathleen Kirby, Educational & Counseling Psychology

Cheryl Kolander, Health/Phys Ed/Sport Studies

Wendy Pfeffer, Classical and Modern Languages

Sydney Schultze, Classical and Modern Languages

Edwin S. Segal, Anthropology

Arthur Slavin, Humanities, Emeritus

Associate Professors
Beth Boehm, English

Karen Chandler, English

Rinda Frye, Theatre Arts

Patricia Gagne, Sociology

Karen Hadley, English

Susan Herlin, History/Pan African Studies

Mary Hums, Health/Phys Ed/Sport Studies

Bose Folasade Iyun, Pan African Studies

Eileen John, Philosophy

Carol Mattingly, English

Nancy Potter, Philosophy

Mary Ann Stenger, Humanities

Pamela Takayoshi, English

Assistant Professors
Anne Caldwell, Political Science

Katherine Burger Johnson, University Libraries

Susan Kelly, Sociology

Theresa Rajack-Talley, Pan-African Studies

Programs
Students may pursue graduate work in Women's Studies in three different ways.

The Women's Studies Program of the College of Arts and Sciences offers an interdisciplinary graduate certificate in Women's Studies to students who are accepted into a UofL graduate program and wish to do concentrated work in Women's Studies. A graduate certificate in Women's Studies is awarded in conjunction with a graduate degree for completing 12 hours of course work approved by the Women's Studies chairperson. The 12 hours of course work may also count toward the student's degree. Students wishing to pursue a graduate certificate in Women's Studies in conjunction with a degree should apply for the certificate program by consulting the Women's Studies chairperson after admission to a UofL graduate program. The Women's Studies chairperson shall inform the student's degree program chairperson of the student's application for the graduate certificate in Women's Studies and shall work with the degree program chairperson to facilitate the student's completion of degree and certificate requirements.

The Women's Studies Program also offers an interdisciplinary graduate certificate in Women's Studies to post-baccalaureate students who are not pursuing a graduate degree but who want to focus on women's studies at the graduate level. The non-degree certificate requires 15 hours of course work approved by the Women's Studies chairperson. Post-baccalaureate students wishing to pursue a graduate certificate in Women's Studies outside of a degree-granting program must apply for admission through the Graduate School.

A student may also pursue graduate work in Women's Studies through the Interdisciplinary Studies Program. See catalogue for more information about Interdisciplinary Studies. After contacting the Graduate School for information about application and program development in Interdisciplinary Studies, students who choose to focus on Women's Studies through Interdisciplinary Studies should contact the Women's Studies chairperson for advice about shaping a program proposal.

Requirements for the graduate certificate in Women's Studies for students in degree-granting programs
1. A total of 12 hours of courses at the 500 or 600 level, approved by the Women's Studies chairperson.
2. At least one course must be at the 600 level.
3. At least one course must be outside of the department in which the student is pursuing the degree.
4. At least one course must focus on feminist theory. This requirement may be waived if the student has had a theory course approved by the Women's Studies chairperson.
5. Please note that a single course can satisfy more than one of these requirements.
6. Please note that the 12 hours of certificate course work may also count toward the student's graduate degree.

Requirements for the graduate certificate in Women's Studies for post-baccalaureate students not pursuing a graduate degree
1. A total of 15 hours of courses at the 500 or 600 level, approved by the Women's Studies chairperson.
2. At least two courses must be at the 600 level.
3. Courses must be chosen from both humanities and social science disciplines.
4. At least one course must focus on feminist theory. This requirement may be waived if the student has had a theory course approved by the Women's Studies chairperson.

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Course Descriptions

Accounting

ACCT 500 Fundamentals of Accounting (3.0)
Note: Fulfills a Foundation Core requirement only.
Fundamental principles of accounting needed by the manager. Topics include the assumptions of accounting, recording and reporting transactions; interpretation of data for decision-making purposes.

ACCT 526 Finance and Accounting Applications in Logistics and Distribution (3.0)
Prerequisite: MKT 525.
Note: This course does not fulfill credit for MBA.
Fundamental principles of accounting and finance as applied to logistics and distribution as needed by managers.

ACCT 600 Managerial Accounting (3.0)
Prerequisites: ECON 600, CIS 675, MGMT 600, ACCT 500.
Emphasizes uses of accounting for managerial decisions, planning control and evaluation. Discussion of accounting concepts and procedures, accounting statements, budgets, income measurement, and costs.

ACCT 611 Cost and Operations Management (3.0)
Prerequisite: Admittance to the Master of Accountancy Program.
An integrated course using traditional and innovative cost accounting and production management techniques and concepts to analyze decisions necessary to produce goods and provide service.

ACCT 615 Advanced Financial & Governmental Accounting (3.0)
Prerequisite: Admittance to the Master of Accountancy program.
Coverage of financial reporting rules and processes for business combinations and governmental and not-for-profit organizations from both a reporting and decision - making perspective.

ACCT 620 Management Control Systems (3.0)
Prerequisite: ACCT 600.
Uses of accounting systems in aiding management control. Transfer pricing, managed costs, cost centers, performance centers, investment centers, activity based management. Not regularly offered.

ACCT 631 Federal Taxation (3.0)
Prerequisite: Admittance to the Master of Accountancy Program.
Focus is on the individual taxpayer. Coverage includes federal income tax of the individual, income taxation of estates and trusts, retirement and family tax planning, and the estate and gift tax.

ACCT 641 Financial Accounting and Professionalism (3.0)
Prerequisites: Admittance to the Masters of Accountancy Program.
Covers the standard setting process for generally accepted accounting principles. Includes application of GAAP to create financial statements. Additional focus on the ethical and professional expectations of the CPA.

ACCT 651 Auditing and Systems I (6.0)
Prerequisites: Admittance to the Master of Accountancy Program.
Focuses on the design, implementation and documentation of accounting information systems. Emphasis also placed on the internal control system and proper audit trails. First course of a two-course sequence.

ACCT 655 Special Topics in Accounting (3.0)
Prerequisites: Admittance to the Master of Accountancy Program.
Explores a variety of topics in accounting, auditing, or taxation.

ACCT 661 Enterprise Resource Planning Systems (3.0)
Prerequisites: CIS 610 & CIS 615 or admittance to the Masters of Accountancy Program.
Focuses on the features of an ERP system, the implementation of ERP systems, and internal control issues related to ERP systems. The use of ERP systems in conjunction with electronic commerce will be featured.

ACCT 680 Special Topics in Accounting (1.0-6.0)
An advanced study of one or more selected topics or issues related to the study of Accounting.

ACCT 698 Research Seminar in Accounting (1.0-3.0)
Prerequisite: ACCT 600 and permission of departmental chair.

Anthropology

ANTH 546 Problems in Urban Anthropology (3.0)
Prerequisite: ANTH 201 or consent of instructor.
An examination of one or more current issues regarding urbanization and development in traditional and modern societies.

ANTH 548 Special Topics in Cultural Anthropology (3.0)
Prerequisite: Consent of instructor.
An examination of one or more specific areas of social-cultural anthropology. Details announced each semester.

ANTH 549 Special Topics in Archaeology (3.0)
Prerequisite: ANTH 202 and ANTH 305.
An examination of specific areas of archaeology. Details announced each semester.

ANTH 601 Special Topics in Anthropology (3.0)
Prerequisite: Consent of instructor or department chair.
Outlines vary as to area of expertise of instructors; objectives aim at the maximum of staff utilization and meeting program needs within the University which call for studies in anthropology as that discipline interrelates with other special knowledge. Students may take the course as often as topics vary, up to 6 hours.

ANTH 604 Problems in Social Anthropology (3.0)
Prerequisite: Consent of instructor.
Intensive examination of selected topics in social anthropology focusing on current theories and methodologies. Alternate Fall semesters.

ANTH 606 Regional Analysis (3.0)
Prerequisite: Consent of instructor.
Intensive analysis of socio-cultural data of a particular region of the world (such as Africa, pre-Columbia, Contemporary America, or Latin America) and method and theory pertaining to that region. May be repeated up to six hours if no duplication is involved. Alternate Fall semesters.

Art (Creative)

ART 502 Directed Study in Painting (1.0-3.0)
Prerequisites: ART 301; BFA Candidacy or faculty consent.
3 lab, 3 independent study.
Experimentation on individual problems in painting. May be repeated up to a maximum of 12 hours.

ART 503 Art Workshop (0.5-3.0)
Prerequisite: Consent of instructor.
An intensive workshop in a specialized area of art.

ART 507 Art Education (3.0)
Prerequisite: M.A.T. candidacy in elementary education or consent of instructor.
Discussion to establish philosophy, and studio to explore projects and media appropriate for kindergarten through grade 8.

ART 508 Art Education Methods and Research I (3.0)
Prerequisite: Fine Arts majors only.
Art education methods and current research readings to satisfy Kentucky certification requirements for teachers of art in grades K-6.

ART 517 Directed Study in Drawing (1.0-3.0)
Prerequisites: ART 515 or 516; BFA Candidacy or faculty consent.
3 lab.
Experimentation on individual problems in drawing.
May be repeated to a maximum of 12 hours.

ART 518 Art Education Methods and Research II (3.0)
Prerequisite: Fine Arts majors only.
Art education methods and current research readings to satisfy Kentucky certification requirements for teachers in grades 7-12.

ART 534 Directed Study in Ceramics (1.0-3.0)
Prerequisites: ART 531; BFA Candidacy or faculty consent.
3 lab.
Experimentation on individual problems in clay and ceramics. May be repeated up to a maximum of 12 hours.

ART 543 Directed Study in Printmaking (1.0-3.0)
Prerequisites: ART 541; BFA Candidacy or faculty consent.
3 lab.
Note: Formerly ART 527.
Experimentation on individual problems in printmaking. May be repeated to a maximum of 12 hours.

ART 555 Directed Study in Photography (1.0-3.0)
Prerequisites: ART 511 or 513; BFA Candidacy or faculty consent.
3 lab.
Experimentation on individual problems in photography. May be repeated to a maximum of 12 hours.

ART 579 Directed Study in Graphic Design (1.0-3.0)
Prerequisites: ART 571; BFA Candidacy or faculty consent.
3 lab.
Experimentation on individual problems in graphic design. May be repeated to a maximum of 12 hours.

ART 584 Directed Study in Fiber and Mixed Media Art (1.0-3.0)
Prerequisites: ART 581 or 582; BFA Candidacy or faculty consent.
3 lab.
Experimentation on individual problems in fiber and mixed media art. May be repeated to a maximum of 12 hours.

ART 590 Special Problems in Studio Art (3.0)
Prerequisites: BFA Candidacy; or faculty consent.
Advanced exploration of a particular theme, medium or combination of media outside the scope of established departmental curriculum, with emphasis on individual problems. May be repeated with different subtitles to a maximum of 12 hours.

ART 595 Independent Study (1.0-3.0)
Prerequisite: Minimum grade point average of 3.0 overall; minimum grade point average of 3.5 in the department, and at least 18 semester hours credit in the department.

ART 600 Graduate Seminar (1.0)
Prerequisites: Graduate Standing.
Note: Crosslisted with ARTH 600.
Reports, critiques, presentations and discussions on personal research and current topics in the visual arts.

ART 601 Workshop in Painting (3.0)
Prerequisite: Four semesters of undergraduate painting.
Concentrated study in advanced contemporary painting problems, with strong emphasis on independent visual thought. May be repeated, but no more than 18 hours can be credited to M.A.

ART 615 Workshop in Drawing (3.0)
Prerequisites: Four semesters of undergraduate drawing.
Concentrated study of contemporary concepts and theories leading to independent visual thought expressed through drawing techniques.
May be repeated, but no more than 18 hours can be counted toward M.A.

ART 621 Workshop in Sculpture (3.0)
Prerequisite: Four semesters of undergraduate sculpture.
Concentrated study of sculptural problems and techniques. May be repeated, but no more than 18 hours can be credited to M.A.

ART 625 Workshop in Printmaking (3.0)
Prerequisite: Four semesters of undergraduate printmaking.
Concentrated study leading to independent visual thought. May be repeated, but no more than 18 hours can be credited to M.A.

ART 631 Workshop in Ceramics (3.0)
Prerequisite: Consent of instructor.
Advanced individual projects and experimentation. May be repeated, but no more than 18 hours can be credited to M.A.

ART 643 Independent Study (1.0-15.0)
Prerequisite: Consent of instructor.
Credit according to achievement.

ART 644 Independent Study (1.0-15.0)
Refer to: ART 643

ART 645 Thesis Guidance (3.0)

ART 646 Thesis Guidance (3.0)
Refer to: ART 645

ART 651 Workshop in Photography (3.0)
Prerequisites: Four semesters of undergraduate photography and consent of instructor.
Concentrated study of photographic techniques and theory leading to independent visual thought.
May be repeated, but no more than 18 hours can be counted toward a M. A.

ART 681 Workshop in Fiber/Mixed Media (3.0)
Prerequisite: Consent of instructor.
Concentrated study of fiber problems and techniques with emphasis on development of student's individual direction. May be repeated, but no more than 18 hours can be credited to M.A.

ART 691 Workshop in Studio Art (3.0)
Prerequisite: Consent of the instructor.
Concentrated study in advanced contemporary visual problems leading to independent visual thought.
May be repeated, but no more than 18 hours can be credited to M.A.

Art History

ARTH 540 Approaches to Study of Art History - WR (3.0)
Prerequisite: One undergraduate art history survey course or consent of instructor.
Note: Approved for the Arts and Sciences upper-level requirements in written communication (WR).
Significant approaches to problems of style and iconography. Introduction to research methods and historiography.

ARTH 541 Modern Perspectives in the Visual Arts- WR (3.0)
Prerequisites: Graduate standing or permission of the instructor.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Modern perspectives in the study and criticism of art; exploration of perennial issues of interpretation.

ARTH 542 Special Topics (3.0)
Content to be indicated in schedule of courses. May be taken with four different subtitles to a maximum of 12 hours.

ARTH 543 Independent Study (1.0-3.0)
Prerequisite: Consent of instructor.

ARTH 544 Pan-African Art: Form and Content (3.0)
Prerequisite: Consent of instructor.
Note: Cross-listed with PAS 581.
Similarities and differences in African-American folk art, Caribbean folk art, and traditional African art.

ARTH 546 History of Ceramics (3.0)
Prerequisite: Consent of instructor.
Survey of the history of ceramics. Emphasis on the evolution of technical innovations and styles.

ARTH 547 Museum Methods (3.0)
Prerequisite: Major in art history and consent of instructor.
Advanced work in museum education at the J.B. Speed Art Museum or with departmental collections.

ARTH 548 Museum Methods (3.0)
Prerequisite: Major in art history and consent of instructor.
Advanced work in museum education at the J..B Speed Art Museum or with departmental collections.

ARTH 551 Studies in Ancient Art (3.0)
Prerequisites: ARTH 351, ARTH 352, ARTH 353, or consent of instructor.
Selected topics in ancient art and architecture.

ARTH 552 Ancient Painting (3.0)
Prerequisite: ARTH 351, ARTH 352, ARTH 353, or consent of instructor.
A study of mural painting from the ancient cultures of Egypt, the Aegean, Greece and Italy.

ARTH 553 Ancient Cities (3.0)
Prerequisite: ARTH 351, ARTH 352, ARTH 353, or consent of instructor.
A study of the development of the city in the Mediterranean region from prehistoric times to the late Roman Empire.

ARTH 561 Studies in Medieval Art (3.0)
Prerequisite: One 300-level course in Medieval art or architecture, or consent of instructor.
Studies in the art and architecture of the Middle Ages emphasizing a synthesis of the arts in a particular period or place.

ARTH 562 Medieval Architecture (3.0)
Prerequisite: One 300-level course in Medieval art or architecture, or consent of instructor.
The development of medieval architecture in Eastern and Western Europe with emphasis on the interrelationships between various countries.

ARTH 563 Medieval Figural Arts (3.0)
Prerequisite: One 300-level course in Medieval art or architecture, or consent of instructor.
The development of the figural arts in the Middle Ages with emphasis on a particular period, geographical area, or medium.

ARTH 571 Studies in Renaissance Art (3.0)
Prerequisite: One 300-level course in Renaissance art or consent of instructor.
Study of a major phase of painting or sculpture, fifteenth or sixteenth century, in Italy or Northern Europe, with emphasis on sources and development of style.

ARTH 574 History of Prints (3.0)
Prerequisite: 12 hours of art history or consent of instructor.
Origin and development of woodcut, engraving, etching, aquatint, lithography, and serigraphy; major artists using these techniques.

ARTH 581 Studies in Baroque Art (3.0)
Prerequisites: ARTH 381, ARTH 382, ARTH 383, or consent of instructor.
Study of one of the leading artists of the seventeenth and eighteenth centuries, such as Bernini, Borromini, Tiepolo, Velazquez, Rembrandt, Rubens, or Watteau.

ARTH 591 Studies in Modern Art (3.0)
Prerequisite: One 300-level course in Modern art or consent of instructor.
Reconstruction and interpretations of modern artistic aspirations through study of sources and documents by artists, critics and historians.

ARTH 593 Studies in Modern Architecture (3.0)
Prerequisite: One 300-level course in Modern architecture or consent of instructor.
Principal forms and theories of urban and building design in relation to social forces in modern Europe and America.

ARTH 595 Studies in American Art (3.0)
Prerequisite: One 300-level course in American art or architecture or consent of instructor.
Studies in American architecture, city planning, decorative arts, painting, or sculpture, from colonial times to present.

ARTH 597 Studies in Photographic History (3.0)
Prerequisite: Consent of instructor.
The aesthetic development of photography, with emphasis on U.S. photographers and contemporary issues relevant to the medium.

ARTH 598 Studies in the History of Landscape Architecture (3.0)
Prerequisite: Consent of instructor.
Special problems and advanced research in garden history and the development of spatial planning.

ARTH 599 Urban Design (3.0)
Prerequisite: One 300-level course in architectural history or consent of instructor.
Historical survey of city design and planning philosophies from ancient times to the present, with emphasis on Europe and the United States.

ARTH 600 Graduate Seminar (1.0)
Prerequisites: Graduate Standing.
Note: Crosslisted with ART 600.
Reports, critiques, presentations and discussions on personal research and current topics in visual arts.

ARTH 641 Seminar in Art History (3.0)
Prerequisite: Consent of instructor.
Exploration of core problems in iconography, formal analysis, criticism, or historiography.

ARTH 643 Independent Study (1.0-12.0)
Prerequisite: Consent of instructor. Credit according to achievement.

ARTH 644 Independent Study (1.0-12.0)
Refer to: ARTH 643

ARTH 645 Thesis Guidance (3.0)

ARTH 646 Thesis Guidance (3.0)
Refer to: ARTH 645

ARTH 647 Teaching Internship (2.0)
Prerequisite: Consent of instructor. Development and practice of teaching skills through work with an individual instructor in an undergraduate course.

ARTH 648 Curatorial Methods (1.0-3.0)
Prerequisites: Consent of the instructor.
Development and practice of curatorial methods through work on a specific project or in a gallery or museum setting. May be repeated but no more than 9 hours may be counted toward a M. A.

ARTH 651 Seminar in Ancient Art (3.0)
Prerequisite: Consent of instructor. Advanced study on selected topics in ancient art and architecture.

ARTH 661 Special Problems in Medieval Art (3.0)
Prerequisite: Consent of instructor.

ARTH 671 Special Problems in Renaissance Art (3.0)
Prerequisite: Consent of instructor.

ARTH 681 Special Problems in Baroque Art (3.0)
Prerequisite: Consent of instructor.

ARTH 691 Special Problems in Modern Art (3.0)
Prerequisite: Consent of instructor.

ARTH 693 Special Problems in Modern Architecture (3.0)
Prerequisite: Consent of instructor.

ARTH 695 Special Problems in American Art (3.0)
Prerequisite: Consent of instructor.

ARTH 699 Special Problems in Urban History (3.0)
Prerequisite: Consent of instructor. Advanced research in urban history from an architectural standpoint.

ARTH 745 Dissertation Research (1.0-12.0)
Prerequisite: Permission of dissertation director.

Anatomical Sciences and Neurobiology

ASNB 510 Gross Anatomy for Students of Physical Therapy (3.0)
Lectures and laboratory dissection of regions required for students of Physical Therapy. Limited to students of Bellarmine's Physical Therapy program. Limited to 40 students maximum. Offered summer semester only.

ASNB 601 Gross Anatomy (8.5)
Prerequisite: Permission from course director at least two weeks before beginning of course.
Primarily a laboratory course. Major emphasis is upon cadaver dissection, but lectures, group discussions, informal laboratory conferences, demonstrations, X-ray presentations are frequent. Correlation of function with structure is stressed in all areas. See Medical School Freshman Schedule for time.

ASNB 603 Microscopic Anatomy (6.0)
Prerequisite: Permission from course director at least two weeks before beginning of course.
Presented as an integrated study of cells, basic tissues, and organ systems. The classical light microscopic approaches are supplemented by information derived from electron microscopy. Mixture of lectures, labs and self-instruction . See Medical School Freshman Schedule for time.

ASNB 605 Human Embryology (2.5)
Prerequisite: Permission from course director at least two weeks before beginning of course.
Normal and abnormal human embryogenesis and organogenesis are presented through lectures and demonstrations. Special lectures emphasize the cause and treatment of malformations. Second quarter. See Medical School Freshman Schedule for time.

ASNB 606 Anatomy Seminar (1.0)
Presentations and discussions of individual research or topics of current anatomical interest throughout the year.

ASNB 611 Methods in Neurobiology (3.0)
Prerequisite: Consent of instructor
An introduction to the methods used to study the nervous system through a combination of didactic sessions and demonstration and/or hands-on experiences. Topics may include cell and tract labelling, electrophysiology, protein blotting and immunohistochemistry, cell culture microscopy, and basic molecular biology.

ASNB 612 Cellular Electrophysiology (3.0)
Prerequisites: Medical Neurosciences (615) or consent of the instructor.
To provide graduate students in the neurosciences with a solid foundation in electrophysiology, so they can apply electrophysiological concepts and methods to their research activities.

ASNB 614 Molecular Neuroscience (4.0)
Prerequisite: Consent of instructor.
Structure and function of the nervous system from a molecular perspective. Includes description of membrane proteins, channels and receptors in neurons and glia. Discussion of the role of such molecular structures in the nervous system.

ASNB 615 Neurosciences (8.0)
Prerequisite: Permission from course director at least two weeks before the course begins.
Unified presentation of neuroanatomy and neurophysiology of the nervous system including discussion of clinical applications.

ASNB 616 Special Projects in Anatomy (1.0-15.0)
Prerequisite: Permission from instructor at least two weeks before beginning of course.
This course, to be arranged to fit individual needs, is intended primarily to accommodate students whose special background exempts them from all or part of ANAT 601, 603, 605, 615; it may also be offered for others who have special needs for other advanced training. May be offered each quarter. Schedule to be arranged.

ASNB 617 Seminar on Developmental Neurobiology (3.0)
Prerequisite: ASNB 615 or consent of instructor.
Covers neural development from neurulation through development of integrated systems. Emphasis will be on the cellular level.

ASNB 619 Original Investigations (1.0-15.0)

ASNB 620 Thesis (1.0-6.0)

ASNB 665 Techniques of Biological Electron Microscopy (3.0)
Prerequisite: Consent of department required.
This course aims to develop in the student reasonable proficiency in specimen preparation techniques and operation of the electron microscope as a foundation for the pursuit of electron microscopic biomedical investigations. Limited to four students. Second Semester.

ASNB 671 General and Oral Histology (5.0)
Prerequisite: Oral Biology major or related field.
Provides knowledge of histological structure including ultrastructure of tissues and organs. Oral structures presented in detail.

ASNB 672 Survey of Dental Gross and Neuroanatomy (3.0)
Prerequisite: Oral Biology major or related field or consent of course director.
Note: Crosslisted with BMSC 809.
A survey of major anatomical structures of thorax and abdomen with limited study of upper limbs and introduction to neuroanatomy. Majority of the course is centered on dissection of the human body.

ASNB 673 Head and Neck Anatomy (4.0)
Prerequisite: Oral Biology major or related field and ASNB 672, or consent of course director.
Note: Crosslisted with BMSC 810.
A detailed study of head and neck anatomy including dissection of the head and neck region with special emphasis on cranial nerve neuroanatomy and the oral-facial region related to clinical correlations for dentistry.

ASNB 675 Advanced Head and Neck Anatomy (2.0)
Prerequisites: One of the following: 1) Admission to the M.S. Oral Biology program; 2) a DDS, DMD, MD, or DO degree or its foreign equivalent; 3) consent of the course director.
Advanced topics in the anatomic relations of the head and neck as applicable to the post-graduate health professional, with major emphasis on cadaver dissection.

ASNB 678 Current Topics in Neuroanatomy (1.5)
Prerequisite: Medical neuroanatomy.
The first part of the course will consist of a series of lectures dealing with the various experimental methods used in the study of the nervous system. The major portion of the course will be devoted to student seminars and discussions of current topics in neuroanatomy. Third quarter. 3 hr. lect. per week.

Audiology

AUDI 600 Anatomy and Physiology for Communication Sciences (4.0)
Note: Cross-listed with CMDS 572.
Intensive and advanced study of recent developments in auditory-vestibular anatomy and physiology. Includes gross aspects of the temporal bone and cytoartchetectonics of the labyrinth. Laboratory exercises reinforce didactic material.

AUDI 604 Essential Techniques in Audiometry (3.0)
The epidemiology of hearing loss. Basic tests of auditory function including pure tone audiometry, speech audiometry and imminence measurements. Principles of masking. Pathologic correlates of hearing loss.

AUDI 606 Audition and Acoustics (3.0)
Study of sound and its measurement. Relationship of sound to human hearing. Speech acoustics and perception of speech.

AUDI 608 Anatomy and Physiology of the Auditory and Vestibular Systems (3.0)
Prerequisites: AUDI 600
Structure and function of the peripheral auditory system and central auditory pathways. Vestibular anatomy and physiology including vestibular-ocular reflex.

AUDI 610 Clinical Clerkship I (1.0)
A two-semester sequence of directed observation in the audiology clinic. Participation in interviewing patients, eliciting a complete history, preparing written technical reports and record keeping. Includes observations in various outside practicum sites. 1 credit hour each semester.

AUDI 612 Pathology of the Auditory-Vestibular System (3.0)
Study of pathology of the auditory-vestibular system with special reference to clinical symptomatology. Etiology, epidemiology, pathogenesis, diagnosis and treatment of auditory-vestibular disease and injury.

AUDI 614 Speech-Language Pathology for the Audiologist (3.0)
An overview of normal and disordered speech and language development with special reference to the effects of hearing loss. Central auditory processing disorders. Adult communication disorders. Making appropriate referrals for evaluation and treatment.

AUDI 616 Embryology and Genetics of the Auditory System (2.0)
Study of the anatomical development of the auditory system with special reference to endogenous (genetic) and exogenous causes of hearing loss. Genetic syndromes affecting the auditory system.

AUDI 618 Instrumentation and Electronics in Audiology (2.0)
Basics of electronic circuitry, especially in audiometric instrumentation and amplification systems. Includes instrumentation calibration, trouble-shooting and repair. Analog, analog-digital hybrid, and digital signal processing.

AUDI 620 Clinical Clerkship II (2.0)
A three-semester sequence of introductory level clinical audiometry under the aegis of an experienced clinician. Mastery of basic skills such as threshold determination for pure tones and speech stimuli, masking, auditory discrimination measurements, tympanometry, and calibration.
2 credit hours each semester.

AUDI 621 Audiologic Rehabilitation (3.0)
Management strategies for hearing loss beyond the hearing aid. Topics include auditory training, speech reading, communication repair strategies, counseling, adjustment to hearing aids, assistive listening devices and cochlear implants.

AUDI 622 Electrophysiologic Techniques in Audiology I (3.0)
Principles of biological potentials, signal averaging, amplification and filtering. Clinical utility of the brainstem auditory evoked response with attention to diagnostic techniques and peripheral hearing assessment.

AUDI 624 Amplification Technology (3.0)
Principles of amplification electronics, electroacoustics and acoustics in aural (re)habilitation. Real ear measurements. ANSI specifications. Earmold acoustics. Modifying acoustical parameters.

AUDI 625 History of Audiology (1.0)
A study of the development and history of audiology as a discipline. Special emphasis on technological innovations beginning in the vacuum tube era and continuing through digital signal processing. The evolution of the clinical evaluation and treatment strategies.

AUDI 626 Assessment and Management of Vestibular Disorders (2.0)
Study of the contribution of the vestibular system to balance and orientation. Technologies and procedures for assessing the dizzy patient. Management of vestibular disorders.

AUDI 628 Differential Diagnosis in Audiology (3.0)
Interpreting the audiologic test battery. Integrating audiologic test results with other diagnostic procedures (i.e., radiologic, neurologic, pathologic, etc). Advanced concepts in test construction, delivery and interpretation. Using test results to plan remediation.

AUDI 630 Amplification Selection and Fitting (3.0)
Determining candidacy and benefit from amplification. Selecting appropriate amplification systems and options including assistive listening devices and implantable technologies. Review of current technologies and their clinical efficacy. Introduction to the business aspects of hearing aid dispensing.

AUDI 632 Professional Issues in Audiology (1.0)
Overview of the social, political and economic climate in hearing health care delivery. Basic and advanced strategies for practice management and development. Interprofessional relationships and responsibilities. Supervision of other professionals.

AUDI 634 Electrophysiologic Techniques in Audiology II (3.0)
A continuation of AUDI 622. Advanced concepts in electrophysiologic measurement and interpretation with special emphasis on recording and interpreting the MLR, SN-10, SSEP, VEP, late cortical potentials, and intra-operative monitoring.

AUDI 635 Audiology Internship I and II (4.0)
A two-semester sequence of supervised patient care in a variety of sites closely associated with the university. Student clinicians will assume increasing responsibility for the full range of basic and intermediate level audiologic procedures and interpretation.
4 credits each semester.

AUDI 636 Pediatric Audiology (3.0)
Hearing disorders and audiologic techniques in the pediatric population. Topics include identification audiometry (screening protocols), childhood aural pathologies and treatment options, behavioral audiometry, electrophysiologic techniques, and current management options.

AUDI 638 Communication Evaluation and Training in the Pediatric Population (3.0)
Overview of current management options for the (re) habilitation of children with hearing loss, including: educational issues, amplification, FM systems, classroom listening systems and counseling.

AUDI 640 Special Topics in Audiology (1.0-3.0)
An elective course designed to focus on specific topics in audiology. Subject matter to be determined by the faculty and students. May be repeated to a limit of 6 credits.

AUDI 642 Gerontologic Audiology (3.0)
A broad study of the human aging process at the cellular, organ, system and social levels with respect to the hearing process. Study of the hearing-impaired elderly in a social context with consequences for case management.

AUDI 646 Medical Audiology (3.0)
Intensive study of the medical correlates of hearing impairment including medical/surgical intervention, pharmacology.

AUDI 648 Psychoacoustics (3.0)
Investigation of the psychology of hearing in normal and impaired auditory systems. Topics include: psychoacoustic testing methods, auditory sensitivity, frequency selectivity, loudness, temporal processing and localization.

AUDI 652 Prevention of Hearing Loss (2.0)
Focuses on the effect of noise on the auditory system, noise measurement and abatement, hearing conservation programming, OSHA standards, etc. The medical-legal aspects of hearing impairment.

AUDI 654 Assessment and Management of Auditory Processing Disorders (3.0)
Special study of the central auditory nervous system with attention to normal and disordered function. Assessment of auditory processing disorders. Management strategies for auditory processing disorders.

AUDI 656 Practice Management in Audiology (3.0)
Organizing, managing and expanding an audiologic practice. Determining costs and fees, accounts management, quality assurance, third-party reimbursement, contracting for services, demographic trends, business and professional ethics, professional liability, marketing, certification and licensure.

AUDI 660 Investigation in Audiologic Practice (1.0-3.0)
Directed course in which students investigate specific clinical problems in audiology. Will include research on a topic of clinical or professional interest. Investigation eventuates in a publishable paper. May be repeated to a maximum of 9 credits.

AUDI 670 Clinical Externship (9.0)
A 3-semester sequence of advanced clinical practicum under the direction of a faculty member or preceptor in a external practicum. Each externship is custom-tailored to the interests of the trainee. May involve relocation or travel.
8 credits each semester.

AUDI 679 Independent Study in Audiology (1.0-6.0)
Individualized course with topics determined by student and instructor. May be repeated.

Business Education

NOTE: These courses may be taken only by business education majors admitted to the Graduate School.

B ED 601 Principles and Problems of Business Education (3.0)
Historical background and present status of business education, critical evaluation of business curricula, guidance activities of the business teacher, and review of current literature and research. (Required).

B ED 603 Improvement of Instruction in Business Education (Business and Economics) (3.0)
Individual and group projects which deal with objectives, instructional materials, teaching procedures, curricular organization, and teaching problems in such fields as bookkeeping and accounting, business organization and management, business law, consumer economics, economics, and general business.

B ED 620 Directed Readings in Business Education (1.0-3.0)
Intensive study of current topics in business education. Opportunity will be available for independent research and writing.

BE 697 Master of Engineering Thesis in Bioengineering (1.0-6.0)
Prerequisites: Graduate/Professional standing in bioengineering and BIOL 465 or equivalent.
Original design or research activity in a bioengineering discipline, under the direction of a faculty member. A written thesis must be presented to a faculty committee and defended. Open only to candidates for the Master of Engineering Degree in Bioengineering.

Biochemistry

Note: Biochemistry courses are scheduled according to the Health Sciences calendar.

BIOC 545 Biochemistry I (3.0)
Prerequisite: Organic Chemistry II (CHEM 342)
Note: Cross-listed with CHEM 545.
Chemistry of amino acids, peptides, proteins, nucleotides and nucleic acids; methods of analysis and laboratory synthesis; nucleotides; RNA,DNA and protein biosynthesis. Credit may not be earned in both 545 and 645. Credit may not be applied toward an advanced degree in Chemistry.

BIOC 547 Biochemistry II (3.0)
Prerequisite: BIOC 545/CHEM 545
Note: Cross-listed with CHEM 547.
Cellular metabolism of carbohydrates, lipids, amino acids and biomembrane phenomena, enzyme properties, kinetics, and control mechanisms; ligand binding. Credit may not be earned in both 547 and 647. Credit may not be applied toward an advanced degree in Chemistry.

BIOC 602 Medical Biochemistry (7.5)
Prerequisite: Consent of instructor.
Structure, function, synthesis and catabolism of biomolecules, with special emphasis on mammalian systems. Biological mechanisms for the control of metabolism and physiological function and the influence of nutrition and disease states on these processes.

BIOC 603 Special Topics in Biochemistry (1.0-4.0)
Prerequisite: BIOC 645 & 647 (may be concurrent), or consent of instructor.
Arranged to fit individual needs on topics of current interest or to receive some advanced training or conduct research project.

BIOC 606 Biochemistry Seminar (1.0)
Both Fall and Spring semesters.

BIOC 611 Biochemical and Molecular Methods (3.0)
Analysis of modern biochemical and molecular biology methods including theory, practice, demonstration and data analysis of the purification and characterization of proteins and nucleic acids, centrifugation, spectroscopy, chromatography, electrophoresis, cloning, yeast genetics and recombinant DNA techniques.

BIOC 613 Biochemistry Laboratory (2.0-4.0)
The course will consist of participation in the research programs of two laboratories in the department. A half-semester will be devoted to each laboratory. Pass/Fail grading.

BIOC 619 Research (1.0-15.0)

BIOC 640 Principles of Biochemistry (5.0)
Prerequisite: Consent of instructor.
Covers general aspects of biochemistry with special emphasis given to areas applicable to dentistry. Topics include protein structure and function; chemistry and metabolism of carbohydrates, lipids, amino acids, and nucleotides; molecular genetics; nutritional biochemistry; calcification; and molecular endocrinology. Clinical conferences keyed to current lecture topics are presented by clinical faculty. Spring.

BIOC 641 Advanced Eukaryotic Genetics (4.0)
Prerequisite: Consent of instructor.
Note: Cross-listed with BIOL 641.
Familiarizes advanced students with classical, molecular and quantitative genetics. Subjects covered include gene mapping in model systems and humans as well as genetic manipulation of model organisms.

BIOC 645 Advanced Biochemistry I (4.0)
Prerequisite: Organic Chemistry II (CHEM 342).
Note: Cross-listed with CHEM 645.
Chemistry of amino acids, peptides, proteins, nucleotides and nucleic acids; methods of analysis and laboratory synthesis; nucleotides; RNA, DNA and protein biosynthesis. Lectures concurrent with CHEM 545; one added lecture hour each week covers advanced topics. Credit may not be earned in both 545 and 645.

BIOC 647 Advanced Biochemistry II (4.0)
Prerequisites: BIOC 645/CHEM 645.
Note: Cross-listed with CHEM 647.
Cellular metabolism of carbohydrates, lipids, amino acids and nucleotides; enzyme properties, kinetics, and control mechanisms, ligand binding; biomembrane phenomena. Lectures concurrent with CHEM 547; one added lecture hour each week covers advanced topics. Credit may not be earned in both 547 and 647.

BIOC 660 Molecular Endocrinology (2.0)
Prerequisite: BIOC 645 and 647, or consent of instructor.
Note: Cross-listed with Medical Elective BIOC 860.
Comprehensive course integrating molecular aspects of hormone action with biologic responses in target tissues.
Particular emphasis is placed on the evolution of experimental progress, application of concepts and techniques, and the role of molecular endocrinology in clinical management of endocrine-related disease in this rapidly emerging field.

BIOC 668 Molecular Biology (4.0)
Prerequisite: BIOC 645 and 647, or consent of instructor.
Molecular aspects of the structure and function of cells with emphasis on mechanisms and regulation of gene expression.

BIOC 670 Protein Structure & Function (4.0)
Prerequisites: BIOC 645/ CHEM 645, or permission of instructor.
This course covers physical methods of protein characterization and correlates structure of proteins and enzymes with their function.

BIOC 675 Biochemistry of Cancer (2.0)
Prerequisites: BIOC 645 and 647, or consent of instructor.
Traditional areas of carcinogenesis will be described. Lectures in the areas of drug resistance, growth factors, oncogenes, tumor suppressor genes and metastasis will provide the background for understanding of the expression and regulation of neoplasms in mammals.

Biology

BIOL 500 Plant Growth and Development (3.0)
Prerequisites: BIOL 242, BIOL 243, and BIOL 329 or consent of instructor.
Selected topics from the field of developmental and experimental botany. Lectures, discussions, and student presentations on current and classical literature. Credit may not be earned in both 500 and 600.

BIOL 501 Independent Study (3.0)
Prerequisites: Faculty and chair consent. Minimum cumulative grade point average of 3.0, and completion of biology core.
Independent study in a selected subject area with a student-selected faculty member. No more than 6 hours of Independent Study 501, 502 or 504 WR or Undergraduate Research 404, 405 or 406 WR may be used to meet the minimum in Biology for the B.A. or B.S.

BIOL 502 Independent Study (1.0-3.0)
Prequisites: Faculty and chair consent. Minimum cumulative grade point average 3.0, and completion of biology core.
Independent study in a selected subject area with a student-selected faculty member. No more than 6 hours in independent Study 501, 502 or 504 WR or Undergraduate Research 404, 405 or 406 WR may be used to meet the minimum inBiology for the B.A. orB.S.

BIOL 506 Freshwater Invertebrates (4.0)
Prerequisite: Consent of instructor.
Functional biology, ecology behavior, and classification of freshwater invertebrates, with an emphasis on non-insect taxa. Credit may not be earned in both 506 and 606.
3 hrs. lect; 2 hrs. lab or field.

BIOL 507 Aquatic Entomology (3.0)
Prerequisite: BIOL 382 or BIOL 522.
Collection, preparation, identification, and study of insects in various aquatic environments. Credit may not be earned in both 507 and 607. 2 hrs. lect., 2 hrs. lab. or field.

BIOL 509 Methods and Principles of Systematic Zoology (3.0)
Prerequisite: BIOL 242 and BIOL 301.
Study of taxonomic theory and methods of nomenclature in zoology. Credit may not be earned in both 509 and 609.

BIOL 512 Endocrinology (3.0)
Prerequisite: BIOL 465.
Chemical regulation in animals. Credit may not be earned in both 512 and 612.

BIOL 513 Comparative Physiology (3.0)
Prerequisite: BIOL 347 and BIOL 465.
Adaptations of basic physiological functions across a broad spectrum of organisms. Credit may not be earned in both 513 and 613.

BIOL 514 Ornithology (3.0)
Prerequisite: BIOL 301 and BIOL 302 or consent of instructor.
Evolution, morphology, diversity, ecology, and behavior of birds. Lab stresses field identification of birds. Credit may not be earned in both 514 and 614. 2 lecture, 3 lab. Fall, odd numbered years.

BIOL 516 Genetic Manipulations With Bacteria and Fungi (4.0)
Prerequisites: BIOL 330 and BIOL 331 or equivalent experience and consent of instructor.
Recommended: BIOL 485 and BIOL 358 and BIOL 542 or BIOL 642.
An advanced course in laboratory techniques to study bacteria and fungi at the molecular level. Emphasis on up-to-date in vivo and in vitro techniques. Credit may not be earned in both 516 and 616.

BIOL 519 Ichthyology (3.0)
Prerequisite: BIOL 301.
Introduction to anatomy, physiology, ecology, distribution, economic importance, and classification of major groups and representative local species of fish. 2 hrs. lect., 3 hrs. lab and/or field.

BIOL 522 Aquatic Ecology (4.0)
Prerequisite: BIOL 301.
Ecological processes in aquatic environments with primary emphasis on lakes and reservoirs. Credit may not be earned in both 522 and 622. 2 lecture, 4 lab or field. Fall, even-numbered years.

BIOL 524 Stream Ecology (4.0)
Prerequisite: BIOL 302 or permission of instructor.
Introduction to physical and biological properties of streams, with emphasis on the ecology of stream communities. Focus on basic research methods with field and laboratory projects. Credit may be earned in both 524 and 624. 2 lecture, 2 lab or field.

BIOL 529 Mammalogy (3.0)
Prerequisites: BIOL 301 and BIOL 302 or consent of instructor.
Systematics, evolution, behavior, ecology and distribution of mammals. Credit may not be earned in both 529 and 639. 2 hours lecture; 2 hours lab. Fall, even-numbered years.

BIOL 539 Medical Entomology (3.0)
Prerequisite: BIOL 382 or consent of instructor.
Study of insects and other arthropods that cause pathological conditions in man and domestic animals; life cycles and control of pathogens and vectors. Credit may not be earned in both 539 and 639. 2 hrs. lect., 2 hrs. lab.

BIOL 542 Gene Structure and Function -WR (3.0)
Note: Approved for the Arts & Sciences upper-level requirement in written communication (WR).
Prerequisite: BIOL 330 or equivalent.
Advanced topics in genetics of prokaryotes and eukaryotes, including chromosome structure and function, and gene regulation. Credit may not be earned for both 542 and 642.

BIOL 544 Fisheries Management (4.0)
Prerequisite: BIOL 301 and 302.
Principles and techniques of managing freshwater and marine fish stocks for human benefit. Emphasis on adjusting aquatic environments, stock assessment, and population dynamics. Credit may not be earned in both 544 and 644. 2 hrs. lect., 4 hrs. lab. or field.

BIOL 550 Biostatistics (3.0)
Prerequisite: MATH 180 or MATH 205; an introductory course in statistics; or consent of instructor.
Application of statistical methods commonly used in life sciences. Emphasis will be on the interpretation of experimental data. Credit may not be earned in both 550 and 650.

BIOL 562 Ecosytems Ecology (3.0)
Prerequisite: BIOL 301; an advanced ecology course recommended.
The transformations of matter and energy that link plant, animal and geochemical cycles. Implications for resource management also discussed. Credit may not be earned in both 562 and 662. Spring, even-numbered years.

BIOL 563 Population and Community Ecology (3.0)
Prerequisite: BIOL 301.
Introduction to population dynamics and species interactions in aquatic and terrestrial ecosystems. Review of underlying ecological theory and its applications for conserving biodiversity. Credit may not be earned in both 563 and 663. Spring, odd-numbered years. 3 hours, lecture.

BIOL 569 Evolution (3.0)
Prerequisites: BIOL 242-243 and BIOL 301-302.
Offers a comprehensive overview of evolution and provides students with a review of issues that make up this critical discipline. Credit may not be earned in both 569 and 669.

BIOL 571 Selected Topics (1.0-4.0)
Contents to be indicated in schedule of courses.

BIOL 584 Interdisciplinary Frameworks in Environmental Science and Technology (3.0)
Overview of environmental problems in human and ecological health and solutions offered by environmental engineering. Presented through lectures, seminars, and a set of practical experiences. Case studies will emphasize interdisciplinary frameworks for solving environmental problems and sustaining use of resources. Credit may not be earned in both 584 and 684. 3 hours, lecture.

BIOL 600 Advanced Plant Growth and Development (4.0)
Prerequisites: BIOL 242, BIOL 243 and BIOL 329 or consent of instructor.
Selected topics from the field of developmental and experimental botany. Lectures concurrent with Biology 500; more advanced material through requirement of independent study or project. Credit may not be earned in both Biology 500 and 600. 3 hrs. lect.

BIOL 606 Advanced Freshwater Invertebrates (5.0)
Prerequisites: Consent of instructor.
Functional biology, ecology, behavior, and classification of freshwater invertebrates, with an emphasis on non-insect taxa. Lectures concurrent with Biology 506; more advanced material through requirement of independent study or research project. Credit may not be earned in both 506 and 606. 3 hrs. lecture; 2 hrs. lab or field.

BIOL 607 Advanced Aquatic Entomology (4.0)
Prerequisites: BIOL 382 or BIOL 522.
Collection, preparation, identification, and study of insects in various aquatic environments. Lectures concurrent with Biology 507; more advanced material through requirement of independent study or research project. Credit may not be earned in 507 and 607. 2 hrs. lect., 2 hrs. lab or field.

BIOL 608 Ecological Instrumentation (3.0)
The theory and practice of modern techniques of measurement in micro- and macro-ecosystems. 3 hrs. lect.

BIOL 609 Advanced Systematic Zoology (4.0)
Prerequisites: BIOL 242 and BIOL 243 and BIOL 301 and BIOL 302.
Study of taxonomic theory and methods of nomenclature in zoology. Lectures concurrent with Biology 509; more advanced material through requirement of independent study or research project. Credit may not be earned in both 509 and 609. 3 hrs. lect.

BIOL 610 Advanced Behavioral Ecology (4.0)
Prerequisite: BIOL 301.
Evolution of behavioral adaptations for survival and reproduction; topics will include foraging, aggression, mate choice, mating strategies, and sociality. Credit may not be earned for both 510 and 610.

BIOL 612 Advanced Endocrinology (4.0)
Prerequisite: Principles of Physiology (BIOL 465).
Chemical regulation in animals, primarily mammals. Lectures concurrent with Biology 512; more advanced material through requirement of independent study or research project. Credit may not be earned in both 512 and 612. 3 hrs. lect.

BIOL 613 Advanced Comparative Physiology (4.0)
Prerequisites: BIOL 347 and BIOL 465.
Adaptations of basic physiological functions across a broad spectrum of organisms. Lectures concurrent with Biology 513. More advanced material through requirement of independent study or research project. Credit may not be earned in both 513 and 613. 3 hrs. lect.

BIOL 614 Advanced Ornithology (4.0)
Prerequisites: BIOL 301 and BIOL 302 or consent of instructor.
Evolution, morphology, diversity, ecology and behavior of birds. Lab stresses field identification of birds. Lecture concurrent with 514; more advanced material through requirement of independent study or research project. Credit may not be earned in both BIOL 514 and BIOL 614. 2 hrs. lect., 3 hrs. lab. Fall, odd-numbered years.

BIOL 615 Advanced Environmental Physiology (4.0)
Prerequisites: BIOL 365 or consent of instructor.
Comparative biological and biochemical mechanisms of adaptation to ecological and environmental extremes in eukaryotic organisms. Lectures concurrent with Biology 515; more advanced material through requirement of independent study or research project. Credit may not be earned in both 515 and 615.

BIOL 616 Advanced Genetic Manipulations to Study Bacteria and Fungi (5.0)
Prerequisites: BIOL 330 and BIOL 331.
An advanced course in laboratory techniques to study bacteria and fungi at the molecular level. Emphasis on up-to-date in vivo and invitro techniques. Lectures concurrent with Biology 516; more advanced material through requirement of independent study or research project. Credit may not be earned in both 516 and 616. Recommended: BIOL 355 and 542 or 642.

BIOL 617 Advanced Molecular Biology (4.0)
Prerequisite: Cellular and Molecular Biology (BIOL 329) or Genetic and Molecular Biology (BIOL 330), and one semester of organic chemistry.
Nature, production and replication of biological compounds and their relation to structure and function in development; discussion of methodologies. 3 hrs. lect.

BIOL 619 Environmental Entomology (3.0)
Prerequisite: BIOL 382, or consent of instructor.
Advanced topics in insect systematics, ecology, and applied entomology. 3 hrs. lecture.

BIOL 620 Insect Biology For Teachers (3.0)
Prerequisite: BIOL 242 and BIOL 243 and graduate education program participant.
Note: Designed for teachers or those in graduate education programs. Not applicable to graduate or undergraduate programs in Biology. Arthropod anatomy, physiology, classification, and ecology; emphasis on projects and presentations for middle and high school students. Field and laboratory techniques; projects.

BIOL 621 Molecular Biological Approaches (4.0)
Prerequisites: BIOL 330 and BIOL 331 or equivalent and consent of instructor.
Survey of basic techniques for the study of DNA, RNA, and protein. Provides students with hands-on training in exploring environmental research, questions using molecular biological methods. Requires a three-week lab rotation. Recommended: BIOL 355 and 542 or 642.

BIOL 622 Advanced Aquatic Ecology (5.0)
Prerequisites: Introduction to Ecology (BIOL 301).
Ecological processes in aquatic environments with primary emphasis on lakes and reservoirs. Lectures concurrent with Biology 522; more advanced material through requirement of independent study or research project. Credit may not be earned in both 522 and 622. 2 lect., 4 hrs. lab or field. Offered Fall of even-numbered years.

BIOL 623 Advanced Plant Physiology (5.0)
Prerequisite: Diversity of Life (BIOL 242), Diversity of Life Lab (BIOL 243) and Cellular and Molecular Biology (BIOL 329).
Selected topics in plant physiology, with emphasis on growth and reproduction. Lectures concurrent with Biology 523; more advanced material through requirement of independent study or research project. Credit may not be earned in both 523 and 623. 2 hrs. lect., 4 hrs. lab.

BIOL 624 Advanced Stream Ecology (5.0)
Prerequisites: Permission of instructor.
Introduction to physical and biological properties of streams, with an emphasis on the ecology of stream communities. More advanced literature reviews are required along with the completion of an independent study or research project. Credit may not be earned in both 524 and 624.

BIOL 629 Advanced Mammalogy (4.0)
Prerequisites: BIOL 301 and BIOL 302 or consent of instructor.
Systematics, evolution, behavior, ecology, and distribution of mammals. Lectures concurrent with Biology 529; more advanced material through requirement of independent study or research project. Credit may not be earned in both BIO 529 and BIOL 629. Fall, even years. 2 hrs.lect., 2 hrs lab.

BIOL 630 Advanced Developmental Neurobiology (4.0)
Prerequisites: BIOL 329 and BIOL 330.
A study of developmental biology with a strong nervous system emphasis. Discussion topics will include cell type specification, cell-cell signaling, cell motility, axon guidance, synapse formation, trophic factors, and synapse remodeling and refining. A critical analysis of current literature will be made in the topic areas. Evaluation will be based on participation and written critiques of literature, a grant proposal and oral defense. Credit may not be earned for both 530 and 630.

BIOL 631 Advanced Cellular Physiology (5.0)
Prerequisite: Cellular and Molecular Biology (BIOL 329).
Functional activities of cells and tissues, with emphasis on physical and chemical properties of living matter. Lectures concurrent with Biology 531; more advanced material through requirement of independent study or research project. Credit may not be earned in both 531 and 631. 2 hrs. lect., 4 hrs. lab.

BIOL 633 Advanced Physiological Plant Ecology (5.0)
Prerequisite: BIOL 523 and 563.
A study of chemical, physical, and biological processes involved in plant ecology. Lectures concurrent with Biology 533; more advanced material through requirement of independent study or research project. Credit may not be earned in both 533 and 633. 2 hrs. lect., 4 hrs. lab.

BIOL 639 Advanced Medical Entomology (4.0)
Prerequisite: BIOL 382 or consent of instructor.
Study of insects and other arthropods that cause pathological conditions in man and domestic animals; life cycles and control of pathogens and vectors. Lectures concurrent with Biology 539; more advanced material through requirement of independent study or research project. Credit may not be earned in both 539 and 639. 2 hrs. lect., 2 hrs. lab.

BIOL 640 Advanced Intermediary Metabolism (4.0)
Prerequisite: BIOL 329 and CHEM 342.
An advanced study of methods of metabolic pathways including synthesis of macromolecules (proteins, nucleic acids, lipids, carbohydrates), mechanisms of metabolic control and utilization of metabolic intermediates. Credit may not be earned in both 540 and 640.

BIOL 641 Advanced Eukaryotic Genetics (4.0)
Prerequisite: Consent of instructor.
Note: Cross-listed with BIOC 641.
Familiarizes advanced students with classical, molecular and quantitative genetics. Subjects covered include gene mapping in model systems and humans as well as genetic manipulation of model organisms. 4hrs. lect.

BIOL 642 Advanced Gene Structure and Function (4.0)
Prerequisites: BIOL 330 or equivalent.
Advanced topics in genetics of prokaryotes and eukaryotes, including chromosome structure and function, and gene regulation. Lectures concurrent with 542; more advanced material through requirement of independent study or research project. Credit may not be earned in both 542 and 642. 3 hrs. lect.

BIOL 644 Advanced Fisheries Management (5.0)
Prerequisite: Introduction to Ecology (BIOL 301) and Introduction to Ecology Lab (BIOL 302).
Principles and techniques of managing freshwater and marine fish stocks for human benefit. Emphasis on adjusting aquatic environments, stock assessment, and population dynamics. Lectures concurrent with Biology 544; more advanced material through requirement of independent study or research project. Credit may be earned in both 544 and 644. 2 hrs. lect., 4 hrs. lab or field.

BIOL 650 Advanced Biostatistics (4.0)
Prerequisite: Elements of Calculus (MATH 180) or Analytic Geometry & Calculus I (MATH 205); an introductory course in statistics; or consent of instructor.
Application of statistical methods commonly used in life sciences, with emphasis on interpretation of experimental data. Lectures concurrent with Biology 550; more advanced material through requirement of independent study or research project. Credit may not be earned in both 550 and 650. 3 hrs. lect.

BIOL 651 Advanced Biostatistics II (3.0)
Prerequisites: BIOL 650
Advanced Biostatistics, involves interpretation of experimental data using statistical software. Topics include Experimental design and ANOVA, ANCOVA, MANOVA, Logistic analysis, Logistic regression, and Log linear models. 3 hrs. lect.

BIOL 655 Advanced Microbial Ecology (4.0)
Prerequisite: BIOL 485.
Interrelationships between microorganisms and their environments. Lecture concurrent with Biology 555; more advanced material through requirement of independent study or research project. Credit may not be earned in both 555 and 655. 3 hrs. lect.

BIOL 657 Advanced Industrial and Food Microbiology (4.0)
Prerequisites: BIOL 357 and BIOL 485 or consent of instructor.
A study of involvement of microorganisms with food and in industrial processes. Emphasis on food preservation, food production and industrial fermentation. Lecture concurrent with Biology 557; more advanced material through requirement of independent study or research project. Credit may not be earned in both 557 and 657. 2 hrs. lect., 2 hrs. lab.

BIOL 660 Advanced Ecology of Urban and Suburban Landscapes (4.0)
Effects of cities and suburban sprawl on air and water chemistry, microclimate, fragmented landscapes, and responses of metapopulations and biotic communities to these conditions.

BIOL 661 Advanced Principles of Ecology (5.0)
Prerequisites: BIOL 242, BIOL 243, BIOL 301 and BIOL 302.
Principles underlying the relationships between organisms and their environment, with emphasis on techniques of study in the field and laboratory. Credit may not be earned in both 561 and 66l. 2 hrs. lect., 4 hrs. lab. or field.

BIOL 662 Advanced Ecosystems Ecology (4.0)
The transformations of matter and energy that link plant, animal and geochemical cycles. Lectures concurrent with BIOL 562; advanced material or independent required for students enrolling in 662. Credit may not be earned in both 562 and 662.3 hrs. lect.. Offered Spring of even-numbered years.

BIOL 663 Advanced Population and Community Ecology (4.0)
Prerequisites: Introduction to Ecology (BIOL 301).
Introduction to population dynamics and species interactions in aquatic and terrestrial ecosystems. Review of underlying ecological theory and its applications for conserving biodiversity. Lecture concurrent with Biology 563; more advanced material through requirement of independent study or research project. Credit may not be earned in both 563 and 663. Offered Spring of odd-numbered years. 3 hrs. lect.

BIOL 664 Research Methods in Ecology (3.0)
Prerequisites: BIOL 301 and BIOL 302.
Introduction to experimental design, data collection and quantitative analyses. Field and laboratory research, statistical tools and critical evaluation data.

BIOL 666 Scientific Writing (3.0)
Graduate level course in scientific writing (publications, grant proposals, conference presentations, job applications) for Biology/Environmental Biology students.

BIOL 668 Advanced Conservation Biology (4.0)
Prerequisite: Genetics and Molecular Biology (BIOL 330), and Introduction to Ecology (BIOL 301).
Theory and practice of conservation. Topics include biodiversity, habitat loss, the effects of habitat changes on populations, and the design and establishment of reserves. Lecture concurrent with Biology 568; more advanced material or independent study or research project. Credit may not be earned for both 558 and 668. 3 hrs. lect.

BIOL 669 Advanced Evolution (4.0)
Prerequisite: Diversity of Life (BIOL 242), Diversity of Life: Laboratory (BIOL 243), Introduction to Ecology (BIOL 301), and Introduction to Ecology: Laboratory (BIOL 302).
Offers a comprehensive overview of evolution and provides students with a review of issues that make up this critical discipline. Lecture concurrent with Biology 569; more advanced material through requirement of independent study or research project. Credit may not be earned in both 569 and 669. 3 hrs. lect.

BIOL 671 Special Topics (1.0-4.0)
Topics to be indicated in schedule of courses.

BIOL 672 Selected Topics-Laboratory (1.0-4.0)
Contents to be indicated in the schedule of courses.

BIOL 675 Molecular Evolution (4.0)
Prerequisites: BIOL 329, BIOL 330, BIOL 409, CHEM 342 or consent of instructor.
Concerned with the theory on the reconstruction of the evolutionary history of genes and organisms. Students will be exposed to Darwinian and Neutralist explanations of evolutions and learn to use methods and algorithms of phylogenenetic reconstruction by using appropriate inferences and statistical texts. Credit may not be earned for both 575 and 675.

BIOL 684 Interdisciplinary Frameworks in Environmental Science and Technology (3.0)
Overview of environmental problems in human and ecological health and solutions offered by environmental engineering. Presented through lectures, seminars, and a set of practical experiences. Case studies will emphasize interdisciplinary frameworks for solving environmental problems and sustaining use of resources. Credit may not be earned in both 584 and 684. 3 hrs. lect.

BIOL 689 Seminar (1.0)
Reports on personal research and on current literature, with a critique of the research and of the presentation. Attendance, but not course registration, is required of all graduate biology majors during each semester of residence. Only 2 hours of credit may be accumulated. Graded on pass-fail basis.

BIOL 690 Thesis Research (1.0-6.0)
Prerequisite: Consent of major professor.
Research on MS thesis project. Grade shall be deferred by the major professor until evaluation of the thesis by the student's committee. Graded on pass-fail basis by the examining committee.

BIOL 691 Independent Research (1.0-6.0)
Prerequisite: Consent of instructor.
Independent field or laboratory research on a problem not related to thesis or dissertation.

BIOL 692 Independent Study (1.0-6.0)
Prerequisite: Consent of instructor.
Independent library research on a problem not related to the thesis or dissertation.

BIOL 700 Dissertation Research (1.0-9.0)
Prerequisite: Consent of major professor.
Research on dissertation project. Grade shall be deferred by the major professor until evaluation of the dissertation by the student's committee. Graded on a pass-fail basis by the examining committee until evaluation of the dissertation by the student's committee.

Computer Engineering & Computer Science

Computer Engineering and Computer Science courses are open only to students who have been admitted to the Computer Engineering and Computer Science program, or with permission of the Computer Engineering and Computer Science Department Chair.

CECS 502 Seminar in Computer Engineering and Computer Science (1.0)
Prerequisite: Fourth-year standing in CECS.
An oral presentation and a written report to a CECS topic of current interest are required. Study and presentations of the ethical, legal and societal consequences and responsibilities of engineering and technological decisions.

CECS 503 Survey of Computer Engineering and Computer Science (3.0)
Prerequisites: Graduate Standing.
Introduction to foundations of computer engineering and computer science for non-majors. Emphasis on C programming language, data structures and algorithms, multimedia file structures, computer networking, and databases. Not available for credit for CECS/CSE students.

CECS 504 Automata Theory (3.0)
Prerequisite: Discrete Structures (CECS 310).
Finite state machines and their application to engineering problems including modeling the behavior of discrete systems. Topics include theory of computing, formal language theory, and applications of cellular automata. Engineering models of digital computer hardware are covered and related to software design.

CECS 506 Modeling and Analysis of Engineering Systems (3.0)
Prerequisite: Linear Algebra for Engineering (CEE 330)
Representation of engineering systems, Fourier analysis, z-transforms, frequency response, state-space analysis, stability, an introduction to the basic theory of filter design; and demonstrated concepts to CAS.

CECS 508 Numerical Analysis I (3.0)
Prerequisite: Engineering Computation (CEE 307) and Linear Algebra for Engineering (CEE 330).
Advanced numerical methods for computer aided engineering analysis and design. Functional approximation; splines; boundary value problems; Fourier approximations and transforms; FFT; matrix decompositions and eigenvalues; characteristic value problems.

CECS 510 Computer Design (3.0)
Prerequisite: Logic Design (ECE 210) and assembly language experience as covered by Computer Interfacing (ECE/CECS 412), Introduction to Computer Science and Engineering, CECS 301, or experience acceptable to the instructor.
Corequisite: ECE 511.
Note: Cross-listed with ECE 510.
Review of logic design and elementary computer organization. Design of the central processing unit, memory, control, and input-output portions of a computer. The VHDL hardware design language will be used.

CECS 516 Fundamentals of Computer Communications and Networks (3.0)
Prerequisite: Probability and Statistics for Engineers (IE 360), and Computer Interfacing (CECS 412).
Note: Cross-listed with ECE 518.
Data communications: The exchange of data between devices is covered. The key aspects of transmission interfacing, link control, and multiplexing are examined. Data communication networking: Examines the internal mechanisms by which communication networks provide a data transfer service for attached devices.

CECS 522 Performance Evaluation of Computer Systems (3.0)
Prerequisite: Probability & Statistics for Engineers (IE 360) and Design of Operating Systems (CECS 420).
A study of approaches to the evaluation of computer systems. Measurement techniques and evaluation techniques are treated in detail with attention to existing commercial hardware and software monitors and simulators.

CECS 525 Microcomputer Design (4.0)
Prerequisite: Computer Interfacing (ECE/CECS 412) or consent of instructor.
Note: Cross-listed with ECE 516.
Design and construction of microcomputers with microprocessors and digital integrated circuits. Breadboarding, hardware design, and software design are emphasized. The class is separated into groups, and each group designs, breadboards, and tests a complete microcomputer system, including interfaces to peripheral devices.

CECS 530 Design of Compilers (3.0)
Prerequisite: Design of Operating Systems (CECS 420).
Engineering descriptions of algorithmic language. Study of syntax, semantics, ambiguities, procedures, replication, iterations, and recursion in the language. Engineering design of a compiler.

CECS 535 Introduction to Databases (3.0)
Prerequisites: CECS 335.
This course covers the basic issues in the field: database design, SQL, query processing and optimization, transactions. The emphasis will be placed on Engineering design and implementation of relational systems. A written project is required.

CECS 540 Object Oriented Information Technology (3.0)
Prerequisites: Graduate Standing.
Survey of design and development of object oriented software. Software architectures, development environments, graphical user interfaces, and networks of distributed objects. Software design project required. CECS students cannot receive credit for CECS 440 and 540.

CECS 542 Computer Control and Real Time Programming (3.0)
Prerequisites: ECE 252, CECS 310, EAC 205 and consent of instructor.
Discrete control; elementary relays; some of the commonly used input/output, including computer hardware modules, solid state linear and non-linear amplifiers, and final control elements; and real time programming applications using programmable controllers and micro-computers. The design and implementation of student projects is required.

CECS 545 Artificial Intelligence (3.0)
Prerequisite: Design of File Structures (CECS 335) and Use of Selected Programming Languages: LISP (CECS 303).
Topics covered will include rationale and use of heuristic approach to engineering problem solving; information processing models as an explanation of human perceptual, cognitive and affective behaviors. Applications involving the concepts and problems in artificial intelligence engineering.

CECS 546 Knowledge Engineering and Expert Systems (3.0)
Prerequisites: CECS 302.
Encapsulation and integration of machine and human knowledge engineering, design theories and methods of large scale knowledge processing, design of inference engine and expert system shells. Correctness and quality assurance of expert systems.

CECS 550 Software Engineering (3.0)
Prerequisite: Design of Operating Systems (CECS 420) and Object Oriented Design (CECS 440) or consent of instructor.
Engineering methods applied to the life-cycle issues in the team-oriented development of large software systems including issues of software processes, metrics, testing and quality. Documentation of the project and an oral presentation are required.

CECS 563 Experimental Design in Engineering (3.0)
Prerequisite: Probability & Statistics for Engineers (IE 360).
Design of engineering experiments and projects using theory of least squares, analysis of variance and covariance, randomized blocks, Latin squares, factorial experiments and associated topics. Engineering design problems using SAS or equivalent software packages.

CECS 590 Special Topics in Computer Engineering and Computer Science (1.0-6.0)
Devoted to topics which usually are not treated in detail in the general courses.

CECS 602 Graduate Internship in Computer Engineering and Computer Science (2.0)
Prerequisites: Student must be admitted for Graduate Study, and a sponsored member of the Graduate Intern Program.
Supervised professional experience in industry at the graduate level. This course provides the structure and focus for the graduate intern field assignment to ensure that the assignment is appropriate and consistent with the intern's graduate course of study and professional development. May be repeated for credit.

CECS 608 Advanced Design of Operating Systems (3.0)
Prerequisite: Design of Operating Systems (CECS 420).
Formal study of algorithms arising in the engineering design of operating systems. Models will be designed and analyzed as to performance measures and optimality. Topics include management protection, security, concurrency, and resource allocation.

CECS 609 Hypertext and Multimedia Processing (3.0)
Prerequisite: Design of File Structures (CECS 335), or consent of instructor.
Design-related studies of Hypertext processing and design. Multimedia document representation, storage, and communication. Integration of audio, video, and textual sources for multimedia instruction, and computer-based interpersonal communication. Software and hardware issues for virtual reality environments. Case studies in engineering issues for delivery in medicine and the arts.

CECS 611 Computer Architecture (3.0)
Prerequisite: CECS 510.
Note: Cross-listed with ECE 611.
Classification of computer designs. PMS and ISP descriptions. Study of major systems of current and historical interest.

CECS 616 Communication and Network Architectures (3.0)
Prerequisite: CECS 516 or equivalent.
Explores both the architectural principles and the specific mechanisms required for the exchange of data among computers, terminals and other data processing devices. It also introduces the ISDN and other advanced architectures, which are emerging worldwide digital telecommunications facilities.

CECS 617 Mobile Computing (3.0)
Prerequisites: CECS 516.
Mobile communication and computing concepts, and related software development. Internal mechanisms by which mobile communication networks provide data transfer service for attached devices. Architecture of ad hoc networks and related protocols.

CECS 619 Design and Analysis of Computer Algorithms (3.0)
Prerequisite: Design of File Structures (CECS 335) and Discrete Structures (CECS 410).
The engineering design of efficient computer algorithms. A study of the inter-relationships between algorithmic statements, data structures, and the resulting computational complexity of the algorithm. An engineering analysis of the effect of the computer implementation of the algorithmic statement on the computational complexity. Categorization of algorithms into complexity classes.

CECS 622 Simulation and Modeling of Discrete Systems (3.0)
Prerequisite: Probability & Statistics for Engineers (IE 360).
Engineering design of simulation languages and simulators, discrete stochastic systems, issues in large scale simulation studies and engineering evaluation methods.

CECS 624 Advanced Simulation (3.0)
Prerequisite: CECS 622.
Selected advanced topics in computer and software architectures, algorithms and models in simulation.

CECS 627 Digital Image Processing (3.0)
Prerequisites: CECS 506 or ECE 420 or faculty consent.
A course that surveys basic concepts in image processing and pattern recognition. Topics included are: contrast and edge enhancement, histogram modification, image segmentation, feature extraction, statistical classifiers. Design problems involving computer implementation of algorithms are used extensively.

CECS 628 Computer Graphics (3.0)
Prerequisite: Elementary Linear Algebra Methods in Engineering (CECS 335).
Introduction to computer graphics hardware and interactive engineering computer graphics techniques. Topics include engineering computer aided design, graphics hardware (display processors and displays, hardcopy output devices, input devices), graphics standards and graphical kernel system, graphic object representation and transformation, interaction techniques, three-dimensional graphics. Hardware graphics options are discussed and used.

CECS 629 Distributed System Design (3.0)
Prerequisite: Design of Operating Systems (CECS 420) and CECS 516.
Software issues involved in designing distributed systems, resource allocation, load balancing, synchronization of processes, reliability evaluation of distributed systems, with emphasis on current research topics.

CECS 630 Advanced Databases and Data Warehousing (3.0)
Prerequisites: CECS 535.
Object-relational databases, extended relational databases, and semi-structured data. Design, query languages, query processing, and optimization in data warehousing. Integration of heterogeneous data.

CECS 632 Data Mining (3.0)
Prerequisites: IE 360, CECS 535.
Data mining concepts, methodologies, and techniques, including statistical and fuzzy inference, cluster analysis, artificial neural networks, and genetic algorithms, rule association and decision trees, N-dimensional visualization, Web and text mining, and advanced topics.

CECS 633 Computer Vision (3.0)
Prerequisite: CECS 627, or ECE 618, or consent of instructor.
Note: Cross-listed with ECE 619.
Review of elementary pattern recognition and image processing; extension to advanced topics in computer vision, such as three-dimensional vision and perception, syntactic pattern recognition, motion, texture, and color vision applications.

CECS 640 Internet Application Design and Development (3.0)
Prerequisites: CECS 516 and basic knowledge of Java and object-oriented design.
Java and network communications, applets, servlets, and JSP, database access, remote method envocation, activatable RMI, Java security, COBRA, XML, and e-commerce applications.

CECS 641 Introduction to Medical Imaging (3.0)
Prerequisites: ECE 520 or equivalent.
Note: Crosslisted with ECE 641.
Focuses on the foundation of medical imaging. Mathematics, hardware and software issues of modern medical imaging are covered. Topics include: optical image formation, MRI, CT, Ultrasound and PET.
Bioinstrumentation for EKG, EEG, and EMG will be covered in the context of biomedical signal processing. Topics also include computer-assisted interventions, multimodality imaging, volume visualization, surface registration, and geometrical modeling.

CECS 643 Introduction to Biomedical Computing (3.0)
Prerequisites: Graduate Standing.
Note: Crosslisted with ECE 643.
Covers various aspects of modern tools of biocomputing in its broad sense; hardware and software issues are covered. Topics include: Super and high performance computer architecture, high bandwidth networking, wireless computing, visualization, and software engineering in medicine. Topics also include computer-assistance interventions, imaging, parallel programming, database design and query, as applied to life, medical, and biomedical sciences.

CECS 645 Advanced Artificial Intelligence (3.0)
Prerequisite: CECS 545.
Advanced topics in artificial intelligence from current research publications. Oriented toward second year graduate students. Major project required.

CECS 650 Advanced Software Engineering (3.0)
Prerequisite: CECS 550.
Selected formal methods, algorithms and models applicable in the software engineering process life-cycle.

CECS 690 M.S. Thesis in Computer Science (1.0-6.0)
Experimental and/or theoretical research to be presented in thesis.

CECS 693 Independent Study in Computer Engineering and Computer Science (1.0-6.0)
Note: Chair Approval is required.

CECS 694 Special Topics in Computer Engineering and Computer Science (1.0-6.0)
Devoted to topics which usually are not treated in detail in the general course.

CECS 695 Computer Engineering and Computer Science Seminar (1.0)

CECS 697 Master of Engineering Thesis in Computer Engineering and Computer Science (1.0-8.0)
Prerequisite: Graduate/Professional standing.
Note: This course may be repeated for a maximum total of eight semester hours.
A candidate for the Master of Engineering degree, specializing in the field of Computer Engineering and Computer Science, is required to perform a study, design, or investigation under the direction of a faculty member. A written dissertation is required to be presented and defended orally and submitted to the faculty for approval.

Civil and Environmental Engineering

CEE 503 Fundamentals of Engineering Exam Review (2.0)
Prerequisite: 4th Year Standing.
Review of topics covered on eight-hour NCEEES Fundamentals of Engineering supplied- references examination. Not to be counted towards meeting the requirements for a degree.

CEE 509 Environmental Processes and Systems (3.0)
Prerequisites: CEE 309 or (CHE 251 and 305 and 401) or permission of instructor.
Note: Cross-listed with CHE 509.
This course examines scientific and engineering aspects of environmental problems, stressing important issues, existing technical solutions and new solutions. The course presents engineering approaches to natural systems and describes techniques to treat/eliminate environmental problems.

CEE 520 Design of Structural Systems (3.0)
Prerequisites: CEE 421, 422 and 551.
Introduction to the design of structural systems. Model building codes. Material, structural system and foundation system selection. Design of connections. Economic, detailing constructability and erection issues. Preparation of engineering drawings; review of shop drawing.

CEE 522 Fundamentals of Prestressed Concrete (3.0)
Prerequisite: Matrix Structural Analysis (CEE 420) and Fundamentals of Concrete Design (CEE 421).
Introduction to pre-tensioned and post-tensioned prestressed concrete. Design of precast concrete slabs, buildings, and bridges in accordance with ACI specifications and the Prestressed Concrete Institute (PCI) recommended practices. Application of computer programs for member analysis and design.

CEE 532 Experimental Stress Analysis (3.0)
Prerequisite: Construction Materials (CEE 530).
Fundamentals of experimental stress analysis, brittle coating, photoelastic coating, and electrical strain gage techniques, strain measurements under static and dynamic loading.

CEE 534 Industrial Waste Management (3.0)
Prerequisite: Consent of instructor.
Note: Cross-listed with CHE 534.
A survey of generation, control and management of industrial waste and environmental hazards: airborne, aqueous, solid and hazardous wastes.

CEE 535 Solid Waste Management (3.0)
Prerequisite: Consent of instructor.
Definition of solid wastes; generation rates; recycling and reuse; collection and processing; materials recovery; composting; incineration; energy recovery; landfilling (siting, design, operation, closure); planning and management.

CEE 552 Earth Pressures and Retaining Structures (3.0)
Prerequisite: Geomechanics (CEE 450).
Earth pressure calculation: theory and practice. Design techniques for retaining walls, reinforced earth and soil nailing.

CEE 560 Traffic Engineering (3.0)
Prerequisite: Transportation Systems Engineering (CEE 360).
Characteristics of the vehicle, the driver, and the traffic stream. Highway and intersection capacity, theory of traffic flow, parking, traffic safety.

CEE 561 Environmental Analysis of Transportation Systems I (3.0)
Prerequisite: CEE 360.
An examination of the various impacts that transportation systems and projects may have on the natural and human environment. Areas of study include noise, air quality, and water resources. Relevant laws and regulations, as well as quantitative prediction models, are thoroughly considered.

CEE 562 Geometric Design of Highways (3.0)
Prerequisite: CEE 560.
Development of concepts of geometric design for rural and urban highways. Topics include: design criteria; sight distance; horizontal alignment; vertical alignment, cross-section elements; highway types; intersection design; interchange design; grade separation; highway safety; and drainage design. These concepts will then be applied using state-of-the art proprietary design software.

CEE 570 Applied Hydraulics (3.0)
Prerequisite: CEE 572 Open Channel Hydraulics.
Application of basic principles of hydraulic engineering to analysis of flow in floodways, through bridge openings, culverts, and spillways. Analysis of stable channel design is also considered. Commonly used computer programs are utilized to design structures in floodways.

CEE 571 Applied Hydrology (3.0)
Prerequisite: CEE 470.
Introduction to hydrologic systems; modeling runoff from watersheds using lumped and distributed methods; stormwater management and design; hydrologic and hydraulic routing including kinematic wave routing; computer rainfall-runoff simulation models. A hydrologic design project will be assigned to all students; special assignments dealing with hydrologic processes will be assigned to M.S. students.

CEE 572 Open Channel Hydraulics (3.0)
Prerequisite: CEE 370.
Application of basic principles of hydraulics to open channel flow. Theory and analysis of critical, uniform and gradually varied flow and computer analysis. Select topics in rapidly varied and unsteady flow.

CEE 573 Groundwater Hydrology (3.0)
Prerequisites: Geomechanics (CEE 450) and Surface Water Hydrology (CEE 470).
Fundamental concepts of fluid flow and soil properties; theory of groundwater movement; mechanics of well flow; groundwater contaminant transport.

CEE 574 Water & Wastewater Treatment (3.0)
Prerequisites: CEE 471or equivalent and fifth-year or graduate standing, or permission of instructor.
Introduction to water and wastewater treatment; principles of biological waste treatment; principles of chemical treatment: coagulation; water-softening; ion-exchange; iron and manganese removal disinfections.

CEE 581 Environmental Impact Analysis (3.0)
Prerequisite: Fifth-year or graduate standing or permission of instructor.
A survey of existing regulations pertaining to environmental control. Organization, powers, and responsibilities of federal, state and local government units. Environmental impact statement preparation. Economic, political, and social implications of environmental problems.

CEE 582 Environmental Engineering Design (3.0)
Prerequisite: Fifth-year or graduate standing or permission of instructor.
Design of various environmental treatment systems, sizing and specifications of equipment. Design of process control systems.

CEE 590 Current Topics in Civil Engineering (1.0-4.0)
Prerequisite: Consent of instructor.

CEE 602 Graduate Internship in Civil & Environmental Engineering (2.0)
Prerequisites: Student must be admitted for Graduate Study, and a sponsored member of the Graduate Intern Program.
Supervised professional experience in industry at the graduate level. This course provides structure and focus for the graduate intern field assignment to ensure that the assignment is appropriate and consistent with the intern's graduate course of study and professional development. May be repeated for credit.

CEE 604 Interaction of Soils and Structures (3.0)
Prerequisites: Fundamentals of Concrete Design (CEE 421), Fundamentals of Steel Design (CEE 422), and Foundation Engineering (CEE 551).
Response of foundation materials to applied static and dynamic loads. Foundation design procedures based upon consideration of soil-structure interaction.

CEE 620 Advanced Mechanics of Solids (3.0)
Prerequisite: Consent of instructor.
Note: Cross-listed with ME 620.
Analysis of stress and strain. Topics include theories of failure, unsymmetric bending, curved beams, shear center, torsion, beams on elastic foundations, beams with combined axial and lateral loads, thick-wall cylinders, rotating disc, introduction to elastic stability.

CEE 621 Finite Element Analysis for Structural Engineers (3.0)
Prerequisite: Matrix Structural Analysis (CEE 420).
Introduction to the finite element method (FEM) and its application to structural engineering. Topics include displacement and variational base one-, two-, and three-dimensional element formulation, introductory elasticity, isoparametric elements, interpolation methods, numeric integration, geometric and material nonlinearity. Emphasis on FEM program development.

CEE 622 Theory of Plates and Shells (3.0)
Prerequisite: CEE 620.
Plate bending theory, circular and rectangular plates. Membrane stresses and bending stresses in shells. Numerical solutions and computer applications.

CEE 623 Advanced Structural Engineering (3.0)
Prerequisites: CEE 520 and 625.
Design of earthquake resistant steel, concrete, and masonry structures. Introduction to time history, modal analysis and pushover analysis. Model code seismic design provisions. Ductility concepts.

CEE 624 Nonlinear Material Behavior (3.0)
Prerequisite: Construction Materials (CEE 530).
In-depth presentation of the time- and temperature-dependent mechanical properties of various engineering materials, such as plastics, rubbers, bituminous mixes.

CEE 625 Structural Dynamics (3.0)
Prerequisite: Matrix Structural Analysis (CEE 420).
Dynamic analysis of structural systems including dynamic response by modal superposition, step integration, response spectrum frequency analysis. Computer applications.

CEE 630 Unit Processes in Environmental Engineering (3.0)
Prerequisite: Fifth-year or graduate standing or permission of instructor.
Physical and chemical nature of water and wastewaters, and application to treatment and water quality characterization. Conventional treatment methods, e.g., flocculation, carbon adsorption, and advanced techniques, including oxidation, electrodialysis, and phosphate removal.

CEE 650 Measurement of Soil Properties (2.0)
Prerequisite: CEE 450 Geomechanics.
Discussion of equipment and techniques for laboratory testing of soil mechanical properties; index testing; testing for permeability, compressibility, and sheer strength.

CEE 651 Measurement of Soil Properties Laboratory (2.0)
Prerequisite: CEE 650 Measurement of Soil Properties (corequisite).
Laboratory testing of soil mechanical properties; index testing; testing for permeability, compressibility, and sheer strength. CEE 650 is a corequisite/prerequisite for the course.

CEE 652 Advanced Earth Pressure and Retaining Structures (3.0)
Prerequisite: Earth Pressures and Retaining Structures (CEE 552).
Soil pressure-structure movement interactions. Design of anchored bulkheads. Retained excavation analysis. Design of cellular cofferdams. Introduction to culverts/tunnels.

CEE 653 Design of Earth Structures (3.0)
Prerequisite: Geomechanics (CEE 450).
Seepage and internal erosion. Stability analyses. Failure mechanisms in natural slopes. Design of earth dams. Embankment construction, control and instrumentation.

CEE 654 Rock Mechanics (3.0)
Prerequisite: Geomechanics (CEE 450).
Physical properties of intact rock; mechanical properties of rock masses, emphasis on practical applications. Rock blasting. Tunneling.

CEE 660 Transportation Planning and Urban Development (3.0)
Prerequisite: Transportation Systems Engineering (CEE 360).
Principles of transportation planning in the urban environment, including land use planning, with emphasis on the orderly development of the transportation system.

CEE 661 Environmental Analysis of Transportation Systems II (3.0)
Prerequisite: Environmental Analysis of Transportation Systems I (CEE 561).
A continuation of CEE 561, with in-depth advanced study of air quality and noise levels resulting from transportation improvements.

CEE 662 Airport Planning & Design (3.0)
Prerequisite: Transportation Systems Engineering (CEE 360).
The principles of location, planning, design, and evaluation of airports are examined from the engineering perspective. In addition, laws and regulations concerning airports and the aviation system are thoroughly studied.

CEE 663 Advanced Traffic Operations (3.0)
Prerequisite: CEE 560.
A continuation of CEE 560, with an emphasis on mathematical and computer techniques to solve traffic problems.

CEE 664 Fundamentals of Intelligent Transportation Systems (3.0)
Prerequisites: CEE 560 & 660.
Overview of the complete Intelligent Transportation Systems field. Elements of traffic flow theory, incident/emergency management, dynamic route guidance, in-vehicle systems, and traffic signal systems.

CEE 665 Pavement Design (3.0)
Prerequisite: Transportation Systems Engineering (CEE 360) and Geomechanics (CEE 450).
Design of flexible and rigid pavements, base courses, and subgrades. Effects of loading on pavement life.

CEE 670 Advanced Hydraulics (3.0)
Prerequisite: Engineering Hydraulics (CEE 370).
Dimensional analysis; integral form of the equations of motion; shear stress distribution; turbulence and boundary layer theory; concepts in particle drag and settling.

CEE 671 Stochastic Processes in Hydrology (3.0)
Basic concepts and classification of stochastic processes with emphasis on hydrologic systems; analysis of hydrologic time series; models for stationary hydrologic stochastic processes.

CEE 672 Statistical Methods in Water Resources (3.0)
Prerequisite: Probability & Statistics for Engineers (IE 360).
Applications of advanced concepts of probability and statistics in hydrology and water resources including frequency analysis and regionalization; parameter estimation; analysis of variance and multiple regression techniques.

CEE 673 Advanced Hydrology (3.0)
Prerequisites: CEE 470 & IE 360.
Advanced concepts for studying hydrologic processes; theory of linear hydrologic systems; conceptual models for modeling watershed rainfall-runoff response including geomorphological approaches.

CEE 674 Water Resources Systems (3.0)
Application of systems analysis techniques in the planning and design of water resources projects; mathematical optimization; simulation and risk-based decision-making.

CEE 675 Surface Water Quality Modeling (3.0)
Prerequisite: Consent of instructor.
Modeling, design and control of water quality in river, lake, and estuary systems; dissolved oxygen and toxic substance models; and lake eutrophication.

CEE 676 Sediment Transport and River Mechanics (3.0)
Prerequisite: Engineering Hydraulics (CEE 370).
Sediment transport theory; overland erosion; alluvial streams; analysis, prediction, and control of river characteristics; local scour at river structures.

CEE 677 Groundwater Modeling (3.0)
Prerequisite: Engineering Hydraulics (CEE 370) and CEE 573.
Mathematical and numerical modeling of groundwater and pollution transport.

CEE 680 Civil Engineering Capstone Design (3.0)
Prerequisites: CEE 380 and Graduate/Professional Standing.
A capstone Civil Engineering course to include elements of geotechnical, structural, transportation, and water resources engineering in a comprehensive design project.

CEE 690 M.S. Thesis in Civil Engineering (1.0-6.0)
Experimental and/or theoretical research to be presented in thesis for degree requirement.

CEE 692 Interactions of the Environment and Society (3.0)
Prerequisite: Permission of instructor.
A broad treatment of environmental problems especially tailored to elementary, middle and high school teachers, emphasizing the social and economic impact of environmental problems on our society. Special attention will be devoted to developing educational portfolios specific to environmental problems for possible incorporation into elementary, middle, and high school course context. Topics of discussion will include water quality, air quality, solid waste disposal, environmental law, noise pollution, and environmental health planning.

CEE 693 Independent Study in Civil Engineering (1.0-6.0)

CEE 694 Special Topics in Civil Engineering (1.0-6.0)

CEE 695 Civil Engineering Seminar (1.0)

CEE 697 Master of Engineering Thesis in Civil Engineering (1.0-6.0)
Prerequisites: CEE 402 and graduate/professional school standing.
A candidate for the Master of Engineering degree, specializing in the field of civil engineering, is required to perform a study, design, or investigation under the direction of a faculty member. A written thesis is required to be presented and defended orally and submitted to the faculty for approval.

CEE 698 CE PhD Seminar (3.0)
Prerequisite: Permission of the chair.
Current literature in the field of civil engineering; extensive student presentations on research projects with interaction and feedback from students and faculty; guest speakers.

CEE 699 CE PhD Research (1.0-18.0)
Prerequisite: Permission of dissertation director.
Original research activity in an appropriate civil engineering discipline, under the direction of a Civil Engineering graduate faculty member.

Chemical Engineering

CHE 502 Biochemical Engineering (3.0)
Prerequisite: For undergraduate students, second-year professional school standing or faculty consent is required.
Engineering principles related to operations involving biological processes, e.g., fermentation. Basic microbiology and biochemistry; biochemical reaction mechanisms, kinetics, rate processes, and separation techniques. Applications to foods, pharmaceuticals, and waste treatment, including system design.

CHE 509 Environmental Processes and Systems (3.0)
Prerequisites: CEE 309 or (CHE 251 and 305 and 401) or permission of instructor.
Note: Cross-listed with CEE 509.
This course examines scientific and engineering aspects of environmental problems, stressing important issues, existing technical solutions and new solutions. The course presents engineering approaches to natural systems and describes techniques to treat/eliminate environmental problems.

CHE 532 Advanced Material Science (3.0)
Prerequisite: For undergraduate students, Graduate/professional school standing is required.
Advanced study of materials science. Topics may include the electronic and atomic structure of materials; properties characterized by electron motion; properties associated with atomic motion; applications and synthesis of fundamentals to several real problems; science of thin films; or other topics selected by the instructor.

CHE 533 Chemical Engineering Safety and Health (3.0)
Prerequisite: For undergraduate students, 4th year standing in engineering or chemistry or equivalent is required.
Overview of regulations and industrial practices, emphasizing chemical hazards, including: industrial hygiene, toxicology, controls and hazards analysis. Safety considerations in process design.

CHE 534 Industrial Waste Management (3.0)
Prerequisite: For undergraduate students, 2nd year professional school standing is required.
Note: Cross-listed with CEE 534.
A survey of regulations, generation, control and management of industrial wastes and environmental hazards: airborne, aqueous, solids and hazardous wastes. Course includes guest speakers, site visits and a term project. Design of waste treatment facilities.

CHE 535 Pollution Prevention (3.0)
Prerequisite: For undergraduate students, 4th year undergraduate or 1st year graduate level status in engineering or science, or equivalent is required.
Multimedia pollution prevention and waste minimization of hazardous and non-hazardous wastes and emissions: toxics use reduction; source reduction; reuse, reclamation and recycling; product life-cycle analysis; economic evaluation; assessments; planning and management.

CHE 550 Kinetics of Polymer Reactions (3.0)
Prerequisite: Kinetics & Chemical Reactors (CHE 441), or consent of instructor.
Kinetic expressions are developed for several polymer reaction mechanisms including chain, step, ionic and emulsion reactions; copolymerization; polymer reaction engineering; molecular weight distributions; structural considerations; design considerations.

CHE 551 Polymer Science (3.0)
Prerequisite: For undergraduate students, second-year professional school standing is required.
Introduction to polymer science and engineering. Polymer synthesis, kinetics, structure, and properties; commercial polymers; polymer processing; equipment design.

CHE 562 Process Control Laboratory (1.0)
Prerequisite: Elements of Process Control (CHE 461).
A laboratory course demonstrating computer simulation and the characteristics of sensing and control devices and their interactions when incorporated into process control systems.

CHE 572 Plant Process and Project Design (3.0)
Prerequisite: For undergraduate students, second year professional standing or CHE 471 is required.
The design and economic evaluation of a chemical plant, from process definition and flow sheet construction to a cash position diagram and measures of profitability.

CHE 574 Techniques of Research (3.0)
Prerequisite: For undergraduate students, second-year professional standing is required.
The design, analysis, and interpretation of experimental results to obtain the desired information within reasonable constraints of time and expense. Testing predictions and making reliable decisions utilizing graphical, numerical, and statistical techniques.

CHE 602 Graduate Internship in Chemical Engineering (2.0)
Prerequisites: Student must be admitted for Graduate Study, and a sponsored member of the Graduate Intern Program.
Supervised professional experience in industry at the graduate level. This course provides the structure and focus for the graduate intern field assignment to ensure that the assignment is appropriate and consistent with the intern's graduate course of study and professional development. May be repeated for credit.

CHE 603 Tissue Engineering (3.0)
Prerequisites: Graduate/Professional School standing, Biology 329 or consent of instructor.
This is an advanced elective course to satisfy the requirements for a graduate level degree in chemical engineering. This course presents an introduction to tissue engineering with an emphasis on the role of biomaterials and bioreactor design.

CHE 610 Advanced Thermodynamics (3.0)
A comprehensive study of physical and chemical equilibrium, with special emphasis on nonideality.

CHE 612 Nonequilibrium Thermodynamics (3.0)
The extension of classical thermodynamics to include systems in which transport processes are taking place. Examples from the areas of engineering, chemistry, and biological systems are examined.

CHE 620 Transport Phenomena I (3.0)
An integrated study of momentum, thermal energy, and mass transport by molecular and convective mechanisms, with and without generation, for steady-state and unsteady-state conditions, in laminar, boundary-layer, or turbulent flow. Molecular theories of transport properties.

CHE 621 Transport Phenomena II (3.0)
Prerequisite: CHE 620.
Consideration of advanced theories and applications of transport properties as related to heat, mass, and momentum transfer.

CHE 624 Introduction to Rheology (3.0)
Principles and applications of the rheology of polymeric materials. Kinematics of shear and extentional flows. Properties of polymer melts; experimental rheometry. Property predictions based on a variety of generalized Newtonian, linear viscoelastic, co-rotational, and co-deformational models.

CHE 631 Homogeneous Fluid Dynamics (3.0)
Advanced study of momentum transfer in homogeneous fluids. Conservation of matter, momentum, and mechanical energy; ideal flow, creeping flow, laminar flow, turbulent flow, and boundary layer approximations; non-Newtonian fluids.

CHE 632 Heterogeneous Flow (3.0)
Analysis of two-phase flows of gases, liquids, and solids. Single-particle and multiparticle systems, fluidized beds, bubble beds, drop beds; slug flow, annular flow.

CHE 633 Heat Transfer (3.0)
Advanced problems in the fields of conductive and convective heat transfer.

CHE 637 Advanced Stagewise Processes (3.0)
Methods of calculations for complex binary and multicomponent mixtures. Consideration is also given to the design of equipment for these separations.

CHE 638 Advanced Absorption (3.0)
An examination of absorption as a portion of general mass transfer phenomena. Theoretical and generalized relationships are applied to industrial problems of design.

CHE 640 Chemical Kinetics and Catalysis (3.0)
A study of catalytic reaction mechanisms and solid catalysts with applications to cracking, reforming, hydrotreatment of fuels, synthesis gas conversion and partial oxidation reactions. Design of catalysts and catalytic reactors for specific applications.

CHE 641 Advanced Reactor Design (3.0)
Reactor design and performance with emphasis on non-ideal behavior. Includes study of non-isothermal, non-ideal flow homogeneous and heterogeneous reactors. Introduction to heterogeneous catalysis and biochemical reactors.
Extensive application of digital computers.

CHE 650 Membrane Separations (3.0)
Qualitative and quantitative description of membrane separation processes including reverse osmosis and ultrafiltration; membrane synthesis; industrial applications including wastewater treatment, continuous systems, liquid membranes and gas separations. Design of membranes, membrane modules and membrane separation processes.

CHE 653 Polymer Processing (3.0)
Introduction to polymer melt rheology. Simple model flows. Analysis, modeling, design and control of polymer melt processes such as extrusion, calendering, fiber spinning, film blowing, injection molding, and blow molding.

CHE 654 Engineering Properties of Polymers (3.0)
The relationships between molecular structure, measurable properties, and design requirements for polymeric materials. Molecular topology; morphology; rheology; mechanical, thermal, electrical, optical, and chemical properties; design and economic considerations in engineering applications.

CHE 660 Optimization in Control Systems (3.0)
Theory of optimization will be studied and applied to the solution of control problems. Both steady-state and dynamic optimization topics will be considered.

CHE 661 Control of Dynamic Processes (3.0)
A combined laboratory and seminar course involving advanced process-control experiments and simulation procedures with the necessary concomitant discussion.

CHE 662 Advanced Process Control (3.0)
Advanced control system design and implementation; feed-forward, cascade, adaptive, multivariable, and constraint control systems; computer process control.

CHE 663 Distillation Dynamics and Control (3.0)
Multicomponent calculations and design of distillation units. Automatic control of these units, sensitivity analysis in control strategy, and dynamic mathematical modeling and simulation of the columns and accessories, including design considerations.

CHE 671 Bioseparation (3.0)
Prerequisites: EAC 205 or equivalent; Graduate/Professional school standing or consent of instructor.
This course introduces the basic concept, theory, and applications of bioseparations.

CHE 686 Chemical Engineering Analysis (3.0)
Mathematical modeling of chemical engineering phenomena leading to total and partial differential equations requiring solution by use of series, transforms, and digital computer techniques. Applications to design and analysis of chemical engineering processes.

CHE 687 Modeling and Simulation of Chemical Processes (3.0)
Prerequisite or corequisite: Consent of instructor.
Techniques of computer-aided process modeling and design, primarily using ASPEN PLUS, which simulates the steady state behavior of process operations such as distillation columns, heat exchangers and reactors. ASPEN PLUS is an advanced sequential modular process simulator and economic evaluation system.

CHE 690 M.S. Thesis in Chemical Engineering (1.0-6.0)
Experimental and/or theoretical research to be presented in thesis for degree requirement.

CHE 693 Advanced Research in Chemical Engineering (1.0-12.0)

CHE 694 Special Topics in Chemical Engineering (1.0-6.0)

CHE 695 Chemical Engineering Seminar (1.0-4.0)

CHE 696 Independent Study in Chemical Engineering (1.0-6.0)

CHE 697 Master of Engineering Thesis in Chemical Engineering (1.0-8.0)
Prerequisite: Graduate/Professional School standing.
A candidate for the Master of Engineering degree, specializing in the field of Chemical Engineering, is required to perform a study, design, or investigation under the direction of a faculty member. A written dissertation is required to be presented and defended orally and submitted to the faculty for approval. This course must be repeated for a minimum total of 8 semester hour credits to satisfy minimum M.Eng. requirements.

CHE 698 Chemical Engineering Project Management (3.0)
Prerequisites: Graduate/Professional School standing.
Presents the fundamentals of proposal writing, business plan requirements, literature and background investigation, and project management once a project is funded.

CHE 699 Chemical Engineering Project Communications (3.0)
Prerequisites: Graduate/Professional School standing, CHE 698.
Students accomplish either a written proposal/business plan or a written project report. An oral presentation of the proposal or project reports is also required.

Chemistry

CHEM 503 Special Topics in Chemistry (1.0-3.0)
Prerequisite: As required by topic.
Not applicable toward graduate degree in chemistry.

CHEM 545 Biochemistry I (3.0)
Prerequisite: Organic Chemistry II (CHEM 342).
Note: Cross-listed with BIOC 545.
Chemistry of amino acids, peptides, proteins, nucleotides and nucleic acids; methods of analysis and laboratory synthesis; nucleotides; RNA, DNA and protein biosynthesis. Credit may not be earned in both 545 and 645. Credit may not be applied toward an advanced degree in Chemistry.

CHEM 547 Biochemistry II (3.0)
Prerequisite: CHEM 545/BIOC 545.
Note: Cross-listed with BIOC 547.
Cellular metabolism of carbohydrates, lipids, amino acids and biomembrane phenomena; enzyme properties; kinetics, and control mechanisms; ligand binding. Credit may not be earned in both 547 and 647. Credit may not be applied to an advanced degree in chemistry.

CHEM 550 Group Theory and its Chemical Applications (3.0)
Prerequisite: One year of physical chemistry.
Elementary group theory; the use of group theory to treat symmetry; application to atomic structure, molecular structure, spectroscopy, and reaction mechanisms.

CHEM 557 Bio-Organic Phenomena (3.0)
Prerequisite: One year of organic chemistry.
Special topics in the biological chemistry area: e.g., chemical carcinogenesis; diet and cancer, food chemistry and polypeptides; proteins; carbohydrates; enzymes; hormone chemistry.

CHEM 561 Advanced Physical Chemistry (3.0)
Prerequisite: One year of physical chemistry, one semester of atomic and molecular physics.
First semester (561): introduction to quantum chemistry. Second semester (562): theoretical and experimental approaches to molecular structure.

CHEM 562 Advanced Physical Chemistry (3.0)
Refer to: CHEM 561

CHEM 576 Polymer Chemistry (3.0)
Prerequisite: One year each of organic chemistry and physical chemistry.
The physical and organic chemistry of high molecular weight polymers.

CHEM 591 Chemistry for Teachers I (3.0)
Prerequisite: For graduate education majors. Must have experience in teaching chemistry principles in elementary, middle, or secondary schools.
Teaching pre-college chemistry with emphasis on curriculum content, laboratory procedures, and process skills. Summer.

CHEM 592 Chemistry for Teachers II (3.0)
Refer to: CHEM 591

CHEM 620 Optical Spectrochemical Methods of Analysis (3.0)
Prerequisite: CHEM 525 and 526.
Principles, instrumentation, and applications of atomic and molecular spectroscopic techniques used in the IR, VIS, and UV spectral regions.

CHEM 621 Electroanalytical Chemistry (3.0)
Prerequisite: CHEM 525 and 526.
Principles of modern voltammetric and potentiometric methods of chemical analysis including fundamental theory, instrumentation, and applications.

CHEM 622 Analytical Separations (3.0)
Prerequisite: CHEM 525 and 526.
Survey of major instrumental separation methods in chemistry and biochemistry with an emphasis on modern chromatographic techniques.

CHEM 623 Advanced Chemical Instrumentation (3.0)
Prerequisite: CHEM 525 and 526.
Electronic aspects of chemical instrumentation; analog and digital circuitry; computer interfacing and software.

CHEM 625 Advanced Analytical Chemistry (3.0)
Prerequisite: CHEM 525 and 526.
A survey of theoretical and practical aspects of modern methods of analysis.

CHEM 629 Special Topics in Analytical Chemistry (1.0-3.0)
Prerequisite: CHEM 525 and 526, or consent of instructor.
Recent developments in selected areas of analytical chemistry.

CHEM 632 Chemical Education for Secondary Teachers (4.0)
Prerequisites: B.S., B.A., or minor in Chemistry or consent of instructor.
In-depth examination of chemistry content for secondary teachers as aligned with national and state standards. Inquiry-based laboratory and diverse assessment of core concepts will be developed. Does not count toward an advanced degree in Chemistry.

CHEM 645 Advanced Biochemistry I (4.0)
Prerequisite: Organic Chemistry (CHEM 342).
Note: Cross-listed with BIOC 645.
Chemistry of amino acids, peptides, proteins, nucleotides and nucleic acids; methods of analysis and laboratory synthesis; RNA, DNA and protein biosynthesis. Lectures concurrent with Chem 545; one added lecture hour each week covers advanced topics. Credit may not be earned in both 545 and 645.

CHEM 647 Advanced Biochemistry II (4.0)
Note: Cross-listed with BIOC 647.
Cellular metabolism of carbohydrates, lipids, amino acids and nucleotides; enzyme properties; kinetics, and control mechanisms; ligand binding; biomembrane phenomena. Lectures concurrent with Chem 547; one added lecture hour each week covers advanced topics. Credit may not be earned in both 547 and 647.

CHEM 651 Independent Study (1.0-3.0)
Credit according to achievement; limited to 3 hrs. per semester

CHEM 652 Independent Study (1.0-3.0)
Refer to: CHEM 651

CHEM 653 Main Group Chemistry (3.0)
Prerequisite: CHEM 515.
Survey of the descriptive chemistry of the main group elements and topics of current interest in main group chemistry such as bonding theories, reaction mechanisms, electronic materials, and catalytic materials.

CHEM 654 Advanced Coordination Chemistry (3.0)
Prerequisite: CHEM 515.
Survey of structure, bonding, and reactivity of the transition metal complexes. Covers topics such as organometallic and bioinorganic chemistry, group theory, and magnetism.

CHEM 655 Special Topics in Inorganic Chemistry (1.0-3.0)
Prerequisite: CHEM 515.
Current problems in inorganic chemistry. 3 hrs. lect.

CHEM 656 Special Topics in Inorganic Chemistry (1.0-3.0)
Refer to: CHEM 655

CHEM 661 Chemical Thermodynamics (3.0)
Prerequisite: One year of physical chemistry.
Advanced discussion of the principles of thermodynamics including an introduction to statistical thermodynamics; applications to chemical systems. 3 hrs. lect.

CHEM 665 Special Topics in Physical Chemistry (1.0-3.0)

CHEM 666 Special Topics in Physical Chemistry (1.0-3.0)
Refer to: CHEM 665

CHEM 667 Reaction Kinetics (3.0)
Prerequisite: One year of physical chemistry.
Theory of the rate of chemical reactions; methods of studying reaction rates; reaction energetics; reactions in solution; chain reactions and inference of mechanism from rate studies. 3 hrs. lect.

CHEM 668 Electrochemistry (3.0)
Prerequisite: Consent of instructor.
A thermodynamic and kinetic study of electrochemical phenomena, including electrical conductivity, electrophoresis, electrode potentials, and electrode processes. 3 hrs. lect.

CHEM 670 Chemistry of Heterocyclic Compounds and Alkaloids (3.0)
Prerequisite: One year each of organic and physical chemistry.
Structures, reactivities, activities, and synthesis of heterocyclic systems including natural products and their uses in medicine. 3 hrs. lect.

CHEM 671 Advanced Polymer Chemistry (3.0)
Prerequisite: One year each of organic and physical chemistry.
Polymer characterization, physical properties and structure.
Conformational changes, elasticity, relaxation phenomena, size and chain distributions; application of microscopy, spectroscopy, magnetic resonance, and diffraction to polymers; liquid crystals. 3 hrs . lect.

CHEM 672 Quantum Chemistry (3.0)
Prerequisite: CHEM 561
Principles of quantum theory with applications to chemistry; and advanced treatment of atomic and molecular structure including Slater-Condon methods for atoms and LCAO-MO-SCF methods for molecules; introduction to ab initio methods. 3 hrs. lect.

CHEM 675 Special Topics in Organic Chemistry (1.0-3.0)
Prerequisite: One year of organic chemistry.
Current problems in organic chemistry; organometallic chemistry; free radical reactions; carbohydrates and nucleosides; peptides. 3 hrs. lect.

CHEM 676 Special Topics in Organic Chemistry (1.0-3.0)
Refer to: CHEM 675

CHEM 678 Advanced Organic Chemistry: General Survey (3.0)
Prerequisite: One year each of organic and physical chemistry.
First semester (678): an introduction to advanced physical organic chemistry, linear free energy relationship, kinetics, isotope effects and spectroscopic techniques as used in the interpretation of reaction mechanisms.
Second semester (679): an introduction to advanced organic chemistry emphasizing reactions and synthesis, and including spectral applications. 3 hrs. lect.

CHEM 679 Advanced Organic Chemistry: General Survey (3.0)
Refer to: CHEM 678

CHEM 681 Modern Biochemistry I (3.0)
Prerequisite: One year each of organic and physical chemistry or consent of instructor. Chemistry and physical properties of proteins, other biopolymers; enzymatic reaction mechanisms and kinetics; bioenergetics.

CHEM 682 Modern Biochemistry II (3.0)
Prerequisite: CHEM 681 or consent of instructor.
Carbohydrate, lipid, protein, and nucleic acid metabolism; endocrine control of metabolism and physiological activities.

CHEM 683 Statistical Thermodynamics (3.0)
Prerequisite: CHEM 561.
Principles of statistical thermodynamics and applications applied to the molecular interpretation of the physical-chemical processes of gases, liquids, and solids. 3 hrs. lect.

CHEM 684 Biophysical Chemistry (3.0)
Prerequisites: CHEM 462 (or equivalent) and 545/645 or consent of instructor.
Basis theory and practical applications of modern biophysical methods; spectroscopy, hydrodynamics, thermodynamics, kinetics, and computational methods applied to protein and nucleic acid systems.

CHEM 687 Molecular Spectroscopy (3.0)
Prerequisite: CHEM 561.
Molecular structure and interactions as determined by spectroscopic investigation. Rotational, vibrational and electronic spectroscopy as determined by ultraviolet, visible, infrared, microwave and radio frequency methods. Fundamental theory and experimental methods. 3 hrs. lect.

CHEM 688 X-Ray Crystallography and Its Application to Molecular Structure (3.0)
Prerequisite: CHEM 561.
Crystal structure analysis. Topics include: symmetry, space groups, data collection, structure solution and refinement, structural analysis and presentation of scientific results. 2 hrs. lect., 1 hr. lab.

CHEM 691 Research (1.0-15.0)
Prerequisite: 30 semester hours of undergraduate chemistry.

CHEM 692 Research (1.0-15.0)
Refer to: CHEM 691

CHEM 695 Seminar (1.0)
Maximum credit allowed is 3 semester hours. Required of all graduate students during residency.

Computer Information Systems

CIS 610 eBusiness Models (3.0)
Prerequisites: CIS 675.
Discussion of business concepts and strategic opportunities surrounding the emergence of eBusiness.
Understanding how the Internet impacts existing business models and how these models are adapted for the digital economy.

CIS 615 Internet Systems and Tools for eBusiness (3.0)
Prerequisites: CIS 610 (or concurrent enrollment), CIS 675.
Discussion and use of Internet technologies and tools. Typical products (e.g., B2B and CRM) are evaluated to determine how they may be used to align with eBusiness strategic goals.

CIS 620 eBusiness Practicum (3.0)
Prerequisites: CIS 610, CIS 615, CIS 675.
Application of digital economy concepts and Internet technologies to an eBusiness problem. Project teams will create an eBusiness model, develop system requirements, and implement web prototypes of the proposed solution.

CIS 655 Computer Ethics and Social Issues (3.0)
In-depth examination of the ethical and social aspects of computing. Topics include responsibilities for computer professionals, organizational and work transformation, privacy, social interaction in electronic forums, policy and other current issues. Case studies, in-class discussion, and position papers will be used extensively.

CIS 675 Information Technology Management in a Digital Economy (3.0)
Prerequisite: Computer Concepts for Managers (CIS 500) or equivalent.
Provides students with an understanding of the effects of the digital environment on business models and how firms have to adapt to be competitive in a digital economy. Focuses on the management of technology in such an environment, with emphasis on management activities (e.g., planning, organizing, coordinating, assimilating new technologies, evaluating information technology investments, etc.) that will enable firms to make the most effective use of their information technology resources.

CIS 680 Special Topics in CIS (1.0-6.0)
An advanced study of one or more selected topics on issues related to the study of Computer Information Systems.

CIS 698 Research Seminar in CIS (1.0-6.0)
Prerequisite: Permission of departmental chair.

Commercial Law

CLAW 600 Legal Aspects of Business (3.0)
Public policy toward business as expressed in the law. Government regulation of securities, trade, employment, environment, and organization: a broad review.

CLAW 610 Commercial Law for Professional Accountants (3.0)
Prerequisite: Admittance to the Master of Accountancy program.
Covers the legal environment of the professional accountant, including business organizations, government regulations and legal liability.

CLAW 680 Special Topics in Business and Law (3.0)
A focused study of selected issues in the regulation of business. Content varies at the discretion of the instructor.

Communicative Disorders

CMDS 545 Survey of Communication Processes and Disorders (3.0)
General overview of audiology and speech-language pathology, including incidence of communicative disorders, anatomy and physiology, diagnostic and rehabilitative audiometry, normal speech and language development and disorders, and neurogenic disorders.

CMDS 557 Aural Rehabilitation (3.0)
Prerequisite: CMDS 545.
Overview of historical and current philosophies in the rehabilitation of hearing impaired persons, including psychological, sociological, educational and vocational aspects.

CMDS 565 Language Acquisition Laboratory (1.0)
Language Acquisition lab is taken in conjunction with the course Normal Tech and Language Development (CMDS 564). The lab allows students to develop critical thinking as they apply skills to theoretical constructs introduced in CMDS 564. These skills include analysis of play level, syntactic and morphological analysis and analysis of written language in children with normal development.

CMDS 567 Fundamentals of Speech and Hearing Science (3.0)
Topics include acoustics, speech-sound acoustics and speech production characteristics, co-articulation, biophysics and psychoacoustics of hearing, and instrumentation in the speech and hearing sciences.

CMDS 570 Clinical Observation in Speech Pathology and Audiology (1.0)
Observations in speech pathology and audiology. Additional observations may be assigned to introduce students to the variety of practicum opportunities available in the program. Pass/fail grading.

CMDS 602 Articulation/ Phonology (3.0)
Prerequisite: CMDS 563 and 567.
Study of vowel and consonant characteristics; sequence of development of phonology/articulation. Procedures for diagnosing disorders in phonology/articulation are examined.

CMDS 604 Audiology I (3.0)
Prerequisite: CMDS 545 or an undergraduate audiology course.
Overview of hearing loss, introduction to methods of assessment, principles of masking, case history, basic pathology, and screening.

CMDS 610 Practicum in Audiology (1.0-4.0)
Prerequisite: CMDS 567 and 604.
Clinical training in the areas of conventional audiometry, advanced diagnostics, patient management, hearing aid selection and aural rehabilitation therapy. Advanced students will be assigned to a variety of clinical settings with the consent of the instructor .

CMDS 611 Practicum in Speech Pathology (1.0-4.0)
Prerequisite: CMDS 564 and 602.
Diagnostic and therapeutic contact with individuals who exhibit communication disorders. Practicum obligations include treatment planning, report writing and patient/parent counseling. Advanced students will be assigned to outside practicum sites with the consent of the instructor.

CMDS 612 Preschool Language Intervention (3.0)
Principles of language intervention, including phonology, for infants, toddlers and preshoolers. Emphasis placed on typical development as well as disordered populations.

CMDS 620 Neurological Disorders of Speech Production (3.0)
Prerequisite: CMDS 572.
Study of disorders resulting in flaccid, spastic, mixed, ataxic, hypokinetic, or hyperkinetic dysarthria. Covers diagnostic and treatment strategies.

CMDS 652 School Age Language and Phonology Intervention (3.0)
Prerequisite: CMDS 564.
Principles of intervention for school-age children and adolescents with language disorders. Considers phonological and pragmatic aspects of language along with semantics, morphology and syntax.

CMDS 661 Assessment of Childhood Language Disorders (3.0)
Prerequisite: CMDS 545, 563, and 564.
Principles of assessment of language disorders in preschool, school-age, and adolescent populations. Emphasis placed on naturalistic and informal assessments.

CMDS 663 Voice Disorders (4.0)
Prerequisite: CMDS 567 and 572 (concurrently).
Study of abnormalities of voice production including dysphonia, psychogenic disturbance, and resonance imbalance. Incorporates laboratory demonstrations and exercises to develop skills using the following technologies: video stroboscopy, videoflouroscopy for VPI, manometry, the Visi-pitch, etc.

CMDS 665 Fluency Disorders (3.0)
Prerequisite: CMDS 567 and 604.
Examines fluency disorders of children and adults. Reviews the literature on etiology and theories of dysfluency. Assessment procedures and therapeutic management are discussed. Includes a review of current technological applications.

CMDS 667 Aphasia and Cognitive Disorders (4.0)
Prerequisite: CMDS 620.
Historical review of the neurological basis of language processing. Emphasis on adult language disorders of aphasia, dementia, 2nd traumatic brain injury.

CMDS 668 Professional Issues in Audiology and Speech Pathology (1.0)
Survey of social, political, business and professional issues in health care delivery related to communicative disorders. Other topics include: curriculum vitae preparation, professional interviews, professional liabilities, contracts, and funding sources, quality assurance mechanism, etc. Pass-fail grading only.

CMDS 690 Dysphagia (3.0)
Prerequisite: CMDS 572.
Evaluation and treatment of pediatric and adult patients with swallowing disorders. Specific emphasis on bedside dysphagia evaluations, modified barium swallow procedures, FEES, assistive devices, treatment techniques, and diet modifications.

CMDS 695 Special Topics in Speech and Language Disorders (1.0-3.0)
Prerequisite: Consent of instructor.
Study of special areas or new topics in speech language pathology. Topics may include counseling, genetic syndromes, multicultural issues, cerebral palsy or management or the burn patient. Topic will be indicated in the semester Schedule of Courses. Maximum of 6 hours of credit.

CMDS 696 Augmentative/ Alternative Communicative (3.0)
Prerequisite: CMDS 652 and 690.
Provides exposure to the area of augmentative/alternative communication (AAC). Topics include functional dimensions of AAC systems; symbol systems; transmission techniques; and intervention strategies.

CMDS 697 Special Topics in Audiology (1.0-3.0)
Prerequisite: Consent of instructor.
Study of special areas or new topics in audiology not included in other courses, such as current technological, political or economic trends in audiology and medicare. Maximum of six hours credit.

CMDS 699 Thesis (1.0-6.0)

Communication

COMM 506 Ethical Problems in Communication - WR (3.0)
Prerequisite: COMM 305.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Examines the moral and ethical problems posed by communication practices. Topics include case studies in interpersonal communication, journalism, public relations, and advertising.

COMM 510 Special Topics in Speech (1.0-3.0)
Prerequisite: Faculty consent.
Advanced study in specific areas in speech and forensics. May be repeated under different subtitles.

COMM 513 History of Communication - WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Examination of the history of communication both as a set of practices and as a subject of academic inquiry.

COMM 520 Computer-Mediated Communication -WR (3.0)
Prerequisite: COMM 150 or consent of instructor.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Conceptual analysis and practical use of computer networks with an emphasis on the social and cultural dimensions of this type of human communication.

COMM 590 Health Communication (3.0)
Prerequisite: Consent of instructor.
Studies the nature, function, and importance of communication in the delivery of health care and/or medical knowledge.

COMM 600 Practicum (1.0-3.0)
Prerequisite: Consent of instructor.
Practical work in speech. Pass/Fail grading.

COMM 605 Communication Theory & Practice (3.0)
Prerequisites: Admission to MBA program or Graduate School.
Seminar studies theories and empirical research in persuasion, social interaction, and group decision-making and offers applied problems that require public presentations by seminar participants.

COMM 610 Problems of Public Discourse (3.0)
Prerequisite: Consent of instructor.
Surveys the chief theories and disputes about public discourse, public knowledge, and decision-making.

COMM 620 Organizational Communication (3.0)
Prerequisite: Consent of instructor.
Theoretical and applied studies of communication within organizations and between organizations and their publics.

COMM 630 Communication and Multiculturalism (3.0)
Prerequisite: Consent of instructor.
Explores the influence of race, nationality, and/or gender on the communication practices of individuals and their institutions.

COMM 640 Communication in Social Service (3.0)
Prerequisite: Consent of instructor.
Studies public communication campaigns, e.g., health information and policy campaigns.

COMM 650 Corporate Communication (3.0)
Prerequisite: Admission to M.B.A. program.
Study of the nature, strengths, and weaknesses of empirical research in organizational communication and application of these findings to analysis, diagnosis, and remedy or communication problems in specific organizations. Focus is primarily on case studies and in-community "practicum" consulting project.

COMM 651 Conflict Management (3.0)
Uses role playing and case studies in community organizations to assist students in developing the skills needed for managing conflict.

COMM 652 Computer-Mediated Communication in Organizations (3.0)
Hands-on study and use of developing technologies and examination of the integration and consequences of innovations in computer communication in organizations.

COMM 653 Integrated Marketing Communication Campaigns (3.0)
Study of integrated advertising, public relations, and sales promotions. Course culminates with students preparing integrated marketing plans for local clients.

COMM 654 Public Relations and Crisis Management (3.0)
Examines problems of planning and implementing public relations strategies for crisis management. The organizations studied include corporations, agencies, educational and government institutions, and non-profits.

COMM 690 Special Topics (3.0)
Examination of topics not covered in regularly-scheduled courses.

Computer Science & Engineering

CSE 610 Advanced Logic Design (3.0)
Prerequisite: Logic Design (ECE 210).
Note: Cross-listed with ECE/CECS 610.
Models and elementary properties of sequential machines, sequential machine compatibility and equivalence, state assignment and state minimization.

CSE 693 Dissertation Research (1.0-24.0)
Prerequisite: Consent of advisor.

CSE 694 Special Topics in Computer Science & Engineering (1.0-6.0)
Prerequisite: Consent of advisor.

CSE 695 Seminar in Computer Science & Engineering (1.0)
Prerequisite: Consent of advisor.
Pass/Fail grading.

CSE 696 Independent Study in Computer Science & Engineering (1.0-6.0)
Prerequisite: Consent of advisor.

CSE 790 Special Topics in Computer Science & Engineering (1.0-6.0)
Devoted to advanced topics that are not treated in the general courses. Topics will be announced in the Schedule of Courses.

Electrical and Computer Engineering

ECE 500 Special Topics in Electrical Engineering (1.0-6.0)

ECE 503 Fundamentals of Engineering Examination Review (2.0)
Prerequisite: 4th Year Standing.
Review of topics covered on eight-hour NCEES Fundamentals of Engineering supplied-reference examination. Not to be counted towards meeting the requirements for a degree.

ECE 505 Graduate-Professional Project in Electrical Engineering (1.0-6.0)
Prerequisite: Approval of a faculty sponsor.

ECE 510 Computer Design (3.0)
Prerequisite: Logic Design (ECE 210) and assembly language experience as covered by Computer Interfacing (ECE/CECS 412), Introduction to Computer Science and Engineering (CECS 230), or experience acceptable to instructor.
Corequisite: ECE 511.
Note: Cross-listed with CECS 510.
Review of logic design and elementary computer organization. Design of the central processing unit, memory, control, and input-output portions of a computer. The VHDL hardware design language will be used.

ECE 511 Computer Design Laboratory (1.0)
Prerequisite: Logic Design (ECE 210).
Corequisite: ECE 510.
Experiments in the design of the central processing unit, memory, control, and input-output portions of a computer using VHDL for software simulation.

ECE 512 Electronics II (3.0)
Prerequisites: Electronics I (ECE 333) and Electronics I Laboratory (ECE 334).
Corequisite: ECE 513.
Design principles of linear discrete and integrated electronic circuits are developed. Topics include comprehensive treatment of op-amp circuits, wideband amplifiers, tuned circuits and oscillators, power amplifiers and IC power supply design. AM/FM modulation and demodulation techniques are covered.

ECE 513 Electronics II Laboratory (1.0)
Prerequisite: Electronics I Laboratory (ECE 334).
Corequisite: ECE 512.
Laboratory requirement for ECE 512.

ECE 514 Introduction to VLSI Systems Laboratory (1.0)
Prerequisite: Logic Design & Lab (ECE 210 and 211).
Corequisite: ECE 510/CECS 510 & ECE 515, or consent of instructor.
Design of logic circuits and subsystems using CAD tools: layout, verification, parameter extraction, circuit- and logic-level simulation.

ECE 515 Introduction to VLSI Systems (3.0)
Prerequisite: Logic Design (ECE 210).
Corequisite: ECE 510/CECS 510 and ECE 514, or consent of instructor.
MOS devices and circuits, electrical and logic design principles. Fabrication steps, design rules, electrical parameters, extraction, delays. Logic/switch arrays, dynamic precharge logic, precharge forms, finite state machines, registers, memories, subsystem design examples.

ECE 516 Microcomputer Design (4.0)
Prerequisite: Computer Interfacing (ECE/CECS 412) or consent of instructor.
Note: Cross-listed with CECS 525.
Design and construction of microcomputers with microprocessors and digital integrated circuits. Breadboarding, hardware design and software design are emphasized. The class is separated into groups and each group designs, breadboards and tests a complete microcomputer system including interfaces to peripheral devices.

ECE 518 Fundamentals of Computer Communications and Networks (3.0)
Prerequisite: Probability and Statistics for Engineers (IE 360), and Computer Interfacing (ECE 412).
Note: Cross-listed with CECS 516.
Data communications: The exchange of data between devices is covered. The key aspects of transmission interfacing, link control, and multiplexing are examined. Data communication networking: Examines the internal mechanisms by which communication networks provide a data transfer service for attached devices.

ECE 520 Digital Signal Processing (3.0)
Prerequisite: Signals & Linear Systems (ECE 420) and Active Network Design I (ECE 421).
Discrete time signals and systems; Discrete Fourier Transforms, FFT algorithms, flow graph and the matrix representation of digital filters; FIR and IIR filter design techniques; quantization effects; spectral estimation; current applications of digital signal processing.

ECE 521 Digital Signal Processing Laboratory (1.0)
Prerequisite: Signals & Linear Systems (ECE 420) and Active Network Design I Laboratory (ECE 422).
Focuses on the implementation of common digital signal processing functions using state-of-the-art DSP devices and software. Introduction to fundamentals of discrete-time signal processing and digital signal processor architectures and applications. Emphasis on laboratory experience involving generation of deterministic and random signals; digital filter design; quantization effects; FFT computation; linear system analysis; speech processing.

ECE 530 Introduction to Random Processes and Estimation Theory (3.0)
Prerequisites: Linear Algebra for Engineering (CEE 330), Probability and Statistics for Engineers (IE 360), and Signals and Linear Systems (ECE 420).
Introduction to the theory and applications of random processes, a nonmeasure-theoretic approach to the study of random variables, functions of random variables, least square estimation, convergence, stochastic representation, stationarity, ergodicity, Gaussian processes, Poisson processes, Markov chains, and random fields.

ECE 531 Electronic Circuit Design Laboratory (3.0)
Prerequisite: Electrical engineering majors only.
A laboratory course in which the student designs and constructs a variety of digital and analog circuits. Practical design considerations are emphasized.

ECE 533 Integrated Circuit Design (3.0)
Prerequisite: Electronics I (ECE 333) and Active Network Design I (ECE 421).
Corequisite: ECE 534.
Analysis and design of analog integrated circuits. Bipolar, JFET, and MOS-FET devices. The technology of IC fabrication. Transistor connections, current sources, active loads, and output stages. Integrated amplifier and MOS circuit design.

ECE 534 Integrated Circuit Design Laboratory (1.0)
Prerequisite: Electronics I (ECE 333) and Active Network Design I (ECE 421).
Corequisite: ECE 533.
Laboratory to illustrate design principles in ECE 533.

ECE 535 Instrumentation Electronics (3.0)
Prerequisite: Major in mechanical engineering, Introduction to Electrical Engineering (ECE 252).
Corequisite: ECE 536.
An introduction to analog and digital integrated circuits used in instrumentation systems. Operational amplifiers, digital integrated circuits, analog-to-digital and digital-to-analog converters are discussed. Microprocessors are introduced and their uses in data acquisition and instrumentation systems are described.

ECE 536 Instrumentation Electronics Laboratory (1.0)
Prerequisites: Major in Mechanical Engineering, ECE 252 Introduction to Electrical Engineering; Corequisite: ECE 535.
Weekly laboratory to accompany ECE 535.

ECE 540 Lasers and Electrooptical Systems (3.0)
Prerequisite: Numerical Methods for Engineering (CEE 307), Linear Algebra for Engineering (CEE 330), and ECE 569; or faculty consent.
Corequisite: ECE 541.
Review of basic electro-magnetics, ABCD law; higher order Gaussian beam modes. Optical resonators: interaction of radiation and atomic systems. Laser oscillation: three and four level systems. Non-linear optics: second-harmonic generation, parametric oscillation and electrooptic modulation, laser applications in information processing, computers and communications.

ECE 541 Engineering Optics Laboratory (1.0)
Prerequisite: Numerical Methods for Engineering (CEE 307), Linear Algebra for Engineering (CEE 330), and ECE 569; or faculty consent.
Corequisite: ECE 540 or ECE 545.
Computer-aided design-oriented series of fundamental optics experiments ranging from thin lens experiments, diffraction, interference, laser coherence and birefringence. Abbe theory.

ECE 542 Physical Electronics (3.0)
Prerequisite: Introductory Modern Physics (PHYS 300).
Semiconductor fundamentals, energy bands, carrier transport theory, continuity equations, PN junction diodes, Zener diodes, Schottky Barrier diodes, metal-semiconductor contacts, bipolar junction transistors, MOS capacitors, field effect transistors, microelectronic fabrication.

ECE 543 Fundamentals of Microfabrication and MEMS (3.0)
Prerequisites: Senior Standing.
Microfabrication techniques including cleanroom technology, lithography, thermal oxidation, diffusion, ion implantation, film deposition, etching, micromachining, wafer-level bonding/polishing, and packaging yield. Microtechnology measurement and analysis techniques. Process simulation. CAD device-layout. MEMS (microelectromechanical systems) and microelectric technology and applications. Material issues for MEMS/microelectronics.

ECE 544 Microfabrications/MEMS Laboratory (1.0)
Prerequisites/Co-requisite: ECE 543.
Laboratory to illustrate microfabrication processes, semiconductor measurement techniques, MEMS microstructure fabrication, and MEMS testing. Cleanroom activity required.

ECE 545 Optical Signal Processing (3.0)
Prerequisite: Signals & Linear Systems (ECE 420); or consent of instructor.
Scalar diffraction theory and equivalence to linear filtering. Fourier transform properties of lenses. The modulation transfer function.

ECE 550 Communications and Modulation (3.0)
Prerequisite: Signals & Linear Systems (ECE 420).
Corequisite: ECE 551
Modulations such as AM, FM, PAM, PPM, PDM, single sideband, vestigial sideband. Coherent and noncoherent detections, heterodyne action, performance and distortions, circuits for modulating and demodulating.

ECE 551 Communication Systems Laboratory (1.0)
Prerequisite: Signals & Linear Systems (ECE 420).
Corequisite: ECE 550.
Laboratory exercises involving the design and analysis of electronic communication systems for the transmission of analog and digital data at radio frequencies.

ECE 560 Control Systems Principles (3.0)
Prerequisite: Signals & Linear Systems (ECE 420).
Corequisite: ECE 561.
Basic concepts of linear control systems. Formulation of the linear control problem by classical and state space methods. Frequency response and time response analysis and synthesis techniques. Stability and system performance specifications.

ECE 561 Control Systems Laboratory (1.0)
Corequisite: ECE 560.
Laboratory exercises involving identification, analysis and design of closed-loop control systems.

ECE 569 Intermediate Electromagnetic Fields and Waves (3.0)
Prerequisite: Introduction to Electromagnetic Fields and Waves (ECE 473).
General curvilinear coordinates. Electromagnetic energy transmission. The wave equation, Poynting theorem and plane wave propagation in media. Transmission lines and impedance matching.

ECE 570 Microwave Engineering (3.0)
Prerequisite or Corequisite: ECE 569 and ECE 572.
Microwave generation, transmission, and detection. Unified approach to analysis of wave guiding systems. Design of microwave components, devices, and systems to realistic specifications. Hardware to be discussed includes passive components, ferrite components, resonators and filters, klystrons, magnetrons, traveling-wave tubes, microwave diodes, microwave transistors, and microwave integrated circuits.

ECE 571 Antennas (3.0)
Prerequisite or Corequisite: ECE 569.
Introduction to antenna radiation and reception. Radiating systems discussed include wire, aperture, reflector, lens, traveling-wave, log-periodic antennas, uniform and random-phased arrays, adaptive multibeam arrays, conformal arrays, and millimeter wave antennas. Introduction to antenna measurements, including impedance and radiation patterns. Introduction to numerical analysis of realistic radiating and scattering systems.

ECE 572 Microwave Engineering Laboratory (1.0)
Prerequisite or Corequisite: ECE 569, ECE 570, or consent of instructor.
Experiments at microwave frequencies dealing with Time Domain Reflectometer (TDR) techniques, mismatch loss and maximum power transfer; impedance, power pattern and polarization measurements of several basic antenna types; characteristics of wave propagation at normal incidence and oblique reflection.

ECE 581 Electromechanics (3.0)
Prerequisite: Introduction to Electromagnetic Fields and Waves (ECE 473).
B and H in ferromagnetic materials. Magnetic circuits. Transformers. Dynamic equations of magnetic systems. Operating principles and characteristics of d.c. motors and generators, universal motors, induction motors, synchronous motors.

ECE 582 Power System Analysis (3.0)
Prerequisite: Introduction to Electromagnetic Fields and Waves (ECE 473).
Three-phase circuits. Inductance and capacitance of transmission lines. Circuit models. Per-unit representation. Network methods. Load-flow studies. Load-flow control. Economic dispatch. Symmetrical three-phase faults.

ECE 593 Independent Study in Electrical Engineering (1.0-6.0)
Prerequisite: Approval of a faculty sponsor.

ECE 595 Graduate/Professional Seminar in Electrical & Computer Engineering (1.0)
The following courses of instruction offered by the Department of Electrical and Computer Engineering, Speed Scientific School, in conjunction with the Graduate School, are also available to students enrolled in the Professional School of Engineering-Division of Higher Studies, on approval.

ECE 600 Special Topics in Electrical & Computer Engineering (1.0-6.0)

ECE 602 Graduate Internship in Electrical and Computer Engineering (2.0)
Prerequisites: Student must be admitted for Graduate Study, and a sponsored member of the Graduate Intern Program.
Supervised professional experience in industry at the graduate level. This course provides the structure and focus for the graduate intern field assignment to ensure that the assignment is appropriate and consistent with the intern's graduate course of study and professional development. May be repeated for credit.

ECE 605 Graduate Project in Electrical & Computer Engineering (1.0-6.0)
Prerequisite: Approval of a faculty sponsor.

ECE 611 Computer Architecture (3.0)
Prerequisite: ECE 510/CECS 510.
Note: Cross-listed with CECS 611.
Classification of computer designs. PMS and ISP descriptions. Study of major systems of current and historical interest.

ECE 614 Artificial Neural Systems (3.0)
Foundations of learning machines and neural processing algorithms: supervised and unsupervised learning of feedforward and recurrent neural networks, perceptron layers, associative memories, feature maps. Applications in the areas of classification, control, and signal processing. Implementation issues.

ECE 616 VLSI Architectures (3.0)
Prerequisites: ECE 510, 515 or consent of instructor.
Design of data paths and processor arrays, testability, analog architectures. VLSI design project: design, implementation and fabrication.

ECE 617 Expert Systems Engineering (3.0)
Knowledge representation, production and decision support systems. Electrical engineering design project using LISP, PROLOG or expert systems shell.

ECE 618 Digital Image Processing (3.0)
Prerequisite: ECE 520, 521 or ECE 420 and faculty consent.
Corequisite: ECE 635.
Introduction to the theory and applications of 2-D signal and image processing: 2-D signals and systems analysis, 2-D sampling and quantization, 2-D signals and image transforms, 2-D FIR filter design; image formation; image enhancement; image restoration; image coding; image reconstruction from projections; image compression; color image processing; current applications.

ECE 619 Computer Vision (3.0)
Prerequisite: ECE 618.
Corequisite: ECE 645.
Introduction to the theory and applications of computer vision. Topics include: image representation, image segmentation, image analysis by mathematical morphology, texture, shape representation, shape analysis and 3D vision.

ECE 620 Pattern Recognition and Machine Intelligence (3.0)
Prerequisite: ECE 420, IE 360 or consent of instructor.
Corequisite: ECE 655.
Fundamentals of statistical, structural, and syntactic pattern recognition approaches. Parametric and nonparametric classification, feature extraction, clustering, and formal languages representation. Applications include: Data classification, character recognition, speech recognition, and target tracking.

ECE 621 Active Network Design II (3.0)
Prerequisite: Active Network Design I (ECE 421).
Corequisite: ECE 622.
A continuation of ECE 421. Filter, approximations and transformations, all-pass networks, phase equalization, composite op-amps, and time-domain properties of filters are among the topics considered. The course includes readings from the literature.

ECE 622 Active Network Design II Laboratory (1.0)
Prerequisite: Active Network Design I Laboratory (ECE 422).
Corequisite: ECE 621.
Laboratory to illustrate analysis and design principles.

ECE 625 State Space Theory of Linear Systems (3.0)
Prerequisite: Signals & Linear Systems (ECE 420).
Modern theory of linear systems with primary emphasis on the state-space formulation. Single-input single-output, multiple-input multiple-output, continuous, discrete, time-invariant, and time-varying systems are considered. Concepts of controllability, observability, canonical forms, state transition matrices, eigenvalues, eigenvectors, stability, and state observation.

ECE 630 Pulse and Digital Waveforms (3.0)
Prerequisite: Active Network Design I (ECE 421), or consent of instructor.
Corequisite: ECE 631.
Analysis and design of clippers, clampers, Schmitt triggers, precision rectifiers, peak detectors, monostables, astables, function generators, sine shapers, track-and-hold circuits, digital-to-analog and analog-to-digital converters, and current-mode circuits are among the topics discussed. The course emphasizes piecewise-linear analysis.

ECE 631 Pulse and Digital Laboratory (1.0)
Prerequisite: Active Network Design I Lab (ECE 422) or consent of instructor.
Corequisite: ECE 630.
Laboratory to illustrate analysis and design principles.

ECE 635 Digital Image Processing Laboratory (1.0)
Corequisites: ECE 618.
Laboratory experiments in hardware and software forms are assigned to test the concepts covered in ECE 618, Digital Image Processing. Projects include: digital image acquisition, transform analysis of digital images, image enhancement for display and printing, color image processing and image quality, image coding and compression, video processing, high definition television, networking and broadcasting, and image reconstruction from projects.

ECE 640 Introduction to Biomedical Engineering (3.0)
Prerequisite: Signals & Linear Systems (ECE 420).
Engineering modeling and simulation of biological systems, quantitative physiology of the cardiovascular, pulmonary, and circulation systems, fundamentals of biomechanics and human-machine interface, basics of medical instrumentation design, and artificial organs. Practical applications include biopotential amplifiers design, biological signal processing, and medical imaging.

ECE 641 Introduction to Medical Imaging (3.0)
Prerequisites: ECE 520 or equivalent.
Note: Crosslisted with CECS 641.
Focuses on the foundation of modern medical imaging. Mathematics, hardware and software issues of modern medical imaging are covered. Topics include: Optical image formation, MRI, CT, Ultrasound, and PET. Bioinstrumentation for EKG, EEG, and EMG will also be covered in the context of biomedical signal processing. Topics also include computer-assisted interventions, multimodality imaging, volume visualization, surface registration and geometric modeling.

ECE 642 Fiber Optics and Integrated Optical Systems (3.0)
Prerequisite: Numerical Methods for Engineering (CEE 307), Linear Algebra for Engineering (CEE 330), and ECE 569; or consent of instructor.
Propagation of electromagnetic waves in dielectric media. Phase and group velocity: Eikonal equation. Ray and wave theory of uniform and graded index planar and channel optical waveguides and optical fibers. Design and fabrication techniques for waveguides and integrated optical devices. Semiconductor laser and modulator design.

ECE 643 Introduction to Biomedical Computing (3.0)
Prerequisites: Graduate Standing.
Note: Crosslisted with CECS 643.
Covers various aspects of modern tools of biocomputing in its broad sense; hardware and software issues are covered. Topics include: Super and high performance computer architecture, high bandwidth networking, wireless computing, visualization, and software engineering in medicine. Topics also include computer-assisted interventions, imaging, parallel programming, and database design and query, as applied to life, medical and biomedical sciences.

ECE 645 Computer Vision Laboratory (1.0)
Prerequisites: ECE 618.
Corequisites: ECE 619.
Laboratory experiments in hardware and software forms are assigned to test the concepts covered in ECE 619, Computer Vision. Projects include: Image formation and camera calibration, stereo vision, 3D object reconstruction from the sequence of images, active vision applications, surface registration, and motion estimation.

ECE 646 Optical Computer Architectures (3.0)
Prerequisite: Consent of instructor.
Focuses on the assessment of optoelectronic technology to enhance the performance of future computers. General consideration is given to the feasibility of all-optical supercomputers in the future and how electro-optical technology can support nearer term computing needs. Current research avenues and specific implementations of computing components are studied in detail.

ECE 647 Fundamentals of Optoelectronics and Photonics (3.0)
Prerequisite: Consent of instructor.
Introduction to fundamental properties, components, and theories used to build optical systems for broad bandwidth telecommunications, computing, sensing and information processing.

ECE 650 Statistical Theory of Communication (3.0)
Prerequisite: Probability & Statistics for Engineers (IE 360) and ECE 550.
Analysis and design of linear and nonlinear systems of engineering interest that are forced by random noise and/or noise-like signals. Random processes, correlation functions, spectral density, optimum linear systems. Applications in control systems engineering and radio communications engineering, including radar, sonar, signal design, and weak signal detection in the presence of noise.

ECE 651 Communication System Design (3.0)
Prerequisite: ECE 550.
Emphasis on the systems approach to digital communication systems design. Topics include communication link analysis, channel coding, modulation and coding trade-offs, synchronization, spread spectrum techniques, and data encryption and decryption.

ECE 652 Information Theory and Coding (3.0)
Prerequisite: ECE 550.
Information theory, capacity, and measures of information; fixed and variable length block encoding, data compression; state transition and Markov source models for communication channels and methods of achieving maximum capacity; topics in abstract algebra including groups, rings and fields; block error correction codes such as Hamming codes, cyclic codes, BCH codes, Reed Soloman codes; convolutional codes and Viterbi decoding algorithm.

ECE 655 Pattern Recognition and Machine Intelligence Laboratory (1.0)
Corequisite: ECE 620.
Laboratory experiments in hardware and software forms are assigned to test concepts covered in ECE 620, Pattern Recognition and Machine Intelligence. Projects include: Stochastic simulation, design of Bayesian classifiers, clustering, hyperspectral classifiers, digital train mapping, automatic target recognition, and biomedical applications.

ECE 661 Sampled-Data Control Systems (3.0)
Prerequisite: ECE 560.
Analysis and synthesis of closed-loop sampled-data control systems using Z-transforms and state-space methods. Sampling and data reconstruction. Modified Z-transform. Time response and steady state accuracy. Stability analysis. Lag, lead, and PID controllers. Pole assignment. State estimation. Discrete optimal control.

ECE 662 Introduction to Optimum Control (3.0)
Prerequisite: ECE 560.
Calculus of variations, dynamic programming, the minimum principle, and numerical optimization techniques applied to discrete-time and continuous-time deterministic control systems.

ECE 664 Modern Adaptive Control (3.0)
Prerequisite: ECE 560 and 625.
Methods of modern adaptive control, including the indirect and direct approaches. Discrete- and continuous-time controllers. Behavior of controllers under nonideal conditions, including stochastic disturbances and unmodeled dynamics.

ECE 665 Theory of Nonlinear Systems (3.0)
Prerequisite: ECE 625.
Modern theory of nonlinear systems including phase plane analysis, Lyapunov stability theory, perturbation theory, singular perturbations, describing functions, Lure problem, Popov circle criterion. Applications to closed-loop control systems.

ECE 667 Fuzzy Control (3.0)
Prerequisites: ECE 560 and ECE 561.
Fuzzy system basics including fuzzy set theory, fuzzification, inference, defuzzification. Programming fuzzy systems. Fuzzy control approaches. Fuzzy systems identification and rule base construction from data. Adaptive fuzzy control using both direct and indirect approaches.

ECE 670 Advanced Electromagnetic Theory (3.0)
Prerequisite: ECE 569.
General curvilinear coordinates. Applications of Maxwell's equations. Boundary conditions. Uniform and nonuniform transmission lines. Scalar and vector potentials. Dielectric and magnetic properties of matter. Complete and partial wave polarization. Interaction of waves and matter. Reflection and refraction of waves at boundaries. Wave propagation in anisotropic media. Energy and momentum of electromagnetic waves.

ECE 681 Solid-State Motor Controls (3.0)
Prerequisite or corequisite: ECE 581.
Electrical and mechanical input-output characteristics of various d.c. and a.c. motors as related to mechanical control by electrical inputs. Applications of solid-state devices (SCR's, SCS's, Triacs, etc.) in trigger, control, and protective circuits for motors.

ECE 682 Advanced Power System Analysis (3.0)
Prerequisite: ECE 582.
Symmetrical components. Unsymmetrical faults. Power system stability. Power system protection. Computer methods.

ECE 690 M.S. Thesis in Electrical Engineering (1.0-6.0)
Experimental and/or theoretical research to be presented in thesis for degree requirement.

ECE 693 Independent Study in Electrical & Computer Engineering (1.0-6.0)
Prerequisite: Approval of a faculty sponsor.

ECE 695 Graduate Seminar in Electrical and Computer Engineering (1.0)

ECE 697 Master of Engineering Thesis in Electrical Engineering (1.0-8.0)
Prerequisite: ECE 496 and Graduate/Professional standing.
A candidate for the Master of Engineering degree may satisfy this requirement by producing a written thesis to be presented and defended orally before a faculty committee for approval.

ECE 698 Master of Engineering Paper in Electrical Engineering (1.0-8.0)
Prerequisites: ECE 496 and Graduate/Professional standing.
A candidate for the Master of Engineering degree may satisfy this requirement by producing a written technical paper to be presented and defended orally before a faculty committee for approval. The paper must also be submitted to a refereed conference or refereed journal for potential publication.

ECE 700 Dissertation Research in Electrical Engineering (1.0-18.0)
Prerequisites: Completion of doctoral core program and consent of dissertation director.
Original research activity in an appropriate electrical engineering discipline, under the direction of an Electrical and Computer Engineering graduate faculty member.

Economics

ECON 500 Foundations of Economics (3.0)
Prerequisites: Consent of instructor.
Note: Crosslisted with PLAN 500.
Survey of supply and demand analysis, cost and production, and price determination in different market organizations. Analysis of GOP, unemployment, inflation, and economic growth.

ECON 600 Managerial Economics (3.0)
Prerequisites: Econ 500.
The understanding and application of economic theory to the problems of the business enterprise. The use of economic concepts for managerial decision making. Demand theory, market structures, pricing, government regulations, international competitiveness, and economic analysis of current business trends and changing technologies are among the topics covered.

ECON 605 Urban Economics (3.0)
Prerequisites: PLAN 500, ECON 500, or consent of instructor.
Note: Crosslisted with PADM 640, UPA 603, and PLAN 603.
Application of economic theory to urban policy issues including metropolitan development and job creation, poverty, crime, transportation, environment, spatial structure, and other issues.

ECON 620 Economic Conditions and Forecasting (3.0)
Prerequisites: ECON 600 or ECON 605/UPA 603/PLAN 603/PADM 640.
Note: Crosslisted with PLAN 628 and UPA 624.
Develops quantitative tools for the analysis and forecasting of economic phenomena. Both structural and time series models are presented. Basic econometric methods are used to fit models and evaluate their forecasting properties.

ECON 640 Public Finance (3.0)
Prerequisite: ECON 500.
Note: Cross-listed with UPA 646.
The theories and principles of taxation, the economic impact of different taxes, the public debt, and fiscal policy are discussed. Taxation of the business firm is also discussed.

ECON 644 Health Economics (3.0)
Examines health care issues by applying microeconomic theory. Particular emphasis on health insurance, managed care, health care production, and physician services.

ECON 650 Macroeconomic Theory (3.0)
Prerequisite: ECON 500 and elementary calculus.
Note: Cross-listed with UPA 625.
Aggregate income and employment theory. Classical and Keynesian models; monetary and fiscal policy; the theory of growth and cycles.

ECON 660 Microeconomic Theory (3.0)
Prerequisites: ECON 500/PLAN 500.
Note: Crosslisted with UPA 628.
A thorough examination of the theory of household and firm. Determination of price under different market structures.

ECON 670 International Economy (3.0)
A Discussion of current problems of international trade and finance and their effects upon the national economy and the firm. Particular stress is placed upon the role of private capital in the developed and the developing economies.

ECON 680 Special Topics in Economics (1.0-6.0)
An advanced study of one or more selected topics or issues related to the study of Economics.

ECON 698 Research Seminar in Economics (1.0-3.0)
Prerequisite: One 600-level economics course and permission of the departmental chair.

Educational and Counseling Psychology

ECPY 501 Independent Study in Educational Psychology (1.0-3.0)
To be arranged with the dean.

ECPY 502 Independent Study in Educational Psychology (1.0-3.0)
Refer to: ECPY 501

ECPY 507 Learning Theory and Human Growth and Development (3.0)
Basic principles of learning theory and human development. Included are the major theories of learning including behaviorism, cognitive, and cultural historical activity theory along with physical, social, cognitive, emotional, language, and cultural development as they apply to children and youth including those with special needs.

ECPY 512 Learning and Cognition in Education (3.0)
Prerequisite: Consent of instructor.
A survey of major theoretical models in the area of cognition and learning. Emphasis upon applications of theory in the classroom and in counseling. Implications are drawn from several models and contrasted in the context of the individual student's readiness, motivation and aptitude.

ECPY 513 Individual Differences in Education (3.0)
Prerequisite: Consent of instructor.
A survey of individual differences in socio-cognitive and personality areas of development based upon current literature. Ways to meet individual and group needs in educational settings; interpretation of individual differences for effective classroom instruction.

ECPY 525 Topical Studies in Educational Psychology I (1.0-3.0)
Prerequisite: Consent of instructor.
Investigation of current concerns and issues in educational psychology.

ECPY 526 Topical Studies in Educational Psychology II (1.0-3.0)
Refer to: ECPY 525

ECPY 527 Workshop in Educational Psychology I (1.0-4.0)
Prerequisite: Consent of instructor.
Topical workshop on educational psychology concerns.

ECPY 528 Workshop in Educational Psychology II (1.0-4.0)
Refer to: ECPY 527

ECPY 540 Evaluation and Measurement in Education (3.0)
Intended to acquaint the student with evaluation and measurement in education and counseling. Two types of evaluative instruments are studied: the teacher's own tests and evaluation devices, and standardized tests.

ECPY 596 Seminar in Guidance (1.0-4.0)
Prerequisite: Majors are urged to take seminars prior to or concurrent with practicum.
The investigation of special problems in counseling.

ECPY 597 Seminar in Guidance (1.0-4.0)
Refer to: ECPY 596

ECPY 600 Introduction to Counseling and Psychotherapy (3.0)
Information and skills necessary for beginning the practice of counseling and psychotherapy. Course introduces ethics, professional issues, service settings and basic counseling skills. Course is designed as a laboratory course. 2/3 of course is lecture and 1/3 of course is lab.

ECPY 605 Human Development (3.0)
Survey of the principles of development from conception to adulthood, emphasizing biological, environmental, and cultural factors affecting development.

ECPY 607 Learning Theory and Human Growth and Development (3.0)
Basic principles of learning theory and human development. Included are the major theories of learning including behaviorism, cognitive, and cultural historical activity theory along with physical, social, cognitive, emotional, language, and cultural development as the apply to children and youth including those with special needs.

ECPY 611 Learning Systems: Theory and Practice (3.0)
Major theoretical models in the area of instruction and learning; application of theories in everyday learning situations in the classroom and in counseling, with special attention to behavior modification and programmed instruction. Implications drawn from several models are contrasted in the context of the individual student's characteristics.

ECPY 619 Theories of Counseling & Psychotherapy (3.0)
The study of major theoretical positions in counseling and psychotherapy; implications for research and practice.

ECPY 620 Classroom Based Guidance/Counseling (3.0)
An introductory survey of counseling principles, procedures, functions, and techniques, with emphasis on classroom application. To be given in the interdisciplinary context of an effective program.

ECPY 621 Differential Diagnosis and Treatment in Counseling (3.0)
Prerequisite: Consent of instructor for non-majors.
Diagnostic procedures and differential treatment strategies for use by counselors and others in the helping professions.

ECPY 624 Organization and Administration of Secondary School Counseling (3.0)
Prerequisite: ECPY 521
Organization and administration of a counseling program in the secondary school. Patterns for implementation of the services of: counseling, testing, consultation, information and placement.

ECPY 625 Elementary School Counseling (3.0)
Prerequisite: ECPY 512 and ECPY 521.
Organizational overview of elementary school counseling; career development in middle childhood; the role and function of the elementary school counselor. Study and application of counseling and consulting techniques appropriate to the elementary school setting.

ECPY 626 Consultation (3.0)
Prerequisite: 8 hours in guidance.
Provides school counselors, certified professional counselors, psychologists, and other with mental health professionals with models and techniques for consulting across organizations, communities, families, parents, and teachers, especially in an urban setting.

ECPY 628 Theories and Techniques of Counseling Children (3.0)
Prerequisites: ECPY 521, 651. Non-majors must have consent of instructor.
Intensive study of counseling theories and techniques with children. Prepares students for counseling practice with children.

ECPY 629 Theories and Techniques of Counseling and Psychotherapy (3.0)
Prerequisite: ECPY 600 or 660.
School counseling students should take ECPY 629 after completion of Rank II courses.
Focuses on methods and techniques of counseling. Theory and research will be studied including training in current professional practice and empirically supported approaches to therapy with an emphasis on cognitive, behavioral and affective theory.

ECPY 631 Adolescence (3.0)
Prerequisite: Human Development & Learning (ECPY 305) or Introduction to Psychology (PSYC 201).
Examination of current socio-psychological research on developmental patterns associated with puberty, identity, cognition, and socio-emotional growth. Analysis of various theoretical models

ECPY 632 Clinical Art Therapy I: Theories (3.0)
Prerequisite: Admission to the program.
Overview of history and theoretical approaches in art therapy. Emphasis on the ETC, MDV, defense mechanisms, graphic development, and life span clinical issues as they interface with managed care and performance indicators. Cultural issues related to the clinical context will be explored.

ECPY 633 Clinical Art Therapy II: Assessment and Practice (3.0)
Prerequisite: Admission to the program.
Fundamentals of graphic analysis, the indicators of various psychopathologies, and the application of interventions in treatment (according to DSM IV). Practice in interpretation of drawings and case discussion.

ECPY 634 Family Systems Process (3.0)
Prerequisite: Permission of major advisor.
Content will cover family life cycle development, healthy family functioning, life cycle issues of the divorced and blended family and an introduction to assessment indicators.

ECPY 635 Family Assessment Concepts (3.0)
Prerequisite: FMTH 600/ET 640
Focuses on theoretical concepts from the major theories of family systems therapy with an emphassis on assessment and treatment planning. Therapist skills in assessment interviewing will be discussed and simulated.

ECPY 636 Family Assessment Practice (3.0)
Prerequisites: FMTH 600/ECPY 634/ET 640; FMTH 601/ ECPY 635/ ET 641; and concurrent with second semester of practicum in major program.
Provides clinical supervision of family assessment and consultation skills for practicum based students. Emphasis placed on engagement and problem identification.

ECPY 637 Expressive Techniques in Psychotherapy (3.0)
Prerequisite: Consent of instructor.
Teaches theory and techniques from various expressive modalities including relaxation, guided imagery, play, dance/movement, focusing, music drama, poetry, contour drawing, and problem-focused art therapy.

ECPY 638 Group Art Therapy Techniques (3.0)
Prerequisite: Consent of instructor.
Foundations in group dynamics and group therapy through expressive art techniques; experiential therapy basis will be used.

ECPY 640 Assessment Methods for Counselors (3.0)
Prerequisite: ECPY 540.
Study of the individual for counseling purposes. Cover three areas: (a) what constitutes significant data concerning the individual and his/her environment; (b) the procedures followed to obtain these data; and (c) how the counselor may use these data in the counseling process.

ECPY 641 Applied Methods in Art Therapy (3.0)
Studio-lab in the practical application of expressive and therapeutic techniques, role playing, and symbolic awareness.

ECPY 642 Symbols of Self-Actualization (3.0)
Prerequisite: Consent of instructor.
Study of symbols encountered in the development of self in art, mythology, and psychology. Emphasis on archetypal ego symbolism and symbols of transformation and their exploration through art expression.

ECPY 643 Field Studies in Art Therapy (3.0)
Prerequisite: Admission to the program.
Provides students with opportunities to visit and evaluate practicum sites. Students will analyze skills necessary for art therapy field work at various practicum sites, and will assess their interests and skill level for various practicum opportunities.

ECPY 645 Gender, Sexuality and Sexual Abuse Issues in Therapy (3.0)
Prerequisite: Consent of instructor.
Gender, sexuality, and sexual abuse issues are presented from the viewpoint of consumers' mental health treatment. Emphasis placed on understanding the contribution of environment and individual experience to current mental health functioning, proper methods of intervention and the process of change. A systems/developmental approach is employed.

ECPY 648 Psychological Assessment I (3.0)
Prerequisite: ECPY 540.
The first of a two-course sequence, ECPY 648-649, that explores theory and applications of individual psychological assessment. Explores the theory of intelligence, neuro-psychological assessment, abilities measures, the ethical, professional, and legal issues of testing in different settings.

ECPY 649 Psychological Assessment II (3.0)
Prerequisite: ECPY/EDSP 648.
The second of a course sequence that explores theory and applications of individual psychological assessment. Explores theory and application of tests and social-emotional functioning, development, personality assessment, the ethical, professional, and legal issues of testing in different settings.

ECPY 650 Group Process and Practice (3.0)
Study of group processes and procedures which are applicable to counseling. Method of instruction is lecture and participation in a group. Pass-Fail grading.

ECPY 651 Group Procedures With Children (3.0)
Prerequisite: Admission to graduate counselor education or consent of instructor.
Process and practice of group guidance and group counseling with children.

ECPY 652 Multicultural Practicum in Art Therapy (3.0)
Prerequisites: ECPY 655 Art for Children with Special Needs.
Students participate in a study abroad service learning travel experience in which they design and implement a summer intensive program for children with multiple disabilities outside of mainland United States. The students are responsible for adapting the activities, art materials, and environment to meet the needs of the participants.

ECPY 653 Grief and Medical Counseling in Art Therapy (3.0)
Provide students with familiarity with utilizing art therapy with grieving and medical populations. Purpose of the course is to provide an overview of the current use of art therapy with grief issues and medical populations as well as to review current theoretical models of treatment.

ECPY 655 Art for Children with Special Needs (3.0)
Focuses on children's emotional needs and the role expressive experiences play in meeting these emotional needs.

ECPY 660 Introduction to Student Personnel Work (3.0)
A general introduction to the historical, organizational, administrative, and practical areas of student personnel work in higher education. Bases for these areas will be discussed, with the goals and objectives of student personnel work in view.

ECPY 661 Theories of College Student Development (3.0)
Examines and explores the major theories of student development. Discussion will be centered on the application of theories to the different types of student groups found on college campuses.

ECPY 662 Student Affairs Programs, Policies, and Practices (3.0)
Prerequisite: ECPY 660.
Review of functions of student affairs areas in higher education, how they are administered and what is considered good practice in those areas. Includes housing, counseling center, career planning, financial aid, admission, registration, student activities, student unions, student health and other selected areas.

ECPY 663 Multicultural Issues (3.0)
Emphasis will be placed on developing effective communication skills in multicultural settings. Focus will also be directed toward various psycho-social factors of different cultural and ethnic groups. The influence of these variables on the helping relationship will be explored.

ECPY 664 College Student Sub-Cultures (3.0)
Prerequisite: ECPY 660.
Overview of various student sub-cultures and professional approaches to development of the students within each culture.

ECPY 670 Career Development and Counseling (3.0)
A study of career development across the life span. Includes a study of the methods and techniques useful for assisting career and life-style choices. Students will be introduced to current technology available for working with elementary, secondary, and post-secondary students, as well as with adult populations.

ECPY 671 Psychology of Career Development (3.0)
Prerequisite: ECPY 570/670.
Advanced study of current research and theories of career counseling and career-related assessment.

ECPY 680 Practicum in Counseling (1.0-8.0)
Prerequisite: ECPY 521 or 660; ECPY 629, 640, 650, and 570 or 625 (570 or 625 may be taken concurrently).
Student must make application in advance of actual enrollment (by March 1 for Fall term and October 1 for Spring term). Supervised experience in counseling and other activities. Counseling interviews, recorded on audio or videotape, are critically analyzed with emphasis upon the counselor.

ECPY 681 Internship in College Student Personnel Services (3.0)
The internship in student personnel is designed to provide students with the opportunity to integrate cognitive learning with practical experiences in the area of student personnel services.

ECPY 682 Internship in Mental Health Counseling (3.0)
Prerequisites: Two semesters of ECPY 680: Practicum in Mental Health Counseling and proof of student malpractice insurance.
Provides experience in mental health couseling under the direct supervision of a licensed mental health counselor at a field placement site approved ny the ECPY department prior to enrollment.

ECPY 683 Internship in Counseling Psychology (1.0-3.0)
Prerequisite: Two semesters of graduate practicum (ECPY 649 or ECPY 680).
Provides experience in applied counseling psychology under the direct supervision of a licensed psychologist.

ECPY 684 Internship in School Counseling (3.0)
Prerequisite: ECPY 680.
Provides experience in school counseling under the supervision of a Certified School Counselor. Six hundred hours of service are required and can be achieved either in one semester by serving 40 hours per week in a K-12 school setting or over several semesters by serving at least 300 hours in a school setting and the remaining hours in a setting serving K-12 school-aged children.

ECPY 690 Counselor Supervision (3.0)
Prerequisite: M.S. in counseling or related field, or consent of instructor for non-majors.
Supervision training from selected supervision models.

ECPY 694 Graduate Seminar in Educational and Counseling Psychology (3.0)
Prerequisite: Consent of instructor.
Covers current issues in counseling and psychology. Course may be repeated.

ECPY 695 Capstone Seminar in College Personnel Work (3.0)
Prerequisite: 30 hours in master's program.
Examines various topical areas in the field of student affairs in today's university setting. Emphasis on synthesis of topical material covered in other courses in the curriculum. Primary focus will be the integration of the practical application in conjunct with developmental theory models.

ECPY 696 Independent Study in Guidance (1.0-3.0)
By arrangement with dean and advisor.

ECPY 697 Topical Seminar in College Student Personnel Services (3.0)
Selected topics such as legal problems, housing, and financial aid, determined by student needs and interests.

ECPY 698 Supervised Readings (1.0-3.0)
By arrangement with advisor and dean.

ECPY 699 Thesis or Professional Paper (3.0-6.0)
Prerequisite: EDFD 600 or equivalent; consent of advisor and dean.

ECPY 700 Supervised Research in Counseling Psychology (1.0-6.0)
Prerequisites: Admission to doctoral program in counseling psychology.
An intensive research apprenticeship with a faculty member. Students assist in formulating research hypotheses, articulating the research design, developing the research method, making arrangements to conduct the study, entering and analyzing the data, and writing up the findings for publication.

ECPY 705 Adult Development Theories (3.0)
Prerequisite: Consent of instructor.
A seminar examining physical, psychological, and social changes that occur during adulthood and how those changes affect learning.

ECPY 710 Social Ecology & Social Behavior (3.0)
Prerequisites: Doctoral student status or permission of instructor.
The development of culture and the effects of social systems on individual and group behavior including the development and interaction of social systems with individual psychology, biological constraints on social behavior, and the effects of the interaction of different social systems.

ECPY 721 Advanced Counseling Seminar (1.0-8.0)
Prerequisite: Consent of instructor.
The topic of this seminar will vary from semester to semester. Written notice of the topic will be given prior to its being offered. The topics will be determined by the instructor, and will be of current interest in the field.

ECPY 722 Advanced Theories of Counseling and Psychotherapy (3.0)
Prerequisite: Master's degree in guidance and counseling or its equivalent and consent of instructor for non-majors.
Covers advanced training in a specific area of counseling and psychotherapy. Topics will be determined by department faculty. Course may be repeated.

ECPY 730 Social, Legal & Ethical Issues in Counseling (3.0)
Examination of current social developments that relate to counseling. Legal perspectives relevant to practice and principles of ethical practice in counseling.

ECPY 750 Group Counseling, Advanced Theory and Practice (3.0)
Prerequisite: ECPY 650, master's degree in counseling and consent of instructor for non-majors.
An examination of research theory and relevant literature for application to counseling in groups. Experience and practice are an essential part of the course.

ECPY 761 Program Development & Evaluation in Student Affairs (3.0)
Prerequisite: Consent of instructor.
Methodologies of developing student affairs programs. Needs assessment through summative evaluations.

ECPY 762 Training of College Student Personnel Paraprofessionals (3.0)
Prerequisite: ECPY 629, ECPY 650, EDAD 682.
Basic training program for paraprofessionals who work in such traditional settings as residence halls, tutorials, peer advisors and counselors, orientation leaders, other positions where students are providing direct service to other students. Includes experience in a supervised laboratory setting.

ECPY 763 Services for Adult and Commuting Students (3.0)
Prerequisite: ECPY 661.
Examines the needs of adult and commuting students in post-secondary institutions, how those needs differ from those of residential students and address means of accommodating those needs.

ECPY 775 Biological Bases of Behavior (3.0)
Prerequisites: ECPY 621 or consent of instructor.
The study of biological bases for behavior including physiological and neurological structure, medical procedures, trauma, psychotropic and illicit and licit drugs.

ECPY 780 Advanced Practicum in Counseling (1.0-9.0)
Prerequisite: Master's degree or its equivalent in counseling or student personnel work, including a previous practicum. Consent of instructor for non-majors. Student must make application for this course in advance of actual enrollment (e.g., a student wishing to take practicum during the summer should apply the preceding fall term).
Supervised experience in counseling and/or student personnel work.

ECPY 781 Field Study in Counseling (1.0-9.0)
Prerequisite: Admission to post-masters programs.
Field observation or experience.

ECPY 782 Doctoral Internship (3.0-6.0)
Prerequisite: Doctoral students in counseling and student personnel or consent of instructor.
Provides on-the-job supervised learning experience for doctoral students in counseling and student personnel. A prospectus describing in concise detail the internship duties must be submitted the semester before the internship begins. May be repeated for up to 12 semester hours of credit.

ECPY 793 Doctoral Seminar in Counseling and Student Personnel (3.0)
Prerequisite: Doctoral students in counseling and student personnel or consent of instructor.
Analysis of current issues and research in the field of counseling.

ECPY 794 Doctoral Seminar in Counseling and Student Personnel (3.0)
Refer to: ECPY 793

ECPY 795 Doctoral Research (1.0-15.0)
Prerequisites: Completion of coursework for Ed.D program or successful completion of comprehensive examinations.
Note: Crosslisted with EDSP, EDAD, EDSD, EDEM, EDFD, EDTD 795.
Doctoral students must register for the course by using the departmental prefix, corresponding to their dissertation chair.

ECPY 796 Research Literature (1.0-6.0)
For advanced graduate students only. Consent of instructor and department chair required.

ECPY 798 Field Study (2.0)
For Ed.S. candidates only.

ECPY 799 Professional Paper (1.0-5.0)
For Ed.S. candidates only.
To provide course credit for the Ed.S. candidate in completing the required independent professional project.

Administration and Higher Education

EDAD 796 Research Literature (1.0-6.0)
For Ed.S. candidates only.
Culminating paper for specialist in education degree. By arrangement with advisor.

Early and Middle Childhood Education

EDEM 501 Independent Study in Early and Middle Childhood Education (1.0-3.0)
To be arranged with the dean.

EDEM 502 Independent Study in Early and Middle Childhood Education (1.0-3.0)
Refer to: EDEM 501

EDEM 511 Reading and Writing in Content Areas (3.0)
Prerequisite: 12 hours in education or psychology, or consent of instructor.
Note: Cross-listed with EDSD 511.
A comparison of the developmental and remedial reader at the middle and secondary levels, with emphasis on developing instructional strategies, materials, and programs in middle and secondary content areas.

EDEM 540 Teaching Adolescent Readers (3.0)
Note: Cross-listed with EDSD 540.
Examines active reading processes, instructional strategies, and appropriate adolescent literature for teaching both the developmental and the remedial reader in secondary language arts.

EDEM 581 Teaching for Talent Development (3.0)
Classroom and school-level approaches to identifying, nurturing, and further developing a variety of talents in all children, including but not limited to the areas of intellectual, academic, creative, visual/performing arts, and leadership talent.

EDEM 582 Teaching Gifted Students in the Regular Classroom (3.0)
Introduction to the nature and needs of gifted, talented, and creative children in K-12 classrooms, ways to meet these needs, and ways to increase gifted behaviors in a greater number of children than those already identified.

EDEM 590 Teacher Institute on African-American Issues (3.0)
Note: Cross-listed with EDSD 590 and PAS 529.
An introduction to Pan-African Studies focusing on multicultural educational strategies for public school educators.

EDEM 591 Survey of African History and Culture for Teachers (3.0)
Note: Cross-listed with EDSD 591 and PAS 530.
An intensive survey of the history and culture of Africa (to 1600) for teachers.

EDEM 592 Survey of African-American History and Culture for Teachers (3.0)
Note: Cross-listed with EDSD 592 and PAS 531.
An intensive survey of the history and culture of African-Americans for teachers.

EDEM 596 Seminar in Elementary Education (1.0-4.0)
The investigation of special problems in education.

EDEM 597 Seminar in Elementary Education (1.0-4.0)
Refer to: EDEM 596

EDEM 602 Elementary School Curriculum (3.0)
An analysis of theoretical foundations of curriculum, contemporary curriculum projects, curriculum evaluation, and strategies for constructing and implementing curriculum.

EDEM 603 The Foxfire Approach to Teaching (3.0)
Note: Cross-listed with EDSD 603.
Provides a thorough working knowledge of philosophy and pedagogy found in the Foxfire approach, a learner-centered approach to classrooms. Prepares teachers at all levels to articulate, accept as valuable, and begin to develop the skills necessary to

implement the eleven core practices of the Foxfire approach. Designed for teachers of children grades K-12.

EDEM 604 Special Problems or Field Experience in Curriculum Development (1.0-6.0)
Intensive study in a current problem in an area of curriculum development or curriculum construction.

EDEM 605 Action Research for Classroom Teachers (3.0)
Note: Cross-listed with EDSD 635.
Involves teachers in identifying questions about their own teaching and classroom situations, developing research methods appropriate for addressing those questions, and conducting a classroom-based study. Pass/Fail only.

EDEM 608 Integrated Thematic Units (3.0)
Enables participants to design units integrating several disciplines around an appropriate theme in ways that are appropriate for a diverse group of students.

EDEM 609 Advanced Middle Grades Curriculum (3.0)
Prerequisite: EDEM 607 or EDUC 504 or consent of instructor.
An advanced examination of curriculum appropriate for the middle school, including integrated, affective, exploratory, differentiated, and authentic curriculum and assessment.

EDEM 610 Literacy Research & Theory (3.0)
Prerequisite: 12 hours in education, to include one introductory course in the teaching of reading.
An advanced course in reading instruction providing an intensive analysis of current research in the theories and strategies of teaching in the elementary and middle school.

EDEM 614 Supporting Struggling Readers and Writers K-12 (3.0)
Prerequisites: One basic course on the teaching of reading and writing.
Addresses the needs of teachers who work with students who have not learned to be fluent, eager and effective readers and writers. Focuses development of literacy concepts that define, support, keep flexible literacy skills.

EDEM 615 Measurement and Evaluation in Literacy (3.0)
Prerequisite: EDEM 610.
An introduction to diagnostic concepts in reading, with an emphasis on screening instruments, materials, and tutoring procedures.

EDEM 616 Advanced Clinical Procedures in Literacy (3.0)
Prerequisite: EDEM 615 or consent of the instructor.
Testing and evaluation of severely disabled readers in a clinical situation, with an emphasis on test interpretation and prescriptive case-study writing.

EDEM 617 Supervision of Literacy Programs (3.0)
Prerequisite: EDEM 616 or consent of the instructor.
Management and supervision of a reading clinic with an emphasis on interdisciplinary clinical staffing and parent involvement.

EDEM 618 Practicum in Literacy (3.0)
Prerequisite: EDEM 616 or equivalent, or consent of instructor.
Supervised internship providing for analysis and refinement of assessment and instruction practices in reading. Settings determined with pupil consultation.

EDEM 619 Environmental Education Institute: The Study of Rural and Urban Watersheds (3.0)
Note: Cross-listed with EDSD 619.
Using a watershed as the focus, this course will examine the impact people have on the environment. Through field trips, community speakers, individual and group research, the students will document the aesthetic, cultural and ecological aspects of a watershed. Participants in the course will be able to use the approach modeled in the course with their students on any watershed.

EDEM 620 Introduction to Teaching Elementary Mathematics Education (3.0)
An investigation of trends, learning theories, instructional activities, and manipulative materials applicable to mathematics education in the elementary school.

EDEM 621 Advanced Methods for Teaching Elementary Mathematics (3.0)
Prerequisite: A course in teaching elementary mathematics.
An advanced course investigating trends, learning theories, instructional activities, and manipulative materials applicable to mathematics education in the elementary school.

EDEM 622 Assessment and Instruction in Mathematics Education (3.0)
Prerequisite: EDEM 620 or 621 or consent of instructor.
A study of methods for assessing students' knowledge and ability in mathematics, and of instructional strategies for increasing students' knowledge and ability in mathematics.

EDEM 623 Integrating Mathematics with Other Content Areas (3.0)
Prerequisite: A course in teaching elementary mathematics.
An investigation of theories, methods, and materials for integrating mathematics with other content areas. Content areas may vary.

EDEM 627 Applied Child Development (3.0)
Examination of physical, cognitive, language, affective and social development of children from conception to age five. Emphasis will be on knowledge and understanding of child development as it pertains to typically and atypically developing children in an educational setting.

EDEM 628 Teaching Middle School Mathematics (3.0)
Prerequisite: A course in teaching mathematics.
An investigation of curriculum materials, instructional activities, and manipulative aids applicable to mathematics courses in the middle and junior high school.

EDEM 629 Teaching Mathematics with Technology (3.0)
Prerequisite: A course in mathematics education.
Focuses on using technology as a tool in the teaching of mathematics in elementary and middle school.

EDEM 630 Theories of Child Development (3.0)
Analysis and comparison of psychoanalytic, cognitive behavioral perspectives of child development. Traces growth and development of children 0-12 years as the foundation for curriculum development.

EDEM 631 Analysis of Curriculum Models in Early Childhood Education (3.0)
Prerequisite: EDEM 627.
Analysis of programs for young children, e.g., DARCEE, B-E, Behavior Analysis, British Infant Model, Piagetism-based program. Emphasis on planning learning environments, content areas within the early childhood program, instructional materials, evaluation of learning, and personnel within the early childhood setting.

EDEM 632 Curriculum and Methods in Early Childhood Education (3.0)
Prerequisites: EDEM 627.
Examination of contemporary curriculum development in programs for young children. Emphasis on contemporary education, methodology and strategies for dealing with children from diverse cultural backgrounds, materials and facilities in early childhood education.

EDEM 633 Curriculum and Methods in Early Childhood Special Education (3.0)
Prerequisites: Admission to Teacher Education.
Explores early childhood models, strategies, and materials appropriate for use with children with special needs.

EDEM 634 Day Care (3.0)
Examines day care programs, day care quality, and effects of day care attendance on young children and on parent-child relationships.

EDEM 635 Administration and Consultations: Day Care and Early Childhood Education (3.0)
Prerequisites: Admission to Teacher Education.
Explores the responsibilities of the day care or early childhood director and the early childhood consultant.

EDEM 636 Theories of Play (3.0)
Prerequisites: Admission to Teacher Education.
Offers knowledge about how play contributes to young children's development and learning.

EDEM 637 Infant/Toddler Development & Care (3.0)
Prerequisites: Admission to Teacher Education.
Examines the development and educational needs of children from birth to age three.

EDEM 638 Advanced Practicum in Early Childhood Education (4.0)
Prerequisite: EDEM 630, 631 and 632.
(a) Supervised classroom experience under the guidance of experienced teachers in educational programs for young children; or, (b) a supervised internship in both an administrative and a supervisory role in programs for young children.

EDEM 640 Language Arts in the Elementary School (3.0)
Prerequisite: 12 hours in education, to include one introductory course in the teaching of the language arts.
An advanced course in language arts instruction. Emphasis is on analyzing trends and problems in the teaching of listening, speaking, and writing skills and the relationship of each skill to the total curriculum.

EDEM 642 Literacy Learning and Cultural Differences (3.0)
Explores the current knowledge base and theoretical frameworks used to explain differential achievement rates between students of diverse cultural, ethnic, and linguistic backgrounds.

EDEM 644 The Authoring Cycle (3.0)
Prerequisite: Preservice course in literacy or consent of instructor.
Examines reading/writing connections and the role of literacy in learning. Presented as a workshop in which students engage in reading and writing to learn. Students are exposed to strategies for organizing appropriate curricula and supporting learners as they experience the benefits of this learning approach themselves.

EDEM 645 Advanced Studies of Children's Literature (3.0)
Prerequisite: Previous undergraduate language arts/literature course or permission of instructor.
Explores literature available for preschool through 8th grade; studies the role of literature in child development and curriculum; identifies trends and issues; and develops evaluative criteria.

EDEM 646 Literature in the Secondary Language Arts Curriculum (3.0)
Prerequisite: Experience teaching English or language arts in the middle or senior high school, a course in methods of teaching English in the secondary school, or consent of instructor.
Note: Cross-listed with EDSD/ENGL 646.
Examines theories behind the teaching of literature, research in teaching literature, and current trends in teaching literature in the secondary language arts or English class.

EDEM 647 Teaching Writing and Language in the Secondary School (3.0)
Prerequisite: Experience teaching English or language arts in the middle or senior high school, a secondary school, or consent of instructor.
Note: Cross-listed with EDSD/ENGL 647.
Examines research, rationales, and methodology involved in teaching writing and language study (grammar, usage, vocabulary, spelling) in the secondary language arts or English Class.

EDEM 648 Literature-Based Curriculum (3.0)
Explores the "whys" and "hows" of literature-based curriculum and instruction. Emphasis on building a learning community, reviewing current children's literature, literature-based curriculum development models, literature-based instruction, and literature-based unit development.

EDEM 649 Using Literacies and Tools to Learn: Inquiry in the Classroom (3.0)
Examines the theoretical underpinnings and practical implementation of inquiry-based learning by creating an intensive inquiry experience/curriculum for students. By "living" the curriculum, students will come to understand how inquiry experiences are initiated and maintained, how to merge them with curriculum "have to's," and how to integrate real world resources in meaningful ways for learners.

EDEM 650 Science Education in the Schools (3.0)
Note: Cross-listed with EDSD 650.
Examines socioeconomic, political, cultural, and other forces that have impact on the teaching of science in U.S. schools.

EDEM 651 Expanding Classroom Walls: Forests, Parks, and Backyards (3.0)
Provides information and experience needed to effectively gear the life and earth science concepts and strategies found in a forest or park setting to classroom learning.

EDEM 652 Workshop in Science Education (1.0-6.0)
Note: Cross-listed with EDSD 652.
A workshop dealing with materials and techniques in teaching science; includes development and evaluation of innovative and practical service projects using teaching strategies.

EDEM 653 Instructional Procedures in Science: Zoos (3.0)
Provides background information and experience needed to effectively teach animal adaptation, animal endangerment, diversity of lifestyle and the application of these learnings to classroom instruction.

EDEM 654 Analysis of Programs of Elementary Science (3.0)
Prerequisite: Teaching Science in the Elementary School (EDEM 404), or Teaching Science K-4 (EDEM 324) or Teaching Science in the Middle Grades (EDEM 419) or consent of instructor.
An intensive study of experimentally designed curriculum models such as Science Curriculum Improvement Study (SCIS), Elementary Science Study (ESS), and Science-A Process Approach (SAPA).

EDEM 655 Science and Technology Education in Informal Settings (3.0)
Examines learning in informal education sites and develops appropriate instructional programs.

EDEM 656 Science Education for Middle Schools (3.0)
Prerequisite: Teaching Science in the Elementary School (EDEM 404), or Teaching Science K-4 (EDEM 324) or Teaching Science in the Middle Grades (EDEM 419) or EDSD 556 or consent of instructor.
Note: Cross-listed with EDSD 656.
Planning and designing individualized program of teaching science; demonstration of teaching techniques; analysis of research related to science curriculum.

EDEM 657 Instructional Procedures in Science (3.0)
Note: Cross-listed with EDSD 657.
Concentrates on newer methods and techniques for presenting materials (e.g., team teaching, learning stations, packets, contracting) as they apply to the science classroom.

EDEM 658 Science Curriculum in the Schools (3.0)
Prerequisite: EDEM/EDSD 650 or consent of instructor.
Note: Cross-listed with EDSD 658.
Examines curriculum programs, the settings in which they are intended to function, and other considerations for building a school program in science.

EDEM 659 Current Issues in Science Education (3.0)
Prerequisite: EDEM/EDSD 650.
Note: Cross-listed with EDSD 659.
Analyzes systems and forces that currently influence science education. Emphasizes creative solutions to the problems these forces create.

EDEM 660 Social Studies in the Elementary School (3.0)
Prerequisite: Teaching Social Studies K-4 (EDEM 322) or Teaching Social Studies in the Elementary School (EDEM 402) or consent of instructor.
An advanced course in teaching social studies; appraisal of materials and newly developed social studies program use of effective teaching techniques; analysis of relevant research studies.

EDEM 661 Alternative Approaches to Assessment in Science (3.0)
Examines alternative approaches to assessing instruction and learning in science classrooms.

EDEM 662 Workshop in Social Studies Education (3.0)
Note: Cross-listed with EDSD 662.
Experience with content, techniques, and materials for teaching social studies in elementary and secondary schools. Offered each summer.

EDEM 663 Research in Life Sciences: Ethology for Middle Grades (3.0)
Provides an introduction to observational methods of studying animal behavior and the scientific methods.

EDEM 664 Trends in Social Studies Education (3.0)
Note: Cross-listed with EDSD 664.
A study of recent trends in social studies, recent developments and new methodologies in teaching social studies, examination of materials and projects especially prepared for social studies teachers.

EDEM 665 Science: Biomes and Habitats (3.0)
Focuses on planning and designing lessons in the teaching of life science concepts in the context of the major biomes and habitats of the world.

EDEM 666 Consumer Economics in the Classroom (3.0)
Note: Cross-listed with EDSD 666.
Includes consumer topics, behavior and problems. Teaching strategies and materials appropriate for teaching consumer education will be emphasized.

EDEM 667 The Media & Consumer Education (3.0)
Note: Cross-listed with EDSD 667.
Examines mass media with special attention to marketing and advertising principles and practices. Directly applies these principles and practices to the elementary and secondary curriculum.

EDEM 668 Workshop in Economic Education (3.0)
Note: Cross-listed with EDSD 668.
Basic economic content, techniques and materials for integrating economics into elementary and secondary subjects.

EDEM 669 Economic Education Curriculum and Teaching (3.0)
Note: Cross-listed with EDSD 669.
Examines economic content, materials and strategies. Economic education teaching units are developed, taught and evaluated.

EDEM 681 Teaching Through Investigations (3.0)
Prerequisite: EDFD 600.
An examination of the nature of more investigation-oriented approaches to K-12 curriculum, including problem-based learning, original research, and authentic assessment strategies.

EDEM 682 Thinking and Problem Solving (3.0)
An examination of the nature of thinking and problem solving as well as various approaches to the nurturing and direct teaching skills and problem solving in grades K-12.

EDEM 683 Creativity (3.0)
A consideration of the nature of creativity, characteristics of creative individuals, curricular and instructional approaches that nurture creativity in grades K-12, and ways to assess creativity.

EDEM 684 Practicum in Gifted Education (3.0)
Prerequisite: EDEM 581 or 582 and two of the following: EDEM 681, 682 or 683, 685 or 686.
Application of knowledge, skills, and competencies delineated in the basic courses in gifted/talented education.

EDEM 685 Special Topics in Gifted Education (3.0)
Current topics in the education of the gifted. Course topics will vary as needed.

EDEM 686 Learning Styles: Curriculum & Instruction (3.0)
An examination of learning style theory and its personal and professional implications for K-12 school personnel, especially curricular and instructional applications.

EDEM 694 Special Topics in Literacy (1.0-6.0)
Prerequisite: Two courses in reading education including foundations of reading course, and consent of instructor.
Current topics in reading education. Course topics will vary as needed.

EDEM 695 Professional Internship in Instructional Development (1.0-5.0)
Prerequisite: Normally taken during last semester of degree.
Supervised professional experience in an instructional development agency and career information for instructional developers. By arrangement with advisor and instructor. Maximum of 3 credits per semester; 5 credits per degree program. For each credit hour taken there is a minimum 3 hr. per week fall and spring; 9 hr. per week summer.

EDEM 696 Independent Study in Early or Middle Childhood Education (1.0-3.0)
By arrangement with dean and advisor.

EDEM 698 Supervised Readings (1.0-2.0)
By arrangement with dean and advisor.

EDEM 699 Thesis or Professional Paper (2.0-5.0)
Prerequisite: EDFD 600 or equivalent; consent of dean and advisor.

EDEM 710 Advanced Study in Literacy (3.0)
Prerequisite: 12 semester hours in reading instruction; EDFD 600 or consent of instructor.
Surveys research in literacy and related communication skills in relation to the total curriculum; a comparison and evaluation of emerging programs, with consideration given to design and development of projects in reading and related skills.

EDEM 720 Implications of Research in Mathematics Education (3.0)
Prerequisite: Consent of instructor.
A survey of mathematics research regarding its implications for mathematics education and its implementations in educational systems.

EDEM 730 Research in Infancy and Early Childhood (3.0)
Prerequisite: EDFD 600 and EDEM 696.
Development of research design in infant and early childhood education. Methods and techniques in the study of children. Each student designs and completes a research problem.

EDEM 740 Seminar in Curriculum Theory and Design (3.0)
Prerequisite: An introductory course in curriculum or consent of instructor.
Note: Cross-listed with EDSD 740.
An advanced study of theories of curriculum structure and content; recent research and implications for curriculum design.

EDEM 770 Doctoral Seminar in Supervision (3.0)
Prerequisites: Near the end of the doctoral program and by permission of instructor (for students in supervision subspeciality).
Note: Crosslisted with EDSD 770.
Provides an information base in the field of interest, opportunities to explore recent innovations in supervision, and practice in evaluating selected supervision strategies.

EDEM 796 Research Literature (1.0-6.0)
For Ed.S. candidates only.

EDEM 798 Field Study (2.0)
For Ed.S. candidates only.

EDEM 799 Professional Paper (1.0-5.0)
For Ed.S. candidates only.

Foundations of Education

EDFD 620 Comparative Education (3.0)
Utilizing such recurring themes as social stratification, denominational control, and colonialism and cultural pluralism, analyzes roles of selected educational systems in international and comparative perspective.

Secondary Education

EDSD 511 Reading and Writing in Content Areas (3.0)
Prerequisite: 12 hours in education or psychology or consent of instructor.
Note: Cross-listed with EDEM 511.
A comparison of the developmental and the remedial reader at the middle and secondary levels, with emphasis on developmental instructional strategies, materials, and programs in middle and secondary content areas.

EDSD 540 Teaching Adolescent Readers (3.0)
Note: Cross-listed with EDEM 540.
Examines active reading processes, instructional strategies, and appropriate adolescent literature for teaching both the developmental and the remedial reader in secondary language arts.

EDSD 590 Teacher Institute on African-American Issues (3.0)
Note: Cross-listed with EDEM 590 and PAS 529.
An introduction to Pan-African Studies focusing on multicultural educational strategies for public school educators.

EDSD 591 Survey of African History and Culture for Teachers (3.0)
Note: Cross-listed with EDEM 591 and PAS 530.
An intensive survey of the history and culture of Africa (to 1600) for teachers.

EDSD 592 Survey of African-American History and Culture for Teachers (3.0)
Note: Cross-listed with EDEM 592 and PAS 531.
An intensive survey of the history and culture of African-Americans for teachers.

EDSD 603 Foxfire Approach to Teaching (3.0)
Note: Cross-listed with EDEM 603.
Provides a thorough working knowledge of the philosophy and pedagogy found in the Foxfire approach, a learner-centered approach to classrooms. Prepares teachers at all levels to articulate, accept as valuable, and begin to develop the skills necessary to implement the core practices of the Foxfire approach. Designed for teachers of children, grades K-12.

EDSD 606 Special Methods in Secondary School Teaching (3.0)
Prerequisite: Admission to the MAT and 9-12 Professional Year Teacher Education Program.
An application of methods and materials to teaching appropriately in specific content areas of certification.

EDSD 613 Remedial Reading in Grades 6-12 (3.0)
Prerequisite: EDEM/EDSD 511 or Teaching Reading in Elementary School (EDEM 406) or consent of instructor.
Note: Cross-listed with EDEM 613.
A study of diagnostic techniques, materials, and strategies for classroom remediation of reading problems at the secondary level.

EDSD 617 Louisville Writing Project (2.0-6.0)
LWP is aimed at the improvement of writing instruction at all levels. It includes an intensive summer program and follow-up activities during the academic year. The project also sponsors Advanced Institutes each summer.

EDSD 618 Introduction to Environmental Education (3.0)
Examines philosophical, historical, curricular and instructional issues pertaining to the environment and the concept of sustainable development and relates these to outcome-based education.

EDSD 619 Environmental Education Institute: The Study of Rural and Urban Watersheds (3.0)
Note: Cross-listed with EDEM 619.
Using a watershed as the focus, this course will examine the impact people have on the environment. Through field trips, community speakers, individual and group research, the students will document the aesthetic, cultural and ecological aspects of a watershed. Participants in the course will be able to use the approach modeled in the course with their students on any watershed.

EDSD 620 Art Student Teaching in the Elementary/Secondary Schools I (4.0)
Prerequisites: EDEM 514, EDEM 515 and either EDEM 516 or EDEM 517 or EDUC 505 or EDUC 506; EDSD 605, EDSD 606 (or currently enrolled in EDSD 606), EDUC 620 or a 2.75 g.p.a. in major and minor teaching fields, admission to teacher education program, admission to the MAT program.
Corequisites: EDSD 609 and EDSD 610.
Provides supervised observation, participation and teaching.

EDSD 621 Art Student Teaching in the Elementary/Secondary Schools II (4.0)
Prerequisites: EDEM 514, EDEM 515 and either EDEM 516 or EDEM 517 or EDUC 506; EDSD 605, EDSD 606 (or currently enrolled in EDSD 606) EDUC 620, a 2.75 g.p.a. in major and minor teaching fields, admission to teacher education program, and admission to the MAT program.
Corequisites: EDSD 609 and EDSD 610.
Provides supervised observation, participation and teaching.

EDSD 627 Teaching Structured Computer Programming (3.0)
Prerequisite: Experience teaching secondary math or science, or consent of instructor.
Methods for teaching structured computer programming in the secondary school. Emphasis on program design in a high level language. Each semester, language to be studied will be indicated in term schedule.

EDSD 629 Mathematics Curriculum in the Secondary School (3.0)
Prerequisite: A course in methods of teaching secondary school mathematics, experience teaching mathematics in middle or senior high school, or consent of instructor.
Factors in developing secondary school mathematics curricula are examined and applied, curriculum materials are investigated, and past and current trends in curriculum reform are analyzed.

EDSD 635 Action Research for Classroom Teachers (3.0)
Note: Cross-listed with EDEM 605.
Involves teachers in identifying questions about their own teaching and classroom situations, developing research methods appropriate for addressing those questions, and conducting a classroom-based study.
PASS/FAIL ONLY.

EDSD 642 Secondary Instruction (3.0)
An exploration of current instructional strategies and practices in the secondary classroom, and an examination of the theories and learning principles which underlie them.

EDSD 644 Special Problems or Field Experience in Curriculum Development (1.0-6.0)
Intensive study of a current problem in an area of curriculum development or curriculum construction.

EDSD 646 Literature in the Secondary Language Arts Curriculum (3.0)
Prerequisite: Experience teaching English or language arts in the middle or senior high school, a course in methods of teaching English in the secondary school, or permission of instructor.
Note: Cross-listed with EDEM 646/ ENGL 646.
Examines theories behind the teaching of literature, research in teaching literature, and current trends in teaching literature in the secondary language arts or English class.

EDSD 647 Teaching Writing and Language in the Secondary School (3.0)
Prerequisite: Experience teaching English or language arts in the middle or senior high school, a course in methods of teaching English in the secondary school, or permission of instructor.
Note: Cross-listed with ENGL 647/ EDEM 647.
Examines research, rationales, and methodology involved in teaching writing and language study (grammar, usage, vocabulary, spelling) in the secondary language arts or English Class.

EDSD 650 Science Education in the Schools (3.0)
Note: Cross-listed with EDEM 650.
Examines socioeconomic, political, cultural, and other forces that have impact on the teaching of science in U.S. schools.

EDSD 652 Workshop in Science Education (1.0-6.0)
Note: Cross-listed with EDEM 652.
A workshop dealing with materials and techniques in teaching science; includes development and evaluation of innovative and practical service projects using teaching strategies.

EDSD 654 Secondary Curriculum (3.0)
A study of foundation factors relevant to secondary curricula. Roles and responsibilities. Development of policies and practices for evaluating and improving the secondary program.

EDSD 656 Science Education for Middle Schools (3.0)
Prerequisite: Teaching Science in the Elementary School (EDEM 404), or Teaching Science K-4 (EDEM 324), or Teaching Science in the Middle Grades (EDEM 419) or EDSD 556 or consent of instructor.
Note: Cross-listed with EDEM 656.
Planning and designing individualized programs of teaching science; demonstration of teaching techniques; analysis of research related to science curriculum.

EDSD 657 Instructional Procedures in Science (3.0)
Note: Cross-listed with EDEM 657.
Concentrates on newer methods and techniques for presenting materials (e.g., team teaching, learning stations, packets, contracting) as they apply to the science classroom.

EDSD 658 Science Curriculum in the Schools (3.0)
Prerequisite: EDEM/EDSD 650 or consent of instructor.
Note: Cross-listed with EDEM 658.
Examines curriculum programs, the settings in which they are intended to function, and other considerations for building a school program in science.

EDSD 659 Current Issues in Science Education (3.0)
Prerequisite: EDEM/EDSD 650.
Note: Cross-listed with EDEM 659.
Analyzes systems and forces that currently influence science education. Emphasizes creative solutions to the problems these forces create.

EDSD 662 Workshop in Social Studies Education (3.0)
Note: Cross-listed with EDEM 662.
Experiences with content, techniques, and materials for teaching social studies in elementary and secondary schools. Offered each summer.

EDSD 664 Trends in Social Studies Education (3.0)
Note: Cross-listed with EDEM 664.
A study of recent trends in social studies, recent developments and new methodologies in teaching social studies, examination of materials and projects especially prepared for social studies teachers.

EDSD 666 Consumer Economics in the Classroom (3.0)
Note: Cross-listed with EDEM 666.
Includes consumer topics, behavior and problems. Teaching strategies and materials appropriate for teaching consumer education will be emphasized.

EDSD 667 The Media & Consumer Education (3.0)
Note: Cross-listed with EDEM 667.
Examines mass media with special attention to marketing and advertising principles and practices. Directly applies these principles and practices to the elementary and secondary curriculum.

EDSD 668 Workshop in Economic Education (3.0)
Note: Cross-listed with EDEM 668.
Basic economic content, techniques and materials for integrating economics into elementary and secondary subjects.

EDSD 669 Economic Education Curriculum and Teaching (3.0)
Note: Cross-listed with EDEM 669.
Examines economic content, materials and strategies. Economic education teaching units are developed, taught and evaluated.

EDSD 696 Independent Study in Secondary Education (1.0-3.0)
By arrangement with dean and advisor.

EDSD 698 Supervised Readings in Educational Literature (1.0-3.0)
By arrangement with dean and advisor.

EDSD 699 Thesis or Professional Paper (2.0-5.0)
Prerequisite: EDFD 600 or equivalent; consent of dean and advisor.

EDSD 730 Internship in Teaching and Learning (3.0)
Required of every doctoral student in the Teaching and Learning Option of the Supervision program. Student submits a prospectus to the major advisor outlining a minimum of one semester's work in an internship related to the student's area of concentration.

EDSD 740 Seminar in Curriculum Theory and Design (3.0)
Prerequisite: An introductory course in curriculum or consent of instructor.
Note: Cross-listed with EDEM 740.
An advanced study of theories of curriculum structure and content; recent research and implications for curriculum design.

EDSD 750 Language, Learning and Teaching (3.0)
Provides a review of theories of language acquisition, philosophies of language and grammar, and theories of learning. These theories will be examined in the light of their relationship to teaching, curriculum and the learner.

EDSD 751 Language, Learning and Culture II (3.0)
Prerequisite: EDSD 750.
Continuation of the review of theories of language acquisition, philosophical and grammatical theories, and theories of learning. These theories will be examined in the light of their relationship to teaching, curriculum, culture, the learner, and education reform, KERA specifically.

EDSD 770 Seminar in Teaching and Learning (3.0)
Prerequisite: Near the end of the doctoral program and by permission of instructor (for students in supervision subspecialty).
Provides an information base in the field of interest, opportunities to explore recent innovations in Supervision, and practice in evaluating selected supervision strategies.

Special Education

EDSP 528 Assessment Procedures for the Visually Impaired (3.0)
Prerequisite: Introduction to Special Education (EDSP 180), EDSP 509, EDSP 510 and EDSP 525.
Analysis and evaluation of the assessment process for children with visual impairments in academic and social behavior areas.

EDSP 529 Student Teaching of the Visually Impaired (4.0)
Prerequisite: Consent of instructor.
Observation, participation, and teaching under supervision in a school for the blind, resource room, or regular classroom having legally blind students.

EDSP 537 Language Learning for Exceptional Children (3.0)
Prerequisite: EDSP 536 or consent of instructor.
Delineates and describes language learning patterns commonly found in relation to specific impairing conditions. Emphasizes specific language learning methods and materials appropriate for these problems.

EDSP 540 Introduction to Exceptional Children (3.0)
Prerequisite: Human Development and Learning (ECPY 305) or Developmental Psychology (PSYC 361).
A survey course designed to acquaint students with all types of exceptional children - physically and mentally handicapped, socially and emotionally disturbed, and the gifted; methods of adapting education to meet the needs of these children.

EDSP 541 Introduction to Learning and Behavior Disorders (3.0)
An integration of theoretical, conceptual, and applied educational systems for children with learning and behavior disorders.

EDSP 545 Exceptional Children in the Regular Classroom (3.0)
Educational programming for exceptional children in regular classrooms; curricular approaches in mainstreaming.

EDSP 578 Practicum in Teaching the Trainable Mentally Retarded (4.0)
Prerequisite: EDSP 540, 570 and 586.
Supervised student teaching of trainable mentally retarded children.

EDSP 594 Problems and Methods of Teaching the Physically Handicapped and Sensory Impaired (3.0)
Prerequisite: EDSP 540 or faculty consent.
Surveys the causes and educational implications of physical handicaps (cerebral palsy, spina bifida, etc.) and sensory impairments (vision and hearing).

EDSP 596 Seminar in Special Education (1.0-4.0)
The investigation of special problems in education.

EDSP 597 Seminar in Special Education (1.0-4.0)
Refer to: EDSP 596

EDSP 612 Curriculum Methods and Assessment I (3.0)
Prerequisite: EDSP 537 and 541.
Introduces basic concepts in special education assessment; provides an overview of instructional methodology used in teaching students with disabilities.

EDSP 613 Curriculum Methods and Assessment: Field Component I (3.0)
Prerequisite: EDSP 537, 541, 612, 675; EDEM 610, 620
A variety of standardized and criterion referenced tests will be examined. Their role in assessing intellectual ability, academic performance, social, and emotional skills will be presented. Functional assessment will also be explored. In addition, curriculum and teaching strategies for students with learning and behavior disorders will be addressed.

EDSP 614 Transition Programs and Services for Children and Youth With Disabilities (3.0)
Prerequisite: EDEM 610; EDSP 537, 541, 612, 613, 616, 617, 675.
Addresses the needs of personnel working with secondary special education students making the transition from school to adulthood. Provides information on the basic adult needs of persons with developmental disabilities, an interdisciplinary service model to meet those needs, and systematic planning and coordination of services that are required for persons with disabilities to achieve maximum quality of life.

EDSP 615 The Normalization Principle in Human Service Systems (3.0)
Analyzes normalization principle in relation to education and other human service systems. Emphasizes evaluation of educational, residential, and community services for mentally retarded and other exceptional individuals.

EDSP 616 Curriculum Methods and Assessment II (3.0)
Prerequisite: EDSP 541, 612, 613; EDEM 610.
Focuses on instructional methods, materials, and assessment in the areas of literacy, math, social skills, and content areas for students with learning and behavior disorders.

EDSP 617 Curriculum Methods and Assessment: Field Component II-Student Teaching (3.0)
Prerequisite: EDSP 537, 541, 612, 613, 616, 617, 618, 675, 693.
Instructional methods, techniques, and materials will be examined. Students work directly with children and adolescents with learning and behavior disorders in order to gain an understanding of these youngsters, and evaluate their own qualifications for working with them.

EDSP 618 Instructional Technology for Students With Special Needs (3.0)
Prerequisite: EDSP 537, 541, 612, 613, 616, 617, 675, 693.
Designed to provide information about the use of instructional technology for students with learning disabilities. Lectures, video presentations, and required readings will be combined to provide a basic foundation of skills.

EDSP 619 Orientation and Mobility/Daily Living Skills for Teachers (3.0)
Introduces methods of teaching those orientation and mobility/daily living skills normally taught by a teacher of the visually impaired and blind (TVIB) to individuals with or without a visual impairment.

EDSP 620 Introduction to Orientation and Mobility (4.0)
Prerequisites: EDSP 624, EDSP 625.
An in-depth study of the history, development and future trends in the field of orientation and mobility. Current practices and philosophies will be discussed. This course will also include an extensive review of the visual system and common eye conditions and disorders as they relate to orientation and mobility (O&M) intervention. A one credit hour lab will be mandatory for all students who have not completed a basic O&M course or who wish to review these prerequisite skills.

EDSP 621 Advanced Methods in Orientation and Mobility 1 (3.0)
Prerequisites: EDSP 624, EDSP 625, EDSP 540, EDSP 620, EDSP 623.
Prepares the future orientation and mobility (O&M) specialist in methods, techniques, and procedures in the area of pre-cane and cane travel skills essential in the development of independent travel skills for persons with visual impairments.

EDSP 622 Advanced Methods in Orientation and Mobility II (3.0)
Prerequisites: EDSP 620, EDSP 621, EDSP 623, EDSP 624, EDSP 625, EDSP 540, consent of instructor.
Provides application of skills learned in EDSP 621 and to real world situations, conditions, and environments typical of those in which persons who are blind must live, work, and travel.

EDSP 623 Foundations in O&M for Infants, Preschool and Multiply Impaired (3.0)
Prerequisites: EDSP 624, EDSP 540, EDSP 625, consent of instructor.
Methods of teaching orientation and mobility skills to visually impaired and blind children, and individuals who are multiply impaired with an emphasis on infants, preschool and multiply impaired students, with particular attention to concept development, gross and fine-motor skills, early intervention, parent training, orientation skills, pre-cane skills, cane skills, protective techniques, exploration and independent ambulation.

EDSP 624 Educational, Physical, Psychological and Social Aspects of Visual Impairment and Blindness (3.0)
Prerequisite: ECPY 521.
Introductory course which considers the educational, conceptual, social psychological, and physical problems of visual impairment.

EDSP 625 Standard English and Nemeth Braille Codes (3.0)
Prerequisite: ECPY 511 and ECPY 521.
A programmed approach to standard English and the Nemeth Braille Code for Mathematics and Scientific Notation. Includes textbook format for mathematics and science.

EDSP 626 Educational Procedures for Low Vision Children (3.0)
Study common eye disorders, and their educational implications. Study of special methods, materials, and adaptations for visually impaired children with emphasis on those with low vision who use print as their learning/reading medium.

EDSP 627 Applications of Assistive Technology (3.0)
Prerequisites: EDSP 540 or Survey course in special education.
Designed to provide professionals information about the latest advances in assistive technology for students with learning, visual, hearing and multiple disabilities. Provided on the web. CyberLessons are provided as well as CD supplemental materials, demonstrations, and required readings will be combined to provide a basic foundation of skills.

EDSP 628 Seminar: Assessment of the Visually Impaired Students (3.0)
Discussion of special topics of educating visually impaired persons.

EDSP 629 Student Teaching with Visually Impaired Students (3.0)
Prerequisite: Consent of instructor.
Observation, participation, and supervised teaching in a school for the blind, resource room, itinerant program, or regular classroom having legally blind students.

EDSP 630 Practicum: Observation and Participation in Orientation and Mobility (3.0)
Prerequisites: EDSP 620, EDSP 621,EDSP 623, EDSP 624, EDSP 625, EDSP 540, consent of instructor.
Practicum experience in direct instruction of students who are visually impaired under the direct and constant supervision and mentoring of a certified O&M specialist. A weekly seminar will be conducted to discuss observations, experiences, and issues.

EDSP 631 Internship in Orientation and Mobility (3.0)
Prerequisites: EDSP 620, EDSP 621, EDSP 622, EDSP 623, EDSP 624, EDSP 625, EDSP 630, and EDSP 540, consent of instructor.
Completes the 360-clock hour requirement for successful practicum and student teaching experience for an O&M specialist. Meets and exceeds all national certification requirements of the Academy of the National Federation of the Blind (NFB).

EDSP 632 Assistive Technology: Implementation into the General Education Curriculum (3.0)
Explores methods and organizational approaches for employing assistive and educational technology in general education curriculum. Study of educational, practices, Universal Design for Learning principles and inclusion alternatives.

EDSP 633 Curriculum and Methods for Early Childhood Special Education (3.0)
Prerequisite: EDEM 627.
Note: Cross-listed with EDEM 633.
Exploration of early childhood models, strategies, and materials appropriate for use with special needs children.

EDSP 634 Characteristics & Needs of Students with Moderate and Severe Disabilities (3.0)
This course addresses the issues and trends of teaching persons who are diagnosed with moderate and severe disabilities. Focus is on the instructional, social, educational, and transitional needs.

EDSP 635 Moderate and Severe Disabilities Practicum (3.0)
Prerequisites: Undertaken after all program requirements have been met.
Practicum: A field-based developing-teacher experience that provides active classroom involvement with students diagnosed with moderate, severe, or multiple disabilities while under the supervision of trained educators and University faculty.

EDSP 636 Diagnostic/Prescriptive Teaching of Individuals with Moderate Mental Retardation (3.0)
Analyzes assessment techniques and explores prescriptive programming for moderately retarded persons from infancy to adulthood. Diagnostic and prescriptive programming experience provided in field-based practicum.

EDSP 637 Transdisciplinary Collaboration for Inclusion (3.0)
Prerequisites: EDSP 540 or Survey course in special education.
Designed for teaching children with disabilities in the inclusive general education classroom. The course provides strategies for curriculum development, instructional modifications and student accommodations focusing on teachers working as members of a team within the framework of general curricula and classrooms. This is a distance education course.

EDSP 638 Educational Management of Health, Physical and Multiple Disabilities (3.0)
Prerequisites: EDSP 540 or Survey course in special education and EDSP 634 Characteristics & Needs of Students with Moderate and Severe Disabilities.
Addresses a broad range of issues of importance to the health and physical problems of students with multiple disabilities.

EDSP 639 Research Analysis in Special Education (3.0)
Prerequisite: EDFD 600.
Analysis of research in special education relative to methodology and current research efforts in the field. Consideration given to understanding research design and the reading of research studies.

EDSP 640 Introduction to Learning Disorders (3.0)
Surveys historical, theoretical, research, and philosophical bases of learning disorders related to the academic and social behavior phases.

EDSP 641 Curriculum Methods in Special Education (3.0)
Prerequisite: Consent of instructor.
Analyzes the subject areas, approaches, techniques, materials, and learning principles used in teaching children in special education.

EDSP 642 Assessment Procedures for Learning and Behavior Disorders (3.0)
Prerequisite: Must be taken in the last 10 hrs. of program.
Analyzes and evaluates the assessment procedures for children with learning disorders in the academic and social behavior areas.

EDSP 643 Instructional Procedures for Learning and Behavior Disorders (3.0)
Prerequisite: Must be taken in the last 7 hrs. of program.
Applies assessment, planning, instructional, and evaluation techniques to cases of specific learning disorders.

EDSP 644 Applied Behavior Analysis (3.0)
Students explore the principles and procedures in the field of applied behavior analysis. Observational methods, single subject designs, and behavior promotion, reduction, and generalization strategies are reviewed in relation to the needs of students with disabilities. Participants are required to develop individual project proposals that demonstrate their ability to design, implement, and evaluate behavioral programs in an effective and ethically responsive manner.

EDSP 645 Student Teaching: Learning and Behavior Disorders (4.0)
Prerequisite: Must be taken after all other special education certification courses have been completed.
Provides supervised teaching experiences with children who have specific learning disorders.

EDSP 660 Assistive Technology: Introduction and Software Applications for Young Children (3.0)
Provide educators with the awareness of the range of available Assistive Technology (AT) options and knowledge of software to enhance learning experiences for students with disabilities. Participants will investigate the use of Assistive Technology as it relates to life skills such as communication, mobility, education, recreation, vocation, independence, and therapy/rehabilitation.

EDSP 661 Assistive Technology: Assessment Data Collection and Decision-Making (3.0)
Participants in this course gain an understanding of the importance of the assessment process in determining appropriate assistive technology solutions. Legal issues associated with assessment, theories that drive data gathering, data gathering instruments and procedures, administrative responsibilities, team assessments, and caregiver involvement are a few of the topics addressed.

EDSP 662 Assistive Technology: Funding and Family Involvement (3.0)
This course emphasizes the need for family participation in the selection, acquisition and implementation of assistive technology. The variety of funding sources and other related alternatives available to assist consumers in purchasing assistive technology services, software, and devices are also explored.

EDSP 664 Assistive Technology: Computer Access and Switches and Toys (3.0)
This course addresses a variety of computer access methods including speech synthesis, touchscreens, expanded keyboards and other interface alternatives as well as the construction and repair of switches, toys and other such devices that play important roles in the daily lives of individuals with disabilities.

EDSP 670 Autism: Introduction and Understanding (3.0)
Increase understanding of individuals with Autism/Pervasive Developmental Disorder (PDD) across the lifespan. Characteristics of this population, namely communication, social and behavioral attributes will be examined as they are manifested across all ages in the context of the family and community. Historical, diagnostic, and identification issues will be addressed.

EDSP 671 Autism: Strategies and Techniques (3.0)
Prerequisites: Intro to Autism or permission of instructor.
Students will examine instructional approaches used with students with autism. Particular emphasis on research based strategies that have considerable utility in facilitating increases in communication, social skills, and involvement in-group activities.

EDSP 672 Autism: Collaboration and Technology (3.0)
Prerequisites: EDSP 671.
Prepare students to develop augmentative/alternative communication systems for individuals with autism. Students will create technology based communication systems with an emphasis on Board/Maker and Overlay Maker. Follow up sessions will be devoted to discussing strategies of implementation.

EDSP 674 Theories of Behavior Disorders (3.0)
Psychological, sociological, and physiological theories of behavior disorders. Emphasis on resulting educational problems. Observation and participation in cooperating facilities.

EDSP 675 Management of the Behavior Disorder Child in the Classroom (3.0)
Study and application of principles appropriate for the education and management of behavior disorder children in the regular classroom.

EDSP 676 Educational Planning for the Behavior Disorder Child (3.0)
Study and application of principles appropriate for the education and management of behavior disorder children in resource room or special classes.

EDSP 677 Practicum: Education of the Behavior Disorder Child (3.0-4.0)
Prerequisite: EDSP 676.
Supervised practicum during which the individual is responsible for the management and instruction of behavior disorder children.

EDSP 681 Early Childhood Education of Exceptional Children (3.0)
Surveys current education and care of exceptional infants and preschool children; including assessment, methods of treatment, and mainstreaming.

EDSP 683 Early Childhood/Special Education Screening (3.0)
Identification and assessment of children with special needs, ages birth to five.

EDSP 684 Early Family Intervention for Preschool Disabilities (3.0)
Focuses on relevant issues in the provision of services to preschool children with disabilities through family intervention strategies and methods.

EDSP 686 Programs and Services for Preschool Children With Disabilities (3.0)
Provides an overview of the types of delivery systems addressed in working with preschool children with disabilities and their families.

EDSP 687 Practicum/Action Research (6.0)
Preparation of teachers in the development, implementation and evaluation of preschool programs for children with disabilities.

EDSP 693 Consulting with Parents and Teachers of Exceptional Children (3.0)
Course designed to provide a background in theories and techniques of consulting and advising and to provide experiential opportunities for observing and participating in consulting and advising sessions.

EDSP 695 Teleteaching and Distance Education (3.0)
Prerequisite: Basic computer proficiency.
Note: Cross-listed with EDTD 695.
Provides hands-on experiences developing and using technology to teach distant learners. Principles and applications of design, development and delivery of instruction using video, audio and computer communications for two-way interactive video.

EDSP 696 Independent Study in Special Education (1.0-3.0)
By arrangement with advisor.

EDSP 697 Topical Seminar (1.0-4.0)
Intensive study of topics indicated.

EDSP 698 Supervised Readings (1.0-3.0)
By arrangement with advisor.

EDSP 699 Thesis or Professional Paper (2.0-5.0)
Prerequisite: Consent of advisor.

EDSP 710 Professional Seminar in Special Education (3.0)
Prerequisite: Admission to doctoral program.
Considers contemporary issues and research in special education. Students are expected to analyze and synthesize information relevant to the field of special education and present it in a series of topical written essays and class presentations.

EDSP 712 Practicum in Special Education Consultation (3.0-6.0)
Supervised practicum during which the learner has responsibility for consulting with teachers of exceptional learners regarding special educational problems.

EDSP 720 Historical and Philosophical Bases of Special Education (3.0)
Prerequisite: Education major and consent of instructor.
The content of this course will include the history and philosophical background of the development of special education. It will include a comparative review of special education in various countries and general direction of current international trends and developments in the field by educators of international prominence.

EDSP 795 Doctoral Research (3.0-15.0)
Prerequisites: Completion of coursework for Ph.D. or Ed.D program or successful completion of comprehensive examinations.
Note: Crosslisted with ECPY, EDAD, EDEM, EDTD, EDSD, EDFD 795. Doctoral students must register for the course by using the departmental prefix, corresponding to their dissertation chair.

EDSP 796 Research Literature in Special Education (1.0-6.0)
For Ed.S., Ph.D., and Ed.D. candidates only.

EDSP 798 Internship/Field Experience in Special Education (3.0)
For Ph.D. and Ed.D. candidates only.

EDSP 799 Professional Paper (1.0-6.0)
For Ed.S., Ph.D., and Ed.D. candidates only.

Occupational Training and Development

EDTD 604 Planning & Evaluation (3.0)
Examines planning and evaluation systems in Occupational Education, including Training and Development and public education. Emphasis is placed on principles of planning, managing the planning process, information systems, evaluation, and decision-making situations.

Teaching and Learning

EDTL 501 General Methods (3.0)
Prerequisites: Admission to the MAT program.
Prepares pre-service teachers to: identify appropriate learning goals for students; design learning experiences that include a variety of developmentally appropriate instructional strategies; manage a range of students, materials, and classroom activities; and honor students' diversity with respect to learning style, motivation, race/ethnicity, gender, and language proficiency.

EDTL 502 Exploring Teaching in the Sociopolitical Contexts of P-12 Schools (3.0)
Prerequisites: Admission to the MAT program.
The sociocultural contexts of P-12 teaching are ever shifting. Society's expectations for schools and the role that teachers are expected to assume must be understood in relation to the social, cultural, political, and historical contexts from which they arise. Teacher candidates must be made aware of the ways in which these multiple and overlapping contexts influence their future work as classroom teachers.

EDTL 503 Developing Cross-Cultural Competence: Teaching Students from Diverse Backgrounds (3.0)
Prerequisites: Admission to the MAT program.
Extends the principles of curriculum, development, teaching and learning introduced in previous courses to working with students from diverse, ethnic, racial, linguistic, and socioeconomic backgrounds.

EDTL 504 Teaching with Technology (2.0)
Prerequisites: Admission to a teacher education program and completion of, or concurrent enrollment in , a content methods course.
Leading teachers to understand and apply current technologies in classroom instruction. The tools of technology are explored for their creative application in education of B-12 children across the curriculum.

EDTL 505 Challenging Advanced Learners (1.0)
Prerequisites: Admission to a teacher education program and completion of, or concurrent enrollment in, a content methods course.
Study of methods for identifying gifted/talented students and differentiating curriculum and instruction to meet their needs.

EDTL 602 Exploring Teaching in the Sociopolitical Contexts of P-12 Schools (3.0)
Prerequisites: Admission to the MAT program.
The sociocultural contexts of P-12 teaching are ever shifting. Society's expectations for schools and the roles that teachers are expected to assume must be understood in relation to the social, cultural, political, and historical contexts from which they arise. Teacher candidates must be made aware of the ways in which multiple and overlapping contexts influence their future work as classroom teachers.

EDTL 603 P-5 Language Arts Methods (3.0)
Prerequisites: Admission to the P-5 MAT Professional Year Education Program.
Examines specific strategies and practices for teaching children with and without disabilities, giftedness, and other individual differences in grades P-5.

EDTL 604 P-5 Mathematics Methods (3.0)
Prerequisites: EDTL 602, ECPY 607, EDTL 501
Investigation of trends, learning theories, instructional activities, and manipulative materials applicable to mathematics education in the elementary school. The focus of this course is on means for improving the teaching of mathematics in the elementary school for all learners. Particular attention will be given to the implementation of the National Council of Teachers of Mathematics' Principles and Standards for School Mathematics. In addition, there will be an emphasis on developmental approach to mathematics learning, teaching, and assessment.

EDTL 605 Teaching Elementary School Science (3.0)
Prerequisites: EDTL 602, ECPY 607, EDTL 501.
Examines the instructional methods and curricular materials appropriate for teaching the concepts and skills of science in grades P-5.

EDTL 606 P-5 Social Studies Methods (3.0)
Prerequisites: EDTL 602, ECPY 607, EDTL 501.
Examines specific strategies and practices for teaching social studies to all children in grades P-5.

EDTL 607 Middle School Special Methods (3.0)
Prerequisites: EDTL 602, ECPY 607, EDTL 501.
Study of methods and materials in teaching, appropriate to the field of English. This course is part of the professional sequence of courses for English majors seeking middle or secondary certification.

EDTL 608 Middle School Special Methods (3.0)
Prerequisites: EDTL 602, ECPY 607, EDTL 501.
Study of methods and materials in teaching, appropriate to the field of English. This course is part of the professional sequence of courses for English majors seeking middle or secondary certification.

EDTL 614 Mentoring for Teachers (3.0)
Prerequisites: Admission to the Graduate School; must be employed as a certified teacher or as a mentor/supervisor, preferably with at least equivalent of Master's degree certification.
Prepares teacher mentors to identify and respond to the needs of beginning teachers, supervise field experiences of new or pre-service teachers, and promote professional growth of novice colleagues.

EDTL 615 Student Teaching in the Elementary Grades (3.0)
Prerequisites: Passing mid-program assessment of teacher certification program.
Supervised observation, participation, and teaching in elementary schools, with two placements of seven weeks each, one in primary and the other in intermediate grades.

EDTL 616 Student Teaching in the Elementary Grades (3.0)
Prerequisites: Passing mid-program assessment of teacher certification program.
Supervised observation, participation, and teaching in elementary schools, with two placements of seven weeks each, one in primary and the other in intermediate grades.

EDTL 617 Student Teaching in the Middle School (3.0)
Prerequisites: Passing mid-program assessment of teacher certification program.
Supervised observation, participation, and teaching in middle school, with two placements of seven weeks in each content teaching major.

EDTL 618 Student Teaching in the Middle School (3.0)
Prerequisites: Passing mid-program assessment of teacher certification program.
Supervised observation, participation, and teaching in middle school, with two placements of seven weeks in each content teaching major.

EDTL 619 Student Teaching in the High School (6.0)
Prerequisites: Passing mid-program assessment of teacher certification program.
Supervised observation, participation, and teaching in the content teaching major in high school.

EDTL 620 Reading and Writing Across the Curriculum/Adolescent Literature (3.0)
Exploring the processes, products and values of literacy in various areas of the curriculum, this course explores and applies literature of all forms in service to the various disciplines and societal roles.

EDTL 621 Intensive Field Experience (1.0-4.0)
Prerequisites: Concurrent enrollment in one or more methods classes (EDTL 603-606 or EDTL 607/608).
Field experience observing, analyzing, participating, and teaching in schools. Students will connect coursework, theory, and practice.

EDTL 622 Orientation and Readings (3.0)
Prerequisites: Admission to the M.Ed. Program.
Read, discuss and write about current literature related to the key Program Concepts within discipline specific fields as well as across content areas, and develop a well-designed research study. Goals and themes of the program will be studied. Students will investigate the literature base supporting the overarching concept of the program: Teaching for Knowledge, Leadership and Change: Enabling Success for All Learners.

EDTL 623 Leadership and Change (3.0)
Prerequisites: Admission to the M. Ed. program.
Exploration of the relationship between school leadership and school change, with an emphasis on teachers' roles as agents of change and members of school communities. Course satisfies Leadership and Change requirement toward M. Ed. in P-12 Education.

EDTL 624 Curriculum Theory (3.0)
Prerequisites: Admission to the M.Ed. program.
Study of significant curriculum theories as they relate to American schooling historically and today. While primarily an opportunity for exploring theory and philosophy of curriculum, students will be encouraged to link theory to practice.

EDTL 625 Social and Ethical Development in Teaching (3.0)
Study of theoretical and practical constructs that foster caring and integration of children's and adolescents' intellectual, ethical, and social development in the classrooms.

EDTL 626 Affirming Diversity (3.0)
Examines the definitions and practices of multicultural approaches to education by placing it in the broader contexts of schooling and society.

EDTL 627 Capstone Course (3.0)
Prerequisites: Completion of 70 percent of M.Ed. courses.
Continue to read, discuss and write about literature related to the Key Program concepts of the program, Teaching for Knowledge, Leadership and Change: Enabling Success for All Learners, within discipline specific fields as well as across content areas and share the impact and learnings associated with the students' courses of study. Each student will develop a professional portfolio highlighting their growth in the program concepts and in the appropriate professional standards for their area.

EDTL 628 Math for Girls and Problem Solvers (3.0)
Prerequisites: A previous methods course.
Examines issues related to gender and mathematics. Emphasis on strategies that benefit all students.

EDTL 629 Summer Portfolio Institute (3.0)
A study of methods of integrating mathematics, writing, and technology. Participants will work with children in a camp-like setting.

EDTL 630 Technology Applications for Mathematics and Science Teachers (3.0)
Prerequisites: Admission to 8-12 M.Ed. or MAT program.
Methods, techniques, and materials of instruction for meaningful and appropriate use of technology for the teaching of mathematics and science in the middle and high school. Equipment and computer software used in the course as well as student projects required will vary according to advances in the available technology and the interest of prospective students.

EDTL 631 Integrated Teaching and Learning I (3.0)
Provides an introduction to the social and cultural aspects of teaching, instructional planning, KERA and content expectations, classroom management, adolescent development, culture, learning theories, policies, resources, ethics, legal expectations, and special education.

EDTL 632 Integrated Teaching and Learning II (3.0)
Prerequisites: Successful completion of EDTL 631, Integrated Teaching and Learning I.
Continuation of general methods, classroom management, applied historical and social foundations; exploration of developmental theory and implications for learning and teaching, grouping, cooperative learning, technology, multiple intelligences, differentiated instruction, reflective problem olving, high incidence disabilities, and leadership.

EDTL 633 Integrated Teaching and Learning III (3.0)
Prerequisites: Successful completion of EDTL 632, Integrated Teaching and Learning II.
Explores personal philosophy of teaching and learning, key issues in education, issues of race, ethnicity, and gender in school and society, community and parental role, ethnographic observation, low incidence disabilities, technology applications and professional development.

Education

EDUC 629 Interdisciplinary Seminar in Early Childhood (3.0)
An interdisciplinary seminar focusing on a variety of topics and issues relevant to early childhood.

EDUC 790 Doctoral Dissertation Seminar (3.0)
Prerequisite: Basic knowledge, understanding, and skill competency in research design, methodology, and analysis and most doctoral coursework completed.
Doctoral students will be provided an opportunity to critique and report on research from various fields, conceptualize and formulate ideas and topics, and develop a formal presentation and defense of a research proposal.

EDUC 795 Doctoral Research (1.0-15.0)
Prerequisite: Completion of coursework for Ph.D or Ed.D. program or successful completion of comprehensive examinations.
Note: Cross-listed with EDAD/ECPY/EDSP 795.

Leadership, Foundation, and Human Resource Education

ELFH 501 Independent Study: Training or Technical Education (1.0-3.0)
Provides Training and Development students with course credit for special investigation into areas not currently subsumed in existing courses.

ELFH 504 School Law for Teachers (3.0)
Examines legal issues, concepts and principles in education as related to teacher job requirements, welfare benefits, and relations with others.

ELFH 515 Supervised Staff-Industry Exchange (1.0-3.0)
Prerequisite: Teacher certification.
Provides essential improvement experience for the occupational education teacher through placement in occupationally oriented job situations which are evaluated to assist the teacher in implementing new skills and updating techniques in the classroom.

ELFH 540 Program Exit Experience (2.0-8.0)
Prerequisites: ELFH 312, 316, 332, 445 and all but 2 courses in major.
This program provides the culminating experience of the program learning. It provides an opportunity to apply their course learning to the teaching/training through a field-based experience. Required for Bachelor of Science degree in Occupational Training and Development and Occupational Education.

ELFH 574 Using Productivity Tools (3.0)
Prerequisites: ELFH 445.
Overview of applications of microcomputers and electronic media systems for instruction and management. Emphasis is placed upon use of general purpose integrated computer software. Current issues involving technology use for training/instruction and work/classroom/school management will be the focus for the course.

ELFH 596 Seminar: Training or Technical Education (1.0-4.0)
The investigation of special problems in training and development.

ELFH 600 Introduction to Research Methods and Statistics (3.0)
Critical examination of research in education. Emphasis given to historical, empirical, and experimental methods of research; to techniques of research design and statistical analysis; and to skills in writing reviews and critiques of research literature.

ELFH 601 Applied Statistics (3.0)
Prerequisites: EDFD 600.
Note: EDFD 603 is an optional lab.
Examination of statistical methods, including sampling, estimation, testing of hypotheses, correlation and regression analysis. Some attention paid to nonparametric tests.

ELFH 602 Survey Research and Attitude Measurement (3.0)
Techniques for construction of evaluation instruments. Special attention given to surveys and questionnaires, sampling and scaling of attitudes and opinions.

ELFH 603 Administrative Leadership in a Reform Environment (3.0)
In this reform environment leaders will learn about leading schools within an integrated policy and governance framework from the federal, state, and district perspectives. Particular attention will be paid to the Kentucky Education Reform Act of 1990.

ELFH 604 Instructional Leadership and Supervision (3.0)
Examines concept of school culture, supervision skills and approaches, observation instruments, and action models for instructional supervision. This course takes a proactive, school success approach to school administration.

ELFH 605 Organization and Administration of Human Resource (3.0)
A study of the organization, management and administration of performance improvement/workforce training/organization development. Emphasis on modern theories of leadership, organization, and administration and their relationship to organizational management functions.

ELFH 606 Evaluation of Educational Processes and Products (3.0)
Study of theories, techniques and methods for evaluation of educational process and products.

ELFH 607 Principles of Educational Leadership (3.0)
Examines concepts, analytical tools, case material, and organizational theories from the public, business, and educational administration sectors.

ELFH 608 K-12 Leadership (3.0)
Examination of critical responsibilities of K-12 educational leaders, including building and system administrators and supervisors, through guided observations outside of class (30% of course time) and through in-class activities (70% of course time). Emphases on processes and skills required in the context of reform in Kentucky and in the nation.

ELFH 609 Internship in Educational Leadership (1.0-6.0)
Field-based, monitored leadership application activities augmented by seminars which assemble interns for reflection and informed discussions. The student will have the opportunity to “learn-by-doing” administrative work. Emphasis is upon elements of the Education Reform Act of 1990 and its implementation. Pass/Fail grading.

ELFH 610 Collaboration and Communication for Effective Leadership (3.0)
A lecture-laboratory course to build student awareness and skills for effective collaborative leadership, communication, decision-making, community relations, and group management.

ELFH 611 Performance Improvement in Human Resource Development (3.0)
Systematic approach to developing human resources in a work environment with emphasis on individual, process and organizational level performance improvement and integration of performance improvement techniques in human resource development.

ELFH 612 Human Resource Management (3.0)
Focuses upon transformational leadership crucial to educational reform. Study of management skills including building personnel motivation, improving evaluation and development systems, and other personnel-related topics.

ELFH 613 Administration and Supervision in Special Education (3.0)
The development, coordination, administration, and supervision of special services for exceptional children.

ELFH 615 Human Resource Development Internship (2.0-8.0)
Prerequisite: EDTD 661, 662, 672, 663, 604, and 681.
Supervised professional work experience in activities related to the student’s program objectives. Designed to provide experience not possible in the classroom setting.

ELFH 616 Internship and Portfolio Seminar (3.0)
1 lecture, 2 field work.
Prerequisites: Graduate standing, completion of all courses required for student’s program, and approval from the student’s advisor.
Covers three components: development of a professional portfolio, a supervised professional work experience in activities related to the student’s masters program and professional goals, and a presentation of the student’s portfolio with reflection upon growth in the program to an authentic audience.

ELFH 620 Legal Issues in P-12 Education (3.0)
Examination of constitutional and statutory provisions and court decisions affecting educational leadership in P-12 education.

ELFH 622 Educational Resource Management in P-12 Education (3.0)
Study of resources, practices and procedures of finance and economics as related to P-12 education. Provides investigation of specific and current educational finance issues affecting educational institutions.

ELFH 623 Special Problems in Leading Instructional Improvements (1.0-6.0)
Prerequisite: Consent of instructor.
Provides skills for persons engaged in instructional leadership who desire to investigate and/or develop specific functional programs for the purpose of improving instruction.

ELFH 625 History of American Education (3.0)
Note: Cross-listed with HIST 625.
Examination of the function of educational processes in the context of American political, economic, and social history.

ELFH 629 Youth and Adults with Special Needs in Career and Technical Education (3.0)
Emphasis on integrating instructional and/or management activities to assist disadvantaged and handicapped persons enrolled in occupational education programs.

ELFH 630 The School in the American Social Order (3.0)
Examination of the school as a social institution, with emphasis on the inter-relationship of the school with other social, political, and economic organizations.

ELFH 631 Motivation and Human Resource Development (3.0)
The course examines social factors that influence adult motivation and performance in human resource development programs. Readings include theory and research on adult motivation in work and learning, social stratification and organizational culture.

ELFH 639 The School Superintendency (3.0)
Focuses on the job responsibilities of the school district superintendent with reference to the knowledge, skills, and dispositions necessary to serve successfully.

ELFH 640 Developing a Philosophy of Education (3.0)
Study of philosophic assumptions and principles governing the American school and the application of these assumptions and principles to practical problems of learning, teaching, and administration.

ELFH 641 Graduate Seminar: HRE or IT (1.0-4.0)
Detailed discussion of new and emerging themes in human resource development and/or instructional technology.
This course may be used as an elective in the MEd in HRD, MEd in Instructional Technology, and the MEd in Occupational Education.

ELFH 649 School System Administration (3.0)
Focuses on school system operations, including management of finances, auxiliary services, human resources, federal and state programs, facilities, and curriculum and instruction.

ELFH 659 Planning (3.0)
Focuses on the development of planning, implementation, and leadership skills needed to direct strategic decision-making.

ELFH 661 Adult Development and Learning (3.0)
Study of current cognitive, psychomotor and affective theories and their application to training programs in industry.
Required for the M.Ed. in Occupational Education.

ELFH 662 Organizational Analysis (3.0)
Examination of the process and techniques used to conduct an organizational task and person analysis and to identify training needs in a non-school environment.

ELFH 663 Methods of Facilitation (3.0)
Development of the presentation skills needed to conduct training programs in non-school settings. Focus placed upon the difference between teaching and facilitation of adult learning. This course is required for the Master of Education in Occupational Training and Development.

ELFH 664 Facilitating Change in Organizations (3.0)
Consists of the study of the organization as a system and how organizations change and develop in reaction to internal and external forces.

ELFH 672 Industrial Design and Development (3.0)
Emphasizes systematic processes for the design and development of instruction with application to education and training. Current theory and research on instructional design and development, in accordance with principles of teaching and learning.

ELFH 673 Using Technology in Curriculum, Instruction, and Assessment (3.0)
Facilitate the integration of technology skills and concepts by evaluating and planning curriculum designs, by identifying and evaluating software and by developing and practicing methods for technology use.

ELFH 674 School Technology Leadership Seminar (3.0)

ELFH 675 Web Use and Publishing (3.0)
Prerequisite: EDTD 574 or equivalency skills.
Uses hands-on experience with computers and technology to design and produce technology-based materials. Principles of lesson design, screen design, page design, electronic presentation, web page development, video production, print materials production are emphasized.

ELFH 676 Authoring Multimedia Instruction (3.0)
Prerequisite: Occupational Analysis and Curriculum Development (EDTD 512) and EDTD 574 or equivalency skills.
Focuses on practical application of computer and technology systems to design and develop multimedia courseware for self instruction. Principles for design of screen, lesson and courseware are emphasized. An authoring tool is used.

ELFH 677 Technical Support Skills (3.0)
Overview of the evaluation, purchase, installation and ongoing management and maintenance of computer systems and related software for instruction and staff productivity.

ELFH 678 American College and University (3.0)
Examination of historical development of the American college, community college, and university, including major ideas and concepts underlying these developments and major problems affecting present institutions of higher learning.

ELFH 679 The Superintendency Practicum (2.0-6.0)
Focuses on the role of the school district leaders in practice. Students enrolling in the practicum are expected to spend time interacting with practicing district-level administrators.

ELFH 680 Legal Issues in Postsecondary Education (3.0)
Examination of constitutional and statutory provisions and court decisions affecting educational leadership in postsecondary education.

ELFH 681 The Philosophy of Higher Education (3.0)
Analysis of competing philosophies of higher education, with the purpose of helping students construct consistent sets of beliefs about values in higher education as a guide to administrative and academic decisions.

ELFH 682 The Organization and Administration of Higher Educational Institutions (3.0)
Exploration of organizational and administrative theory as related to colleges and universities and assessment of the roles of major administrative units of the institution. Purpose is to aid students seeking to become college or university administrators or faculty members.

ELFH 683 College Teaching (3.0)
Analysis of the elements of effective college teaching; observation and evaluation of teaching; opportunities for micro-teaching; and investigation of rights and responsibilities of faculty members.

ELFH 684 Educational Resource Management in Postsecondary Education (3.0)
Study of resources, practices and procedures of finance and economics as related to postsecondary education. Provides investigation of specific and current educational finance issues affecting educational institutions.

ELFH 686 The Two-Year College (3.0)
Analysis of the groups which mold and shape the two-year college as an institution; consideration of the three major adaptive responses of the college as an organization, administration, curriculum and instruction, and student personnel services; and analysis of fundamental issues facing the two-year college as it seeks to adapt to the social, educational, and economic needs of society.

ELFH 689 Special Problems in Educational Leadership (1.0-6.0)
Provides skills for persons engaged in educational leadership who desire to explore specific functional techniques for the purpose of improving administration and management.

ELFH 690 Internship in Postsecondary Education (2.0-6.0)
Provides on-the-job learning and professional development for future postsecondary administrative personnel. Seminars are held periodically under the direction of the University Coordinator. Pass/Fail grading.

ELFH 691 Graduate Independent Study (1.0-3.0)
By arrangement with dean and advisor.

ELFH 692 Independent Study in Leadership (1.0-3.0)
By arrangement with advisor and consent of dean.

ELFH 693 Seminar: Research (1.0-4.0)
Prerequisite: Consent of the dean.The investigation of special problems in education.

ELFH 695 Distance Teaching and Learning (3.0)
Prerequisite: Basic computer proficiency.
Note: Cross-listed with EDSP 695.
Provides hands-on experiences developing and using technology to teach distant learners. Principles and applications of design, development and delivery of instruction using video, audio and computer communications for two-way interactive video.

ELFH 696 Independent Study: HRE or IT (1.0-3.0)
By arrangement with dean and advisor.

ELFH 698 Supervised Readings (1.0-3.0)
By arrangement with advisor and consent of dean.

ELFH 699 Thesis or Professional Paper (1.0-6.0)
Culminating paper for masters degree in higher education. By arrangement with advisor.

ELFH 700 Research Concepts and Design (3.0)
Prerequisite: EDFD 601 or consent of instructor.
Explores the logic of inquiry and examines and critiques a wide variety of research approaches. Students develop at least two approaches to researching a specific topic.

ELFH 701 Design of Experiments (3.0)
Prerequisite: EDFD 601.
Examines experimental and quasi-experimental designs, internal and external threats to validity, and serendipity. Includes some programming and data processing.
3 hrs. class and/or 1 1/2 hrs. lab.

ELFH 703 Multivariate Educational Statistics (3.0)
Prerequisite: EDFD 601
Examines multivariate statistical methods used by educational researchers, including multiple regression, multivariate analysis of variance, and factor analysis. Computer software packages are extensively used.

ELFH 704 Qualitative Field Research Methods (3.0)
Prerequisite: SOC 615, Ph.D. or Ed.D. student, or consent of instructor.
Note: Cross-listed with SOC 618.
Provides opportunities to design and critique field studies in educational and social settings and to practice techniques used to collect and analyze qualitative. Additional time required outside class for observations and interviews.

ELFH 705 Quality Data Analysis and Representation (3.0)
Prerequisites: EDFD 704 or permission of instructor.
Study of techniques for qualitative data analysis, including computer assisted data analysis, and text and non-text representation of knowledge.

ELFH 710 Doctoral Seminar in Educational Leadership (3.0)
Study of meaning and requirements of doctoral study. Discussion of current literature. Pass/Fail.

ELFH 715 Advanced Organizational Theory (3.0)
Focus is on integrating the various theories of organizations and management into an overarching general systems theory.

ELFH 720 Advanced Internship in Leadership (1.0-6.0)
Prerequisite: Admission to a program in Administration or Supervision or consent of instructor.
Provides on-the-job learning and professional development experiences for future administrative and supervisory personnel. Seminars are held periodically under the direction of the University Coordinator. Pass/Fail grading.

ELFH 723 Seminar in Legal Issues (3.0)
Prerequisite: EDAD 620 or EDAD 680.
Provides research skills for intensive investigation of specific, current legal issues affecting the operation of educational institutions.

ELFH 730 Foundations of Urban Educational Policy (3.0)
Prerequisite: Admission to Ph.D. or Ed.D. program or consent of instructor.
An examination of urban educational policy from philosophical, social, historical, psychological, and legal points of view.

ELFH 735 Doctoral Seminar in HRE and IT (1.0-3.0)
Prerequisites: Admission into the Ph.D. or Ed.D. program or consent of the instructor, and consent of the student's advisor.
It is designed to expose students to the work of other doctoral students, faculty members, and other research professionals in human resource development.

ELFH 740 Advanced Internship in HRE and IT (2.0-6.0)
Prerequisite: Ph.D. or Ed.D. student with an emphasis in training and development and consent of advisor.
Provides Ph.D. and Ed.D. students with advanced on-the-job experiences in the field of human resource development.

ELFH 750 Doctoral Seminar in Educational Evaluation (3.0)
Prerequisite: EDFD 606; Ph.D. or Ed.D. students or by consent of instructor.
Covers advanced topics in educational evaluation. Discussion of policy issues and quantitative and qualitative methods.

ELFH 760 Doctoral Internship in Educational Evaluation (3.0-6.0)
Prerequisite: Ph.D. or Ed.D. students in the evaluation specialty area, and consent of instructor required.
Provides on-the-job learning experiences for future educational evaluators.

ELFH 780 Problem Analysis in Educational Leadership I (3.0)
Prerequisites: EDFD 601, EDFD 700, 3rd Research/Statistics Course, and EDFD 730.
Doctoral level study of approaches to analyzing and solving contemporary problems encountered by educational administrators and leaders in such administrative areas as: personnel recruitment and selection, law, budgeting and finance, staff development, operational and strategic planning, policy formulation, diversity and multiculturalism, instructional leadership, and acquisition and use of technology for administrative purposes.

ELFH 781 Problem Analysis in Educational Leadership II (3.0)
Prerequisite: EDAD 780
Doctoral level study and application of approaches for investigating research-based and practice-based problems in educational administration and leadership. Extends expertise gained in EDAD 780 through analysis and application of problem solving and analytical approaches to administrative problem areas selected by the student. The problem areas addressed may include but are not limited to: budgeting and finance, staff development, operational and strategic planning, law, educational policies, policy formulation, diversity and multiculturalism, instructional leadership, and acquisition and use of technology for administrative purposes.

ELFH 782 Reflective Practice for School Leaders (3.0)
Examines the complex realities of practicing school administration in public, independent and parochial schools by integrating action research projects with principal theories of administering schools.

ELFH 790 Problems in Urban Education and Society (3.0)
Prerequisite: Twelve hours in Urban Studies component of Ph.D. and Ed.D. including EDFD 730; restricted to Ph.D. or Ed.D. students or consent of instructor.
Culminating course in Urban Studies component of Ed.D.; with guidance from the instructor, students select and explore a problem that enables them to apply their course of study to some aspect of the urban environment.

ELFH 795 Doctoral Research (1.0-15.0)
Prerequisite: Passing Ph.D. or Ed.D. Comprehensive.
Note: Cross-listed with EDAD, ECPY, EDSP, EDUC 795.
Examination and admission to candidacy for the doctoral degree.

ELFH 796 Research Literature (1.0-6.0)
Prerequisite: Consent of instructor. For post-masters students candidates only.

ELFH 799 Professional Paper (1.0-5.0)
For Ed.S. candidates only.

Engineering Management

EM 510 Industrial Accounting (3.0)
Prerequisite: Graduate/Professional or Graduate School standing.
Fundamentals of financial accounting, accounting systems, cost accounting, and budgetary control systems for use in managing engineering organizations.

EM 515 Operations Research I: Deterministic Models (3.0)
Prerequisite: Matrix Methods for Algebraic and Differential Equations (EAC 205) or equivalent.
The application of mathematical modeling and network analysis techniques to resolve engineering and management problems. The deterministic models include: linear, integer, dynamic, and nonlinear programming; network analysis; scheduling; and PERT.

EM 550 Probability and Statistics for Engineers (3.0)
Prerequisites: EAC 201 or equivalent.
Study of the laws of probability, discrete and continuous probability distributions, point and interval estimation, tests of hypothesis, simple and multiple linear regression, and the analysis of variance.

EM 560 Construction Management (3.0)
Prerequisite: Graduate/Professional or Graduate School standing or special student standing.
An investigation of the engineer's role in the construction process. Study of the many variables influencing the project and associated methods of managing variables. Includes a practical demonstration of student's understanding schedule and cost estimate for a project of the student's choosing.

EM 570 Engineering Economic Analysis (3.0)
Prerequisite: Graduate/Professional or Graduate School standing.
The economic evaluation of engineering proposals involving the investment of capital in machines, processes, structures, and other systems, including the economic justification of highly automated manufacturing systems. The frequent trade-offs between engineering design efficiency and economic efficiency are stressed by a required term project.

EM 590 Special Topics in Engineering Management (1.0-6.0)
Prerequisite: Graduate/Professional or Graduate School standing.
A theoretical or experimental investigation of an engineering management problem.

EM 611 Analysis of Organizational Structures (3.0)
Prerequisite: Graduate/Professional or Graduate School standing.
The theories and practices of design and analysis of engineering organizations. Topics include the analysis of an engineering organization, its structure, control measures, industrial enterprise, organizational change, and productivity assessments.

EM 640 Applied Systems Analysis (3.0)
Prerequisite: Probability and Statistics for Engineers (IE 360).
Methods of engineering management applied to case studies so as to define the problems, analyze the data, and recommend solutions or decisions.

EM 646 Marketing and the Engineer (3.0)
Prerequisite: EM 570.
Provides an introduction to marketing principles and techniques with an emphasis on technical product development, pricing, promotion and distribution strategies. It stresses the role the engineers play in the product marketing plan of an organization, as well as methods for forecasting technology and measuring marketing decisions. It includes a unit on marketing aspects of engineering entrepreneurship.

EM 660 Management Information and Control Systems (3.0)
Prerequisite: A working knowledge of at least one computer programming language.
A study of systems designed to meet the information needs of engineering managers at all levels. A detailed investigation of the system analysis and design process, with emphasis on computer aided information and control systems.

EM 670 Input-Output Analysis (3.0)
Prerequisite: EM 515.
A study of the basic ideas of input-output analysis, with emphasis on its application to economic and technological forecasting.

EM 672 Management Law for Engineers (3.0)
Prerequisite: Graduate/Professional or Graduate School standing.
Elements of law particularly applicable to engineering functions in an organization. Includes contracts, tort law, including negligence, product liability, strict liability, and damages. Workmen's compensation, wage and hour laws, unemployment insurance, OSHA, HEW, equal opportunity, and affirmative action; patents, copyrights, and trademarks; forms of business organizations; property and personal rights.

EM 675 Time Series Analysis (3.0)
Prerequisite: Probability and Statistics for Engineers (IE 360).
Z-transforms; linear, time-invariant, casual systems; signals; autocorrelation; power density spectrum; decimation; adaptive analysis; Box-Jenkins analysis; state-space analysis; comparison of analytical methods.

EM 682 Engineered Personnel Subsystems (3.0)
Prerequisite: Graduate/Professional or Graduate School standing.
Human factors engineering evaluation of personnel subsystems: selection, training, and evaluation processes. Human behavior in industrial organizations. Job performance evaluation and testing procedures. Planning and control of personnel subsystems. Behavioral analysis and measurement methods.

EM 683 Project Management (3.0)
Prerequisite: Graduate/Professional or Graduate School standing.
Use of CPM, PERT, precedence diagramming, resource allocation heuristics, and other techniques for planning, managing, and controlling engineering projects involving research and development, production, maintenance, and construction. Computer procedures and codes for analyzing complex project networks will be covered.

EM 690 M.Eng Thesis in Engineering Management (1.0-8.0)
A candidate for the Master of Engineering degree, specializing in the field of engineering management, is required to perform a study, design, or investigation under the direction of a faculty member. A written thesis is required to be presented orally and submitted to the faculty for approval.

EM 693 Independent Study in Engineering Management (1.0-6.0)

EM 694 Special Topics in Engineering Management (1.0-6.0)
A theoretical or experimental investigation of an engineering management problem.

EM 695 Engineering Management Seminar (1.0-6.0)

EM 697 M.S. Thesis in Engineering Management (1.0-6.0)

EM 699 Engineering Management M. Eng. Project (3.0)
Prerequisites: Completion of at least 18 credits of the required 27 credits of Engineering Management course work.
Students carry out an engineering project under the supervision of a faculty mentor, prepares a written report describing the project, and presents a seminar reporting the results of the project.

English

ENGL 501 Independent Study (3.0)
Prerequisite: Overall average of 3.0, an average of 3.5 in the department, and at least 18 semester hours credit in the department.

ENGL 502 Independent Study (3.0)
Refer to: ENGL 501

ENGL 503 Advanced Creative Writing I (3.0)
Prerequisite: ENGL 305 and consent of instructor.
A course designed for students who have had considerable experience in imaginative writing, and who wish to increase their aptitude as writers of drama, fiction, or poetry. Fall.

ENGL 504 Advanced Creative Writing II (3.0)
Prerequisite: ENGL 503 and consent of instructor.
A continuation of 503, but individuals concentrate on a given form. Spring.

ENGL 505 Advanced Technical Writing -WR (3.0)
Prerequisite: ENGL 303, or writing sample with instructor's consent.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Topic definition, audience analysis and editing strategies for technical reports, theses and articles in various disciplines.

ENGL 506 WR Teaching of Writing (3.0)
Prerequisite: ENGL 309 or ENGL 310, or consent of instructor.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Introduction to the theory, research, and practice that informs the effective teaching of writing.

ENGL 515 Introduction to Old English (3.0)
Readings in the original language of Old English prose and poetry.

ENGL 518 Foundations of Language (3.0)
Note: Cross-listed with LING 518.
A survey of contemporary theories of language, from structuralism to transformational grammar; the relationship of linguistics to literature, psychology, philosophy, reading, and sociology.

ENGL 522 Structure of Modern American English (3.0)
Note: Crosslisted with LING 522.
Examination of the structure of American English; emphasis on grammatical terminology and systems of classification. Recommended for prospective English teachers.

ENGL 523 History of the English Language (3.0)
Note: Crosslisted with LING 523.
The evolution of modern English in terms of social, historical, and linguistic forces which molded it; emphasis on Anglo-Saxon metrics, Latin, French, and Danish influences, and cosmopolitan aspects of English.

ENGL 535 Applied Linguistics for English Teachers (3.0)
Prerequisite: ENGL 102 or ENGL 105.
Note: Cross-listed with LING 535.
Applied linguistics and its application to an understanding of speaking, listening, reading, and writing processes.

ENGL 541 Studies in Old and Middle English Literature (3.0)
Prerequisite: ENGL 102 or ENGL 105.
In-depth study of selected movements, genres, topics, or groupings of writers from the Old and/or Middle English periods.

ENGL 542 Studies in Tudor and Elizabethan Literature (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
In-depth study of selected movements, genres, topics, or groupings of writers from the Tudor and/or Elizabethan periods.

ENGL 543 Studies in Stuart and Commonwealth Literature (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
In-depth study of selected movements, genres, topics or groupings of writers from the Stuart and/or Commonwealth periods.

ENGL 544 Studies in Restoration and Eighteenth-Century British Literature (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
In-depth study of selected movements, genres, topics or groupings of writers of the period from 1660 to 1800.

ENGL 545 Studies in British Literature of the Romantic Period (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
In-depth study of selected movements, genres, topics, or groupings of writers of the Romantic period.

ENGL 546 Studies in British Literature of the Victorian Period (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
In-depth study of selected movements, genres, topics, or groupings of writers from the Victorian period.

ENGL 547 Studies in Modern British and/or Irish Literature (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
In-depth study of selected movements, genres, topics, or groupings of writers from the turn of the century through 1950.

ENGL 548 Studies in Contemporary British and/or Irish Literature (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
In-depth study of selected movements, genres, topics, or groupings of writers since 1950.

ENGL 549 Studies in Post-Colonial and/or Ethnic Literature (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
In-depth study of selected movements, genres, topics, or groupings of writers in post-colonial and/or ethnic literature.

ENGL 550 Studies in African American Literature (3.0)
Prerequisites: ENGL 102 or 105; junior standing.
Note: Cross-listed with PAS 551.
In-depth study of selected movements, topics, or groupings of African American writers.

ENGL 551 Special Topics in Literature in English (3.0)
Topics to be announced in Schedule of Courses. A maximum of 6 hours in special-topics courses may be counted toward the major.

ENGL 552 Special Topics in Literature in English (3.0)
Refer to: ENGL 551

ENGL 554 Women's Personal Narratives (3.0)
Note: Crosslisted with WMST 520.
Course examines issues such as race, class, religion, geography, and sexual orientation surrounding the writing/reading of women's personal narratives (e.g., diaries, letters, autobiographies, oral histories, biographies, and films) from the 19th and 20th centuries.

ENGL 561 Chaucer (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
Close reading of the major works, in the context of medieval traditions and fourteenth-century English society.

ENGL 562 Shakespeare (3.0)
Intensive study of selected drama and poetry of Shakespeare.

ENGL 563 Milton (3.0)
Intensive study of the poetry; background reading in Milton's biography and prose.

ENGL 564 Selected Figures in American Literature (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
Study of the works of a selected writer or grouping of writers, in literary, biographical, and/or social context.

ENGL 567 Post-Colonial Voices: Writing Experience in African Literature -WR (3.0)
Prerequisites: English 102 or 105; junior standing.
Note: Crosslisted with PAS 567.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Examination of "post-coloniality" through a selection of fiction and literary criticism by African writers.

ENGL 571 Studies in American Literature to 1865 (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
In-depth study of selected movements, genres, topics or groupings of writers before 1865.

ENGL 572 Studies in American Literature, 1865-1910 (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
In-depth study of selected movements, genres, topics, or groupings of writers from the Civil War to 1910.

ENGL 573 Studies in American Literature, 1910-1960 (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
In-depth study of selected movements, genres, topics or groupings of writers from 1910 to 1960.

ENGL 574 Studies in American Literature, 1960 - Present (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
In-depth study of selected movements, genres, topics or groupings of writers in contemporary American literature.

ENGL 575 Genre Studies in African-American Literature (3.0)
Prerequisites: ENGL 102 or 105; junior standing.
Note: Cross-listed with PAS 575.
In-depth study of a selected genre of African-American Literature.

ENGL 577 The Harlem Renaissance (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
Note: Cross-listed with PAS 577.
In-depth study of the literature of the Harlem Renaissance in relation to other literary and artistic productions of the period and to cultural and historical contexts.

ENGL 581 Studies in Renaissance Drama (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
In-depth study of dramatic works by Shakespeare's contemporaries.

ENGL 586 Studies in American Drama (3.0)
Prerequisite: ENGL 102 or 105; junior standing.
In-depth study of selected American plays.

ENGL 591 History of Criticism: Plato to the New Criticism (3.0)
Prerequisite: ENGL 102 or 105, and ENGL 310.
Study of selected theories for the interpretation of literary and other texts, from Plato to the New Criticism.

ENGL 599 Advanced Studies in English -WR (3.0)
Prerequisites: ENGL 310; junior standing.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
In-depth analysis of and intensive writing about a focused area of study within the discipline of English.

ENGL 601 Introduction to English Studies (3.0)
Introduces students to research methods, print and electronic resources, strategies for reading and writing scholarly texts, and the seminar format.

ENGL 602 Teaching College Composition (3.0)
Introduction to the design of the freshman composition syllabus, writing assignments, and ways of responding to them.

ENGL 603 Studies in Genres (3.0)
A course in genre studies, featuring in any given semester the drama, biography, the essay, satire, etc.

ENGL 604 Writing Center Theory and Practice (3.0)
Prepares incoming TA's to teach in the University Writing Center. Provides a solid theoretical background for examining pedagogical issues important to an effective writing center, including such concerns as approaches to consulting with students, the role of grammar instruction in the writing center, consulting strategies for ESL students, the importance of computers in the writing center, record-keeping and resource development.

ENGL 606 Creative Writing I (3.0)
Prerequisites: Permission of instructor or enrollment in a degree program in English.
A workshop in the writing of poetry, fiction, and drama, involving the reading and analysis of manuscripts and regular individual conferences.

ENGL 607 Creative Writing II (3.0)
Prerequisites: Permission of instructor or enrollment in a degree program in English.
A creative writing workshop similar to ENGL 606, but also allowing interested students to pursue bases for structuring larger and more ambitious works.

ENGL 613 Independent Study (1.0-3.0)

ENGL 614 Independent Study (1.0-3.0)
Refer to: ENGL 613

ENGL 615 Thesis Guidance (1.0-6.0)

ENGL 620 Research in the Composing Process (3.0)
Examination of the major methodologies, quantitative and qualitative, in composition research, with their underlying theoretical assumptions.

ENGL 621 Sociolinguistics (3.0)
Prerequisite: ENGL/LING 518.
Note: Cross-listed with LING 621.
An examination of the relationship between language and human behavior on various social levels.

ENGL 624 Old English and Middle English Language and Literature (3.0)
A basic knowledge of Old English as a language is required for the study of literary documents before 1066.

ENGL 625 The Teaching of English as a Second Language (3.0)
Prerequisites: Consent of instructor.
Note: Crosslisted with FLE 624 and LING 625.
A theoretical and practical approach to teaching English to students for whom English is not a native language. The linguistic bases of English, as well as the application of curriculum principles, will be considered.

ENGL 626 ESL Endorsement Portfolio (1.0)
Note: Crosslisted with LING 626.
Prerequisite: All other ESL endorsement requirements completed.
Assists post-service teachers in preparing and submitting their ESL endorsement portfolios for review in order to complete the continuous assessment plan for the endorsement. Review takes place in the final phase of the course, of which self-assessment and peer assessment are components. Restricted to ESL endorsement candidates.

ENGL 631 Renaissance Drama (3.0)
Intensive survey of representative non-Shakespearean dramatic works produced in Renaissance England, with attention to literary traditions and modern critical approaches.

ENGL 632 Shakespeare (3.0)
Intensive study of a large cross-section of the plays, with attention to modern critical approaches.

ENGL 633 Sixteenth-Century Poetry and Prose (3.0)
Intensive survey of the major literary figures and intellectual traditions of Sixteenth Century England, with attention to modern critical approaches.

ENGL 634 Seventeenth-Century Poetry and Prose (3.0)
Intensive survey of the major literary figures other than Milton in seventeenth century England, with attention to their literary and intellectual traditions, and to modern critical approaches.

ENGL 642 Eighteenth-Century Fiction (3.0)
Intensive survey of a diversity of fictional forms and their literary and intellectual traditions, with attention to modern critical approaches.

ENGL 643 Eighteenth-Century Poetry and Prose (3.0)
Intensive survey of the major literary figures and intellectual traditions of Eighteenth Century England, with attention to modern critical approaches.

ENGL 644 Romantic Poetry and Prose (3.0)
Intensive survey of the major literary figures and the intellectual traditions of English Romantic Movement, with attention to modern critical approaches.

ENGL 646 Literature in the Secondary Language Arts Curriculum (3.0)
Prerequisite: Experience teaching English, a course in methods of teaching English in the secondary school, or consent of instructor.
Note: Cross-listed with EDEM/EDSD 646.
Examines theories behind the teaching of literature, research in the teaching of literature, and current trends in the teaching of literature in secondary school language arts.

ENGL 647 Teaching Writing and Language in the Secondary School (3.0)
Prerequisite: Experience teaching English, a course in methods of teaching English in the secondary school, or consent of instructor.
Note: Cross-listed with EDEM/EDSD 647.
Examines theories of language acquisition and research and methodology in the teaching of grammars, vocabulary, spelling, semantics, etymology, usage, and dialectics in secondary school language arts.

ENGL 651 Nineteenth-Century Fiction (3.0)
Intensive survey of a diversity of fictional forms and their literary and intellectual traditions, with attention to modern critical approaches.

ENGL 652 Nineteenth-Century Poetry and Prose (3.0)
An intensive survey of the major literary figures of Nineteenth Century England, with attention to literary traditions and modern theories of interpretation.

ENGL 653 Irish Studies (3.0)
Intensive study of recent and contemporary Irish writers, with attention to literary and intellectual traditions and to modern critical approaches.

ENGL 654 Twentieth-Century Literature (3.0)
Intensive study of major writers and literary movements in the English-speaking world during the twentieth century, with attention to literary and intellectual traditions and to the most recent critical approaches.

ENGL 661 Nineteenth-Century American Fiction (3.0)
Intensive survey of a diversity of fictional forms and literary and intellectual traditions, with attention to modern critical approaches.

ENGL 662 Nineteenth-Century American Poetry and Prose (3.0)
An intensive survey of the significant literary figures of Nineteenth-century America, with attention to literary traditions and modern theories of interpretation.

ENGL 664 Twentieth-Century American Writers (3.0)
Intensive study of such major American figures as Faulkner, Hemingway, and their contemporaries (adaptable to any combination a particular teacher may announce).

ENGL 665 Contemporary Poetry (3.0)
A survey or intensive sampling of contemporary poetry.

ENGL 667 Assessing and Responding to Student Writing (3.0)
Prerequisites: English Graduate School status or permission.
Introduction to and exploration of relevant issues, theories, and practices for assessing student writing in and outside the classroom.

ENGL 670 Composition Theory and Practice (3.0)
An exploration of what is known about language, writing, and teaching which treats writing pedagogy as a professional act grounded in theory and informed by a well-defined body of discursive literature.

ENGL 671 History of Rhetoric I (3.0)
Review of rhetorical theory and practice in the Greek, Roman, early Christian, medieval, and scholastic periods.

ENGL 672 History of Rhetoric II (3.0)
Review of rhetorical theory and practice in the English Renaissance, the eighteenth and nineteenth centuries, the modern and contemporary periods.

ENGL 673 Rhetoric and Textual Analysis (3.0)
Selected topics in the rhetorical analysis of fictional and nonfictional texts.

ENGL 674 Interdisciplinary Studies in Rhetoric and Composition (3.0)
Topics can include cognition and composition, the social construction of knowledge, feminist theory and composition, etc.

ENGL 675 Studies in Professional Writing (3.0)
Prerequisite: One graduate linguistics or rhetoric course.
Selected topics dealing with research and theory of writing in the professions including science and technology, social sciences, business, and law.

ENGL 676 The Rhetoric of Science (3.0)
Prerequisites: Graduate Standing.
This is a graduate seminar in rhetoric that examines science doing and science writing as rhetorical enterprises. As a result, we will consider science as "stories" that privilege certain things and ignores others both in what it does and what it says.

ENGL 677 Assessing & Responding to Student Writing (3.0)
Prerequisites: English Graduate School Status or Permission.
Introduction to and exploration of relevant issues, theories, and practices for assessing student writing in and outside the classroom.

ENGL 681 Seminar in Special Studies (3.0)
Involves discussion and analysis of advanced research topics leading to the dissertation.

ENGL 682 Seminar in inguistics (3.0)
Prerequisites: LING 325 or ENGL 325 or ENGL 518.
Note: Cross-listed with LING 690.
Selected topics in applied or theoretical linguistics.

ENGL 685 Seminar in Modern British Studies (3.0)
Involves discussion and analysis of advanced research topics leading to the dissertation.

ENGL 686 Seminar in American Studies (3.0)
Involves discussion and analysis of advanced research topics leading to the dissertation.

ENGL 687 Seminar in Rhetorical Studies (3.0)
Prerequisite: ENGL 602.
Advance investigations in rhetoric and composition under a variety of special topics.

ENGL 689 English 689: Directed Reading for Comprehensive Preliminary Examinations (1.0-3.0)
1-3 hours; may be repeated; minimum of 3 hours required of all doctoral students.
Directed reading on topics of student's comprehensive examinations; reading lists are negotiated between student and directors of the examination areas. Restricted to doctoral students who have completed other coursework and are preparing for comprehensive exams.

ENGL 690 Dissertation Research (1.0-12.0)

ENGL 691 Contemporary Theories of Interpretation (3.0)
A selective survey of theories of interpretation from the New Criticism to the present, and of interpretive practices based on these theories.

Exercise Physiology

EXP 501 Applied Exercise Physiology (3.0)
Prerequisite: Consent of instructor.
Selective review of the pertinent areas of basic physiology and the application of this knowledge to exercise conditions. Consists of both lecture and laboratory format. Fall.

EXP 502 Principles of Exercise Testing and Prescription (3.0)
Prerequisite: EXP 501 or consent of instructor.
Effects of exercise to prevent coronary heart disease and atherosclerosis; specific effects of exercise on the established risk factors. Exercise as a rehabilitative measure in heart attack recovery. Spring.

EXP 503 Selected Topics in Exercise Physiology (3.0)
Prerequisite: Applied Exercise Physiology (EXP 501) or consent of instructor.
Analysis and critical review of the literature on selected topics relating to exercise performance. Summer.

EXP 600 Physiology of Exercise (3.0)
Prerequisite: Applied Exercise Physiology (EXP 501), and Human Physiology (EXP 605), or consent of instructor.
Effects of physical activities and work-related stress on the human organism. Includes energy liberation, circulation and respiration, physical work capacity, physical training, energy cost of various activities, nutrition and performance, temperature regulation, factors affecting performance and fitness, physiology of various sport activities. Laboratory demonstrations and projects and discussion of current literature. Spring.

EXP 601 Laboratory Methods in Exercise Physiology (3.0)
Prerequisite: Consent of instructor
Basic laboratory techniques in Exercise Physiology will be covered, including: oxygen consumption, strength measurement, body composition, etc. General concepts of data collection including validity and reliability will be emphasized. Scientific writing skills will be developed through the use of lab reports. Experimental design and analysis will be briefly discussed. Fall.

EXP 602 Biochemistry of Exercise (3.0)
Prerequisite: EXP 600 or consent of instructor.
Examination of nutritional, energetic and metabolic aspects of exercise. Emphasis on various biochemical control mechanisms that function during exercise and biochemical adaptations that occur through exercise training. Spring.

EXP 603 Seminar in Exercise Physiology (3.0)
Reviews, presentations and discussions of current topics in exercise physiology.

EXP 604 Advanced Topics in Exercise Physiology (1.0-3.0)
Prerequisite: EXP 600 or consent of instructor.
Independent study under the guidance of a selected faculty member.

EXP 605 Human Physiology (3.0)
Prerequisite: Consent of instructor.
Fundamental mechanisms of human physiology and study of coordinated body functions. Emphasis on neuromuscular, circulatory, respiratory and endocrine systems. Fall.

EXP 606 Case Study Practicum (3.0)
Prerequisite: EXP 501/HPES 486, and EXP 502
Analysis and critical review of case studies for special population. Exercise prescription, assessment of test results and lifestyle modifications.

EXP 611 Principles of Electrocardiography (EKG) (3.0)
Prerequisite: EXP 501 and 605 or consent of instructor.
Mechanical and electrical properties of the heart and skeletal muscle. Basic interpretation of EKG signals and EMG.

EXP 620 Exercise Physiology Clinical Internship (3.0-6.0)
Prerequisite: Major in Exercise Physiology and EXP 501, 502, 600, 605.
Corequisite: EXP 503.
Experience in exercise testing prescription, and leadership in Cardiac Rehabilitation. Experiences available for select special populations including the elderly, diabetic, individuals with back pain and pulmonary function problems.

EXP 699 Thesis (1.0-6.0)
Prerequisite: Consent of advisor.
Pass/Fail.

Finance

FIN 500 Business Finance (3.0)
Prerequisites: ACCT 500, ECON 500, MGMT 501.
An introduction to financial concepts from the corporate perspective. Topics include the basics of financial statements, an overview of the financial markets, risk and return, the time value of money, security valuation using time value concepts, cash flow determination and valuation, and long-term capital investment.

FIN 600 Financial Management (3.0)
Prerequisites: FIN 500, ACCT 600, ECON 600, MGMT 600, MKT 600, CIS 675, MGMT 610.
A study of the financing and investment decisions of the firm. Topics include valuations of firms and securities in the old and new economy, market efficiency, EVA and MVA, derivatives and hedging, alternative financing mechanisms (e.g. lease/buy, venture capital), managing uncertainty, agency theory, financial e-commerce, financial architecture, financial distress, global finance, and other related topics.

FIN 620 Financial Institutions and Capital Markets (3.0)
Prerequisites: FIN 600.
A study of financial services firms including the domestic and international markets in which they operate. Topics include money and capital markets, interest rate theory, security valuation, derivatives and immunization, and the characteristics of a financial services firm.

FIN 630 Investment Analysis (3.0)
Prerequisites: FIN 600.
The analysis of the process and environment of investment under conditions of uncertainty. The relevance, applicability, and durability of " Old Economy" valuation models and analytical techniques in the " New Economy" are explored and assessed.

FIN 670 International Finance (3.0)
Prerequisites: FIN 600.
A study of financial principles that are critical to the management of an enterprise in a global business environment. Topics include exchange rates, parity conditions, capital flows, and international banking. Capital formation, budgeting and hedging are discussed within an international context.

FIN 680 Special Topics in Finance (1.0-6.0)
An advanced study of one or more selected topics or issues related to the study of Finance.

FIN 698 Research Seminar in Finance (1.0-3.0)
Prerequisite: One 600-level course in finance and permission of departmental chair.

French

At least two courses on the 500 or 600 level will be offered for graduate students every semester. Course offerings are contingent upon sufficient enrollments. Regularly scheduled 500-level courses may be replaced by seminars, or studies of particular authors or specific topics.

FREN 500 French Work Exchange (3.0-6.0)
Prerequisite: Membership in a University of Louisville Work-Exchange Program with Montpellier administered by the International Center.
Credit awarded upon demonstration of successful completion of course undertaken with prior approval of the department. Cooperating businesses in Montpellier provide jobs for participants who gain practical experience in a French work environment. May be repeated; however only three credits can be applied to a French major.

FREN 506 Francophone Women Writers (3.0)
Prerequisites: FREN 321 and 322 or faculty consent.
Readings of literary and non-literary texts by women of the French-speaking world.

FREN 522 French Phonetics and Diction (3.0)
Prerequisite: 6 hours of French at 300+ level or consent of instructor.
Pronunciation, diction, and intonation in theory and practice. Corrective exercises, recordings for the analysis of individual pronunciation problems. Poetry and prose studied in phonetic transcription, using the International Phonetic Alphabet; extemporaneous speaking and prepared readings.

FREN 523 Advanced Communication Skills (3.0)
Prerequisite: FREN 321-322 or faculty consent.
Oral and written expression, emphasizing style and vocabulary.

FREN 524 Theory and Practice of Translation (3.0)
Prerequisites: FREN 455.
Discusses translation theory and develops techniques for the effective translation of a variety of materials.

FREN 531 Special Topics in Literature and Cultural Studies (3.0)
Prerequisites: FREN 455 or faculty consent.
An intensive study of an aspect of French or Francophone literature and/or culture.

FREN 551 French Oral Practicum (3.0)
Prerequisites: Membership in the UofL Work-Exchange Program with Montpellier administered by the International Center.
Credit awarded upon demonstration of successful completion of course undertaken with prior approval of the department. Cooperating businesses in Montpellier provide jobs for participants who gain practical experience in a French work environment. May be repeated for credit. Only 3 credits total count toward French minor. (Taught on Pass/Fail basis)

FREN 552 French Work - Exchange Research (3.0)
Prerequisites: Membership in the U of L Work-Exchange Program with Montpellier administered by International Center.
Credit awarded upon demonstration of successful completion of course undertaken with prior approval of the department. Cooperating businesses in Montpellier provide jobs for participants who gain practical experience in a French work environment. May be repeated for credit. Only 3 credits total count toward French major.

FREN 561 Independent Study I (1.0-3.0)
Prerequisite: Consent of department.
Independent study in areas not covered in the regular curriculum.

FREN 562 Independent Study II (1.0-3.0)
Refer to: FREN 561

FREN 599 Special Topics (3.0)
Prerequisite: Consent of instructor.
Topics of a unique or specialized nature in French language, literature or culture.

FREN 601 Studies in French Linguistics (3.0)
Exploration of issues in French Linguistics.

FREN 602 Studies in French Culture (3.0)
Exploration of issues in French culture.

FREN 603 Studies in French Media (3.0)
Exploration of issues in French Media.

FREN 604 Studies in French Literature (3.0)
Exploration of issues in French literature.

FREN 670 Special Topics (3.0)
Prerequisite: Consent of instructor.
Selected topics in French language, literature, or culture. Topics chosen will reflect the needs of the students and the background of the instructor. May be repeated under different subtitles.

FREN 680 Seminar (3.0)
Prerequisite: Consent of instructor.
Selected writers or personalities in French language, literature, or culture. Topics chosen will reflect the needs of the students and the background of the instructor. May be repeated under different subtitles.

FREN 690 Thesis (3.0-6.0)

FREN 699 FRE 699 Independent Research (3.0)
Work one on one with a faculty member on a topic of mutual interest.

Geography

GEOG 501 Kentucky Field Course (3.0)
Prerequisite: 6 hrs. Geography or consent of instructor.
Assesses the physical character, resources, people, patterns of development, and regional relationships of the Commonwealth through field study. 3 hrs. lec. and 14 hrs. per week field trips. Summer.

GEOG 510 Geography of the Ancient World (3.0)
Prerequisites: GEOG 201 or HIST 101 or ARTH 250, and two 300 level courses in Geography, Anthropology, History, Art History or Humanities, or consent of instructor.
Geographic study of ancient Europe, the Mediterranean Basin, Nile Valley, and Mesopotamia, with emphasis on sacred places, belief systems, environment, and gender-related issues.

GEOG 520 Geography and Nutrition Among African and African-American Populations (3.0)
Prerequisite: Consent of instructor.
Note: Cross-listed with PAS 560.
Comparison of geographical conditions, food culture, technology and socioeconomic factors among Africans and African-Americans affecting health and nutrition.

GEOG 521 Medical Geography (3.0)
Prerequisites: Faculty Consent.
Introduction to concepts, methods and tools used to investigate geographic aspects of health and disease. Application of concepts and methods through analysis of health, population and environmental data.

GEOG 522 GIS and Public Health (3.0)
Prerequisites: Consent of instructor.
Application of tools and methods of analysis in geographic information systems (GIS) to public health. Use of ArcGIS software to manage and analyze health, census and spatial data.

GEOG 530 Transportation Geography (3.0)
Prerequisite: GEOG 327 or consent of instructor.
An analysis of distribution and transportation systems as functional entities capable of introducing and reacting to change within the economic region.

GEOG 531 GIS & Urban Demographic Analysis (3.0)
Prerequisites: GIS knowledge or concurrent tutorial.
Demographic analysis through the use of GIS technology. Emphasis placed on metropolitan area characteristics including population change, segregation, ethnic settlement, social and economic stratification and commuting.

GEOG 535 GIS and Retail Site Analysis (3.0)
Prerequisite: GIS knowledge or concurrent tutorial.
Retail site analysis through use of GIS technology. Emphasis placed on market demand and supply characteristics. Physical site analysis, demographics, and competitive environment will be examined.

GEOG 541 Teaching Geography (3.0)
Methods and materials in geography instruction for elementary and secondary schools. Credit may not be earned in both 541 and 641.

GEOG 550 The Greater Louisville Region (3.0)
Prerequisite: GEOG 328 or consent of instructor.
Directed field study of urban problems in the greater Louisville region and vicinity, including population, migration, transportation, and pollution.

GEOG 555 Surveying and Mapping (3.0)
Prerequisites: MATH 190 and GEOG 350.
Examination of methods used in surveying, plane table mapping, and photogrammetry with emphasis on the compilation of maps from field data. Fall.

GEOG 557 Advanced Geographic Information Systems (3.0)
Prerequisite: GEOG 357.
Application of advanced GIS concepts to real-world projects. Will focus on development and implementation of a digital geo-spatial database. The project will be carried from the design phase through completion.

GEOG 561 Urban Environmental Quality (3.0)
Prerequisite: Consent of instructor.
A study of environmental aspects of urban areas and analysis of inter- and intra-city variations in environmental quality.

GEOG 578 Downtown Change and Development (3.0)
An analysis of the morphology, development and function of central business districts with a special emphasis on downtown Louisville.

GEOG 583 Spatial and Non-Spatial Database Management (3.0)
Prerequisites: GEOG 357.
Provide students with “hands-on” experience in development, management and integration of spatial and non-spatial databases, using GIS and database management software.

GEOG 590 Special Topics (3.0)
Investigation of topics not offered in regular courses. Topic will be announced in Schedule of Courses. May be repeated for different topics up to a limit of 12 hours. Offered as needed.

GEOG 599 Directed Readings in Geography (1.0-4.0)
Prerequisite: Advanced courses in geography or related fields; permission of major department.
Supervised readings centered around a specific region or topical field for advanced work.

GEOG 620 Geography & Nutrition Among African and African American Populations (3.0)
Note: Crosslisted with PAS 660.
An in-depth examination of the nutritional status of Africans, African-Americans and persons of African descent. The course will focus on comparison of epidemiological transition, political economy of nutrition, politics of food welfare programs, food aid, over-nutrition (obesity), under-nutrition and dietary-related diseases among African-Americans, Africans and persons including blacks in the Diaspora.

GEOG 628 Planning History and Issues (3.0)
Prerequisites: Consent of instructor.
Crosslisted with: PLAN 600.
The history of planning and contemporary issues with an emphasis on roles of planners, zoning and law.

GEOG 631 Urban Demography (3.0)
Prerequisites: Graduate Standing
Note: Crosslisted with PLAN 618.
Spatial analysis of the distribution, characteristics, growth, and change of the population of a metropolitan area.

GEOG 635 Retail Site Analysis (3.0)
Prerequisites: GEOG 327 or Urban Economics or consent of the instructor.
Note: Crosslisted with PLAN 614.
Examination of market structure, retail environment and physical site characteristics. Utilizes current practices in the discipline to determine optimum retail location.

GEOG 641 Teaching Geography (3.0)
Methods and materials in geography instruction for elementary and secondary schools. Credit may not be earned in both 541 and 641.

GEOG 656 Spatial Statistics (3.0)
Prerequisites: Statistics course.
Note: Crosslisted with PLAN 615.
The analysis of spatial patterns and processes through the use of spatially based statistics.

GEOG 657 Geographic Information Systems (3.0)
Note: Crosslisted with UPA 629 and PLAN 608.
Application of GIS to real world projects. An emphasis will be placed on the development of a digital spatial database.

GEOG 658 Analytical Urban Geography (3.0)
Prerequisites: Urban Geography (GEOG 328), Urban Sociology (SOC 305) or consent of instructor.
Note: Crosslisted with PLAN 616.
Advanced analysis of urban spatial processes and patterns with an emphasis on quantitative models.

GEOG 690 Special Topics (1.0-3.0)
Investigation of topics not offered in regular courses. Topic will be announced in Schedule of Courses. May be repeated for different topics up to a limit of 12 hours. Offered as needed.

GEOG 691 Research and Independent Study (1.0-5.0)

Geosciences

GEOS 510 Earth & Space Science for Teachers (3.0)
Prerequisite: Junior standing.
2 lecture; 2 lab.
Principles of the Earth Sciences and their application to the local region; identification of common minerals, rocks, and fossils.

GEOS 564 Hydrology (3.0)
Prerequisite: GEOG 200 or GEOS 201, or consent of instructor.
Advanced study of the hydrologic cycle, drainage basin analysis, stream flow and flooding, pollution and utilization of water resources.

GEOS 565 Natural Hazards (3.0)
Prerequisite: GEOS 201.
Environmental significance of natural hazards, risk assessment methods. A discussion of earthquakes, flooding; landslides/expansive soil and volcanic eruptions. Hazards reduction and mitigation strategies.

GEOS 590 Selected Topics in Geosciences (3.0)
Prerequisite: Consent of instructor.
A detailed investigation of some restricted topic of geology or related discipline. Topic to be announced in Schedule of Courses.

GEOS 610 Earth and Space Science for Teachers (3.0)
Principles of the Earth Sciences and their applications to the local region; identification of common minerals, rocks and fossils. Graduate Students only.

German

GERM 500 German Study Abroad (1.0-15.0)
Prerequisite: Membership in a University of Louisville Language Study Abroad Program or a program approved by the Department.
Credit awarded upon demonstration of successful completion of program undertaken with prior approval of the department, including a paper or project and an oral or written examination in the language and culture, administered under the supervision of a faculty member.

GERM 561 Independent Study (3.0)
Prerequisites: Permission of instructor and department.
Independent study in German language literature and culture.

GERM 599 Special Topics (3.0)
Prerequisites: Permission of instructor and department.
Topics of a unique or specialized nature in German language, literature or culture.

GERM 680 Seminar (3.0)
Prerequisite: Consent of instructor.
Selected topics in German language, literature, or culture. Topics chosen will reflect the needs of the students and the background of the instructor. May be repeated under different subtitles.

GERM 690 Thesis (3.0-6.0)

Graduate Interdisciplinary

GS 683 College Teaching (3.0)
Note: Cross-listed with EDAD 683.
Analysis of the elements of effective college teaching; observation and evaluation of teaching; opportunities for microteaching; and investigation of rights and responsibilities of faculty members.

GS 699 Interdisciplinary Research (1.0-12.0)
Prerequisite: Major in Interdisciplinary Studies.

Healthcare Administration

HADM 620 Introduction to the Business of Healthcare Systems (3.0)
Examines topics from various business areas. Possible topics include cost-benefit analysis, managed care issues, information systems and medical informatics; cost concepts and decision making; product costing and accounting systems; operations management-TQM; and healthcare marketing. Credit cannot be earned for both MGMT 654 and HADM 620.

HADM 621 Health Economics (1.5)
Applied economics in the health service sector. Examines issues of efficiency, insurance, government programs, and the supply and demand for medical services in the hospital and physician market.

HADM 622 Managed Care (1.5)
Familiarizes the student with the various service delivery models of managed care systems. Students will learn how to evaluate different managed care models and how contracting and incentives affect the quality of care.

HADM 624 Management Accounting and Cost Analysis for Healthcare (1.5)
Study of accounting and financial management procedures and techniques in the healthcare industry. Examines accounting problems unique to the healthcare industry. Applies general accounting analysis and management accounting techniques to healthcare settings.

HADM 625 Healthcare Quality and Operations Management (1.5)
Reviews the field of operations management relating to the healthcare market. Examines the relationship between operations research and the management of complex healthcare delivery organizations. Focuses on formulating competitive strategies in operation management decision areas including system design, quality measurement, and productivity analysis.

HADM 626 Healthcare Marketing (1.5)
Focuses on the application of marketing concepts in healthcare organizations, specifically hospital, insurance, and physician markets. Application of marketing concepts such as market segmentation planning, positioning and product mix.

HADM 627 Management of Health Services Organization (1.5)
A systematic study of the roles of health services managers and the organizational and environmental context within which they work. An analysis of healthcare organizations with emphasis on management structures.

HADM 628 Medical Informatics (1.5)
Surveys the use of information systems in healthcare, emphasizing strategies useful in system development and acquisition. Topics include: history of healthcare information systems; applications of information technology to healthcare delivery; how to manage information technology; and information technology as an enabling technology.

HADM 629 Healthcare Finance (1.5)
Prerequisite: FIN 500 or HADM 625
Applied techniques that enable organizations to efficiently manage their financial resources in the unique healthcare setting.
Topics include financial analysis, strategic financial planning, capital project analysis, capital structure considerations, and working capital management.

HADM 631 Healthcare Policy (3.0)
Prerequisite: PADM 620.
Elucidates theories of public policy and applies them to health issues. The course covers the evolution of healthcare and discusses policy options. Major issues of health delivery and finance are also covered within this context.

HADM 632 Healthcare Law (3.0)
Prerequisite: PADM 620.
Covers the legal aspects of healthcare. This includes the structure of the judicial system, legal procedures, torts, criminal aspects, contracts and corporate liability. Other legal aspects include malpractice, patient rights and the nature of the nursing profession.

HADM 680 Special Topics in Healthcare (1.0-3.0)
Advanced study in one or more selected topics or issues related to the study of healthcare administration.

HADM 698 Research Seminar in Healthcare Administration (1.0-6.0)
Prerequisite: HADM 620 and permission of program head.

History

HIST 501 Independent Study (3.0)
Prerequisites: Minimum grade point average of 3.0 overall; minimum grade point average of 3.5 in the department, and at least 18 semester hours credit in the department.

HIST 502 Independent Study (3.0)
Refer to: HIST 501

HIST 503 Advanced Studies in History (3.0)
Prerequisite: Consent of instructor.
Selected topics in history that cross traditional geographic or chronological boundaries.

HIST 504 Philosophy of History (3.0)
Note: Cross-listed with PHIL 504.
Speculations on meaning of history from ancient times to present; discussion of such contemporary issues as nature of explanation, objectivity, truth in history.

HIST 505 U. S. Cultural History: The 19th Century -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
An analysis of artistic expression and intellectual discourses of the nineteenth century, with attention to different methodologies of cultural interpretation.
HIST 211-212 is recommended.

HIST 506 Women in 19th Century America - WR (3.0)
Prerequisites: Completion of General Education writing requirement.
Note: Crosslisted with WMST 533.
Note: Approved for the Arts & Sciences upper-level requirement in written communication (WR).
Course focuses on material conditions, ideologies, and knowledge-systems that shaped American women's lives in the 19th century, with attention to race, class, and regional differences. Credit may not be earned for both HIST 506/WMST 533 and WMST 633.

HIST 508 American Environmental History -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Relationship between economic development and environmental change, focusing on America, pre-colonial to present.

HIST 510 Studies in American History (3.0)
Intensive study of particular topic, to be announced in printed course schedule. May be repeated under different subtitles. Junior standing is recommended.

HIST 511 History of the Old South - WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Economic life, society, and government in the southern states from colonial times to the Civil War. Junior standing is recommended.

HIST 512 History of the Jews in America -WR (3.0)
Note: Approved for the Arts and Science upper-level requirement in written communication (WR).
The experience of Jews in America from the seventeenth century to the present, with attention to topics such as demography, the immigrant experience, anti-Semitism, religious movements and cultural developments.

HIST 514 United States Peace Movement (3.0)
History of the peace movement in the United States from the beginning to the present. The course also examines nonviolent civil disobedience throughout U.S. history. Concentration on the twentieth century with the main focus being the Vietnam Anti-war movement. HIST 314 is recommended.

HIST 515 American Legal History - WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Surveys the role of the law and the legal profession in American history from colonial origins to the present.

HIST 516 History of American Civil Liberties -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Surveys the history of American civil rights, especially voting issues and civil liberties, especially speech and press issues, from colonial origins to present.

HIST 518 Antebellum United States, 1800-1860 -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
An intensive study of the social, economic, political and intellectual aspects of United States history between the Era of the Early Republic and the eve of the Civil War.

HIST 519 Gilded Age and Progressive Era United States, 1877-1929 -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
An intensive study of the social, economic, political and intellectual aspects of American History from the end of Reconstruction to the beginning of the Great Depression.

HIST 521 Colonial America to 1765-WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
History of North America, focusing on the British Colonies, beginning with the first native Americans, to the end of the Seven Years War.

HIST 522 The American Revolution and the Confederation (3.0)
An intensive study of the American Revolution and of the background of the Constitution.

HIST 524 United States Civil War and Reconstruction -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Political dissolution of the 1850s; political, social, economic, constitutional, and military events of the Civil War; the Reconstruction era.

HIST 526 The Pacific War 1941-1945 -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
World War II: the military actions, diplomacy, technology, economics and societies before and after the war in Asia and the Pacific. Junior standing is recommended.

HIST 528 Recent American History, 1929-1945 -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
The interaction of political, economic, social, and intellectual forces in the shaping of foreign and domestic policy.

HIST 529 Recent American History, 1945 to Present -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
The interaction of political, economic, social, and intellectual forces in the shaping of foreign and domestic policy.

HIST 533 Twentieth-Century Latin America -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
The history of Latin America since 1900, with special emphasis upon the problems of social change and revolution.
HIST 332 is recommended.

HIST 534 The U.S. and Latin America -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
The history of the international relations of the United States with the nations of Latin America, emphasizing economic, political, and ideological development. HIST 314 is recommended.

HIST 537 Black Radicalism (3.0)
Modern Black Nationalists, Marxists, and Black Panthers in the U.S., and their programs, ideologies, and behaviors.**HIST 538 African-American Leadership -WR (3.0)**
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Mainstream black leaders' ideology, program and plan of action for freedom and opportunity from slavery to the present.

HIST 540 Advanced Studies in History -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Advanced study of a special topic; meets established guidelines for WR courses; writing and rewriting of papers throughout the term.
Junior standing is recommended.

HIST 542 Studies in Graeco-Roman History -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Topics to be chosen by instructor (e.g., the Ancient Historians).
HIST 342-343 is recommended.

HIST 545 Studies in the Ancient Near East (3.0)
Topics to be chosen by the instructor (e.g., social and legal institutions).

HIST 547 Studies in Russian History -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Topics to be chosen by instructor (e.g., the early church, formation of the Russian state, administration, liberalism, the purges).

HIST 551 Studies in Medieval History -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Intensive work in selected periods of medieval history (e.g., High Middle Ages, Europe in the fourteenth and fifteenth centuries).

HIST 552 Topics in Medieval History (3.0)
Intensive study of selected topics (e.g., makers of Europe; consensus and dissent in medieval society; cities and countryside in Medieval Europe).

HIST 553 The Medieval City -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Revival of urban centers following the commercial revolution, and evolution of public and private structures of urban living; 1000-1500 C.E.

HIST 554 Spain and Portugal in the Middle Ages -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
History of the Iberian peninsula from the Muslim invasion of 711 to the Christian conquest of Granada in 1492, emphasizing cross-cultural exchanges and social interactions.

HIST 555 English Medieval History, 1066 to 1500 -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
An analysis of the political, economic, and social factors contributing to the development of the English nation from the Norman Conquest to the Wars of the Roses.

HIST 559 U.S. and the Cold War Policy -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
This course examines U. S. diplomacy during the Cold War (1945-1989).
Junior standing and HIST 314 are recommended.

HIST 560 The Great War 1914-1918 -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
World War I: the military actions, diplomacy, technology, economics, and societies in the first total war.
Junior standing is recommended.

HIST 561 U.S. and Vietnam -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Analysis of diplomatic relations between the United States and Vietnam, concentrating on the 20th Century.
HIST 314 is recommended.

HIST 562 The Middle Eastern Wars I (3.0)
Nomadic warriors, Turks and Mongols. Wars and military technology of Middle Eastern Gunpowder Empires. Wars of Ottoman expansion.

HIST 563 The Middle Eastern Wars II -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
European technological superiority and Ottoman defeat. The Austrian and Ottoman wars. Balkan Wars. World War I. Turkish War of Independence.

HIST 571 The Renaissance -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
The Italian urban powers; Hundred Years' War after 1415; Church and society on the eve of the Reformation; Italian and Northern humanism; invasion of Italy; early explorations.

HIST 572 Age of the Reformation - WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Intensive examination of causes of the Reformation, the program of the Reformers, the nature of the Roman Catholic Counter-Reformation, and the character of the sixteenth century.
HIST 352 is recommended.

HIST 575 Tudor England, 1485-1603 -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Intensive study of selected aspects of the period: Humanism, Reformation, government and society, court and culture.
HIST 366 is recommended.

HIST 577 The French Revolution and Napoleon -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
The Old Regime; influence of the Enlightenment; causes of the Revolution; courses and significance of the Revolution; emergence of Napoleon; rise and fall of the Empire.

HIST 579 History of European Ideas: Selected Topics -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Selected topics on thinkers in the arts and sciences from one or more generations of European thought between the age of Charlemagne and the present. Includes the influence of ideas on their immediate society as well as on European culture and history. Topics will be announced in the Schedule of Courses.

HIST 582 Contemporary Europe Since 1945 (3.0)
History of Europe from the postwar era to the present.
Junior standing is recommended.

HIST 583 Women in the Twentieth Century in Europe and the U.S.-WR (3.0)
Note: Cross-listed with WMST 531.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
The history of women in Western society, including Europe and the U.S. in the twentieth century. Includes political, economic, social, and cultural developments. Credit may not be earned for HIST 583/WMST 531 and WMST 631.
Junior standing is recommended.

HIST 585 The Third Reich (3.0)
Survey of factors which produced the Hitler regime, and the events which spelled its demise.
Junior standing is recommended.

HIST 587 The Russian Revolutions - WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Intensive examination of the Russian revolutions of 1905 and 1917, their chronology, their causes, historiographical issues.

HIST 588 Feminism in Western Civilization, 1790-1920 -WR (3.0)
Note: Approved for the Arts and Sciences upper- level requirement in written communication (WR).
Comparative analysis of feminist movements in United States, Britain, and Europe, stressing intellectual background, social composition, goals, and political strategies. Credit may not be earned for HIST 588 or WMST 530 and WMST 630.
Junior standing is recommended.

HIST 589 History of American Sexualities -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Focuses on sexual behaviors and meanings in America from the Colonial period to the late twentieth century, and how sexual meanings impact on people's identities, choices, and social positions. Also concerns the interaction of gender, race, and class. Credit may not be earned for this course and WMST 532.
HIST 211-212 is recommended.

HIST 590 Studies in African History -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Note: Cross-listed with PAS 590.
Intensive study of a particular topic chosen by the instructor (e.g., slavery and the slave trade, traditional kingdoms).
9 hours of HIST or PAS 590 and junior standing is recommended.

HIST 591 Civilizations of Ancient and Medieval India - WR (3.0)
Note: Approved for the Arts & Sciences upper-level requirement in written communication (WR).
An introduction to the civilizations of the Indian subcontinent until the eighteenth century. It covers history, interpretive studies and selected literary, religious, and philosophical works, and visual arts.

HIST 592 Civilizations of Modern India - WR (3.0)
Note: Approved for the Arts & Sciences upper-level requirement in written communication (WR).
An introduction to the civilizations of the Indian subcontinent since the eighteenth century. It covers history, interpretive studies and selected literary, religious and philosophical works, and visual arts.

HIST 593 American Image of the Middle East -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Formation of the American image of Islam and the Middle East. European tradition of prejudice. Effect of religious traditions on U.S. mythologies.

HIST 594 Studies in Middle Eastern History -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Selected topics in Middle Eastern history and societies.

HIST 595 Principles of Cultural History -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
The study of major systematic views of the development of Western culture. Credit may not be received for this course and HUM 595.

HIST 596 History of the Future - WR (3.0)
Note: Approved for Arts & Sciences upper-level requirement in written communication (WR).
A conceptual approach that presents the premise that the history of the future is, in reality, the history of the present and the past.
Junior standing is recommended.

HIST 597 Introduction to Public History (3.0)
Introduction to nature, history, and methods of public history. Emphasis on relationship of historical scholarship to nonacademic applications.
Faculty consent is recommended.

HIST 598 Introduction to Archives Administration (3.0)
The history, principles, and methods of administering public and private archives, records, and manuscript materials, with some practice in an archives and records program.

HIST 599 Oral History -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
A study of the nature and development of oral sources in history, the creation and evaluation of them, and their application to research and teaching. Faculty consent is recommended.

HIST 601 Directed Study (3.0)

HIST 602 Directed Study (3.0)
Refer to: HIST 601

HIST 603 Thesis (3.0-6.0)

HIST 605 Research Methods and Materials (3.0)
Techniques of historical research, analysis, organization, and writing; documentation; bibliographical and other research tools; use of research libraries and manuscript depositories. Experience in analysis, research, writing, and criticism.

HIST 607 Oral History as a Research Methodology (3.0)
Advanced applications of oral history methodology to research. Emphasis on research design, validation techniques, integration of data obtained with other sources. Applications to individual research.

HIST 608 Practicum in Public History (3.0)
Prerequisites: Consent of instructor. Supervised experience in a public history setting.

HIST 611 Studies in American History (3.0)

HIST 612 Studies in American History (3.0)
Refer to: HIST 611

HIST 613 The Teaching of History (3.0)

HIST 621 Seminar in American History (3.0)

HIST 622 Seminar in American History (3.0)
Refer to: HIST 621

HIST 625 History of American Education (3.0)
Examination of the function of educational processes in the context of American political, economic, and social history.

HIST 629 Studies in Military History (3.0)
Advanced reading in the fundamental works of military history.

HIST 651 Studies in Medieval History (3.0)

HIST 652 Seminar in Medieval History (3.0)

HIST 662 Seminar in Early Modern European History (3.0)

HIST 682 Studies in Modern European History (3.0)

HIST 683 Seminar in Modern European History (3.0)

Health Promotion, Physical Education and Sport Studies

HPES 501 Stress and Tension Control (3.0)
Prerequisite: Human Anatomy and Physiology for Non-Biology Majors (BIOL 360), Structure and Function in the Movement Sciences (HPES 386) or consent or instructor.
A study of physiological, sociological, and psychological stresses and their underlying mechanisms of action. Emphasis on modification of stress via developed proficiency in relaxation techniques.

HPES 503 Obesity: Causes, Control (3.0)
Prerequisite: Human Anatomy and Physiology for Non-Biology Majors (BIOL 360), Structure and Function in the Movement Sciences (HPES 386) or equivalent.
A study of the physiological, psychological, and sociological factors in the development and modification of obesity. Laboratory experiences in the assessment of obesity will be provided.

HPES 504 Physical Activity and Health (3.0)
Prerequisite: Consent of instructor.
A study of the positive and negative influences of physical activity on diseases and infirmities that affect a healthy lifestyle.

HPES 505 Stress and Disease (3.0)
Prerequisite: Human Anatomy and Physiology for Non-Biology Majors (BIOL 360), Structure and Function in the Movement Sciences (HPES 386) or equivalent.
Relationship of stress to acute and chronic disease and the effects of contemporary stressors on psychophysiological responses. Examination of mechanisms of adaptation, treatment, and prevention.

HPES 530 Nutrition and Athletic Performance (3.0)
Prerequisite: Consent of instructor.
Principles of nutrition with special emphasis on nutrient and energy needs of athletes of optimal performance.

HPES 531 Leadership in Health Promotion (3.0)
Note: Crosslisted with HPES 631.
Analysis of administrative and organizational factors of health education and promotion from within the program, within the organization, and between organizations. Emphasis will be placed on policy making, administration, and functional issues such as collaboration and consultation at the organizational level.

HPES 562 Alcohol and Drug Education (3.0)
Study of key components of alcohol and drug education, i.e., self-concept information, coping skills, refusal skills, and decision making. Alcohol and drug education programs at the national, state, and local level will be reviewed.

HPES 564 Women's Health Issues - CD2 (3.0)
Examines relationship of women to health and healthcare. Comparison and contrast of health concerns unique to women and common to both sexes at all ages.

HPES 565 Nutrition for Children and Adolescents (3.0)
Nutritional needs during childhood are covered with emphasis on diet evaluation, menu planning and disease prevention. Nutrition units will be developed using the curriculum planning map.

HPES 567 Healthy Sexuality and Aids Education (3.0)
A study of the basic competencies required for AIDS/STD education and prevention within the framework of healthy sexual functioning.

HPES 575 Administration of Physical Education Program and Athletics (3.0)
Administration of the total physical education program on the secondary school level, including units on budget, staff, facilities, programs, equipment, public relations, and evaluation.

HPES 589 Prevention and Care of Athletic Injuries II (3.0)
Prerequisite: Prevention and Care of Athletic Injuries I (HPES 389) or equivalent or consent of instructor.
Focuses on basic anatomy and its relationship in sports-induced injuries. Provides framework for adapting prevention, evaluation, management and rehabilitation techniques to aid in the treatment of athletic injuries.

HPES 597 Special Topics in HPES (1.0-3.0)
Prerequisite: Consent of instructor.
Examination of well-defined topics not studied in regular courses. Topics will be announced in Schedule of Courses.

HPES 598 Independent Study in HPES (1.0-3.0)

HPES 601 Philosophy of Sport and Physical Education (3.0)
Study of sport from various philosophical positions. Relation of theories and thoughts about what constitutes sport to particular time periods. Offered as needed.

HPES 604 Research Methods in HPES (3.0)
Prerequisite: HPES Tests and Measurements (HPES 377)
Techniques used in developing the research project. Development of outline for action research project.

HPES 605 Teaching and Learning for Elementary Physical Education (6.0)
Philosophy, objectives, curriculum and methods of teaching physical education to elementary students. Must be taken prior to student teaching.

HPES 606 Teaching and Learning for Secondary Physical Education (6.0)
Philosophy, objectives, curriculum and methods of teaching physical education to secondary students. Must be taken prior to student teaching.

HPES 607 Methods of Supervision in Physical Education (3.0)
Covers various models of supervision. Several systematic observational data collection systems will be used to develop skills for supervision in physical education.

HPES 608 Curriculum: An Achievement Based Approach (3.0)
Prerequisite: Admission to M.A.T.
Presents a variety of curricular approaches to physical education along with activities to help the teacher deliver the content.

HPES 609 Methods in Practical Living: Health (3.0)
Prerequisites: Admission to the MAT in Physical Education Program.
Designed to cover strategies and methods for delivering health education related to practical living skills. (KERA) at the middle school and secondary school level.

HPES 610 Experiential Outdoor Education Leadership (3.0)
Prerequisite: Admission to M.A.T.
Teaches necessary skills to lead outdoor experiential education programs.

HPES 611 Seminar in Student Teaching in Physical Education (3.0)
Prerequisite: Admission to M.A.T.
Corequisite: HPES 612 and HPES 613.
Designed as an analysis of student teaching activities for the purpose of improving instructional competence, developing professionalism and reflective teaching skills, and understanding the learner within the instructional context.

HPES 612 Student Teaching in Physical Education I (6.0)
Prerequisite: Admission to M.A.T.
Corequisite: HPES 611
Provides supervised observation, participation and teaching in physical education at the elementary and secondary school levels.

HPES 613 Student Teaching in Physical Education II (6.0)
Prerequisite: Admission to M.A.T.
Corequisite: HPES 611
Provides supervised observation, participation and teaching in physical education at the elementary and secondary school level.

HPES 614 Action Research Project (3.0)
Prerequisite: Admission to M.A.T.
Corequisite: HPES 611 and HPES 612.
Each graduate student must complete an action research project during the student teaching experience.

HPES 618 Diverse Populations in Physical Activity and Health (3.0)
The study of social and cultural system of diverse groups, related to physical activity and health.

HPES 619 Practicum: Psychomotor Assessment of Dysfunctions in Adapted Physical Activity (3.0)
Administration of tests of psychomotor functioning; interpretation of findings; writing the educational diagnosis; participation in multidisciplinary settings.

HPES 620 Instructional Design in Adapted Physical Activity (3.0)
Prerequisites: Background in physical education and/or special education, or consent of instructor.
Designed to provide knowledge and understanding which will enable students to plan and conduct diversified programs of developmental activities, games, sports, and rhythms suited to the interests, capabilities, and limitations of typical students.

HPES 621 Diagnostic/Assessment in Adapted Physical Activity (3.0)
Instructional intervention applied to the physical education setting; emphasis on design, implementation and evaluation of assessment tools and procedures in programs for the disabled.**HPES 625 Instructional Leadership in Physical Education (3.0)**
A critical examination of the current knowledge base and best practices in K-12 physical education instruction, programming, assessment and professional development.

HPES 629 Introduction to Health Consultation (3.0)
Prerequisite: HPES 501 and HPES 503.
Study of the basic skills required for health behavior change using a health counseling approach with emphasis on the development of skills needed to design and facilitate health counseling programs.

HPES 630 Nutrition and Athletic Performance (3.0)
Prerequisite: College nutrition course or consent of instructor.
Principles of nutrition with special emphasis on nutrient and energy needs of athletes for optimal performance.

HPES 631 Leadership in Health Promotion (3.0)
Note: Crosslisted with HPES 531.
Analysis of administrative and organizational factors of health education and promotion from within the program, within the organization, and between organizations. Emphasis will be placed on policy making, administration, and functional issues such as collaboration and consultation at the organizational level.

HPES 649 Psychological Aspects of Physical Education and Sport (3.0)
Analysis of the interaction among personality, motor ability, group dynamics, and environment in physical education and sports performance. 3 hrs. lect.; labs. arr.

HPES 650 Personality and Social Development in Sport (3.0)
Systematic study of man's behavior in sport in relation to his social environment. Emphasis on the relationship between physical activity and interpersonal competence, attitudes, personality and aggression.

HPES 655 Current Trends and Studies in HPES (3.0)
Examination of current literature, research and trends in HPES.

HPES 659 Motor Control and Learning: Lab (3.0)
Experiments in motor learning that promote the use of basic apparatus and practical applications of research.

HPES 660 Motor Control & Learning (3.0)
Analysis and critical review of literature on selected topics relating to motor control and learning. Emphasis on research in the area of motor learning.

HPES 663 Sexuality Education (3.0)
Survey of the dynamics of family life and parenting skills. Scope of family life education, methods, source materials and current issues.

HPES 669 Administering Health Promotion and Disease Prevention Programs (3.0)
Prerequisite: A year of sport management or consent of instructor.
Special problems in administration of health promotion and disease prevention programs in a variety of community organizations. Program planning and organization; financing and budgeting; measuring program effectiveness; integration of health promotion and disease prevention programs and strategies with existing healthcare delivery systems.

HPES 675 Health Promotion and Disease Prevention at the Individual Level (3.0)
Techniques for identifying patterns of health-negative behaviors and life-style patterns on the part of an individual and health-negative circumstances in an individual's immediate environment. Development, implementation, and evaluation of person-focused changed strategies designed to eliminate, offset, and/or minimize the effects of health-negative behaviors and microenvironmental factors.

HPES 676 Community Health Promotion and Disease Prevention (3.0)
Analytic techniques for identifying health-negative factors in the organizational and community setting; developing, implementing, and evaluating strategic plans and programs for health promotion and disease prevention at the organizational and community level.

HPES 684 Program Planning in Health Education and Promotion (3.0)
Effective design, implementation, and evaluation of health instruction within the school and community setting. Emphasis on the development of sequential learning opportunities designed to meet individual and societal health needs and interests.

HPES 692 Cooperative Internship/Practicum (1.0-3.0)
Prerequisite: Completed 21 hours toward degree; completed 6 hours of HPES courses.
Supervised practical work experience in an organization or business related to the student's academic field, area of specialization, or career interest.

HPES 697 Special Topics in HPES (1.0-3.0)
Examination of one or more selected topics in the study of Health Promotion, Physical Education, and Sport Studies.

HPES 699 Directed Readings in HPES (1.0-3.0)
Prerequisite: 15 hours of graduate credit or consent of instructor.
Supervised readings and written project relating to a specific research topic in health.

Humanities

A wide range of approved courses is available in the Departments of English, Fine Arts, Classical and Modern Languages, Music, History, Philosophy and Theatre Arts. In addition, the Humanities Division offers the following courses in interdisciplinary Humanities.

HUM 500 Honors Thesis in Humanities -WR (3.0)
Prerequisite: Junior standing; admission to Divisional Honors Program.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
An intensive examination of a topical area in Humanities undertaken with a designated faculty director.

HUM 501 Independent Study (1.0-3.0)
Prerequisites: Minimum grade-point average of 3.0 overall; minimum grade point average of 3.5 in the department, and at least 18 hours credit in the department. Consent of Division chair.

HUM 502 Independent Study (1.0-3.0)
Refer to: HUM 501

HUM 509 Interdisciplinary Approaches: Arts and Humanities (3.0)
Methods and theories in interdisciplinary thinking and research, emphasizing (1) the interrelationships of the disciplines, (2) the importance of synthesizing art, theatre, literature, music, philosophy, and religion in a cultural context, and (3) the critical examination of issues arising from fields outside the Humanities that have significant impact on and synergy with the Humanities. Credit may not be earned for both 509 and 609.

HUM 510 Interdisciplinary Approaches: Study of Religion WR (3.0)
Prerequisite: Junior standing.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Historical perspective on methodologies in the study of religion: normative, empirical, hermeneutical, phenomenological and post-modernist (focus on gender, race, class, pluralism).

HUM 511 Topics in the Interpretation of Sacred Texts (3.0)
Prerequisite: Junior standing.
Study in depth of sacred texts and commentaries selected from the major religions of the world: Hebrew Bible, New Testament, Qur'an, Vedas, Bhagavad Gita, and Buddhist sutras.

HUM 512 Topics in Contemporary Religious Thought (3.0)
Prerequisite: Junior standing.
Study in depth of selected contemporary writers from major world religions.

HUM 513 Comparative Religion (3.0)
Prerequisite: Junior standing.
A critical study of similarities and differences in ideas about and attitudes toward significant themes in world religions.

HUM 514 Colloquium: Interreligious Dialogue (3.0)
Prerequisite: Junior standing.
A study of methodologies for interreligious dialogue and their applications in dialogue on significant issues or themes in world religions.

HUM 524 Special Topics in Film Study (3.0)
Prerequisite: HUM 324 or 325 or 326, and junior standing.
An in-depth study on a specific topic to be announced in the Schedule of Courses. May be repeated up to three times for different topics.

HUM 550 Internship in Arts and Humanities (3.0)
Prerequisite: Consent of Chair of Humanities or Graduate Advisor.
Note: Course cannot be repeated for academic credit toward the degree.
An individually arranged internship combining a volunteer work experience with an Arts or Humanities organization or agency with a related academic project.

HUM 555 Independent Reading (2.0-3.0)
Prerequisite: Honors standing, junior standing, consent of division chair.
Readings in cultural history; oral and written reports.

HUM 561 Selected Topics (3.0)
Prerequisite: Junior standing.
Content to be indicated in the Schedule of Courses.

HUM 562 Selected Topics (3.0)
Prerequisites: Junior standing.
Content to be indicated in the Schedule of Courses.

HUM 581 Dante (3.0)
Prerequisite: Junior standing.
Study of Dante's life and major works, and the social, political, and cultural milieu which affected his literary career.

HUM 591 Perspectives on Ancient Culture -WR (3.0)
Prerequisite: Junior standing.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Study of fundamental aspects of ancient culture by means of individual readings and critical writing projects.

HUM 592 Perspectives on Medieval Culture -WR (3.0)
Prerequisite: Junior standing.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Study of fundamental aspects of medieval culture by means of individual readings and critical writing projects.

HUM 593 Perspectives on Early Modern Culture -WR (3.0)
Prerequisite: Junior standing.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Study of fundamental aspects of early modern culture (seventeenth and eighteenth centuries) by means of individual readings and critical writing projects.

HUM 594 Perspectives on Modern Culture -WR (3.0)
Prerequisite: Junior standing.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Study of fundamental aspects of culture in the nineteenth and twentieth centuries by means of individual readings and critical writing projects.

HUM 595 Principles of Cultural History -WR (3.0)
Prerequisite: Junior standing.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
The study of major systematic views of the development of Western culture. Credit may not be received for this course and HIST 595.

HUM 596 Selected Perspectives in Humanities -WR (3.0)
Prerequisite: Junior Standing.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Topics to be announced in Schedule of Courses.

HUM 609 Interdisciplinary Theory: Arts and Humanities (3.0)
Prerequisite: Consent of instructor.
Methods and theories in interdisciplinary thinking and research, emphasizing (1) the interrelationships of the disciplines, (2) the importance of synthesizing art, theatre, literature, music, philosophy, and religion in a cultural context, and (3) the critical examination of issues arising from fields outside the Humanities that have significant impact on the synergy with the Humanities. Credit may not be earned for both 509 and 609.

HUM 610 Methods and Theories in the Study of Religion (3.0)
Prerequisite: Consent of instructor.
Historical perspective on methodologies in the study of religion: normative, empirical, hermeneutical, phenomenological and post-modernist (focus on gender, race, class, pluralism). Credit may not be earned for both 510 and 610.

HUM 611 Topics in the Interpretation of Sacred Texts (3.0)
Prerequisites: Graduate Standing and consent of instructor.
Study in depth of sacred texts and commentaries selected from the major religions of the world: Hebrew Bible, New Testament, Qur'an, Vedas, Bhagavad Gita, and Buddhist sutras.

HUM 612 Topics in Contemporary Religious Thought (3.0)
Prerequisites: Graduate Standing and consent of instructor.
Study in depth of selected contemporary writers from major world religions.

HUM 613 Comparative Religion (3.0)
Prerequisites: Graduate Standing and consent of instructor.
A critical study of similarities and differences in ideas about and attitudes toward significant themes in world religions.

HUM 614 Colloquim: Interreligious Dialouge (3.0)
Prerequisites: Graduate Standing and consent of instructor.
A study of methodologies for interreligious dialogue and their applications in dialogue on significant issues or themes in world religions.

HUM 624 Special Topics in Film Study (3.0)
Prerequisites: HUM 324 or HUM 325 or HUM 326 and Graduate Standing.
An in-depth study on a specific topic to be announced in the Schedule of Courses. May be repeated up to three times for different topics.

HUM 635 Seminar in Humanities (3.0)
Prerequisites: Graduate Standing.
Content to be indicated in Schedule of Courses.

HUM 636 Seminar in Civic Leadership (3.0)
Prerequisites: Graduate Standing and Consent of Chair of the Division.
Introductory course in Humanities and Civic Leadership, critically exploring notions of the individual, freedom, community, and leadership. Required for MA concentration in Humanities and Civic Leadership.

HUM 637 American Thought and Culture (3.0)
Prerequisites: Graduate Standing.
Introduction to history of ideas in terms of twentieth-century American thought and culture, with an emphasis on community values and the arts.

HUM 645 Thesis Guidance (1.0-6.0)

HUM 650 Internship in Humanities and Civic Leadership (3.0-6.0)
Prerequisite: Approval of chair.
Note: Six credit hours are the maximum which can be credited toward the degree. Enrollment limited to students pursuing the concentration in Humanities and Civic Leadership.
An individually arranged internship, combining a volunteer work experience in an Arts or Humanities organization or agency with a related academic project.

HUM 651 Independent Study (3.0)
Prerequisite: Approval of chair.
A research project directed by a member of the division faculty involving independent investigation, interpretation, and application, culminating in an academic research paper or directed study project report.

HUM 652 Independent Study (3.0)
Refer to: HUM 651

HUM 655 Directed Study Project (3.0)
Prerequisites: Graduate Standing and Approval of the Chair of Division of Humanities.
A directed study project involving investigation, interpretation, and application culminating in a non-thesis alternative.

HUM 661 Humanistic Studies I (3.0)
Prerequisites: Graduate Standing.
Introduction to interdisciplinary critical analysis of the arts and humanities in their historical context providing a foundation for close examination of individual works representative of specific periods.

HUM 662 Humanistic Studies II (3.0)
Prerequisites: Graduate Standing.
Introduction to interdisciplinary critical analysis of the arts and humanities in their historical context providing a foundation for close examination of individual works representative of specific periods.

HUM 671 Interdisciplinary Seminar I (3.0)
Prerequisites: Graduate Standing.
Advanced interdisciplinary research and analysis of selected issues in the Arts and Humanities. Content to be indicated in the Schedule of Courses. To be offered in the Fall. May be repeated up to three times.

HUM 672 Interdisciplinary Seminar (3.0)
Prerequisites: Graduate Standing.
Advanced interdisciplinary research and analysis of selected issues in the Arts and Humanities. Content to be indicated in the Schedule of Courses. To be offered in the Spring. May be repeated up to three times.

HUM 681 Topics in Aesthetics and Creativity (3.0)
Prerequisites: Graduate Standing.
Topics to be co-listed with selected departmental offerings. May be repeated up to a maximum of five times.

HUM 682 Topics in Studies in Culture (3.0)
Prerequisites: Graduate Standing.
Topics to be co-listed with selected departmental offerings. May be repeated up to a maximum of five times.

HUM 699 Interdisciplinary Capstone Symposium (3.0)
Prerequisites: Graduate Standing.
Symposium for candidates completing their content course work during the current academic year.

HUM 700 Dissertation Research (1.0-9.0)
Prerequisites: Graduate Standing.
Dissertation Research

Industrial Engineering

IE 503 Fundamentals of Engineering Examination Review (2.0)
Prerequisite: 4th Year Standing.
Review of topics covered on eight-hour NCEES Fundamentals of engineering supplied-reference examination. Not to be counted towards meeting the requirements for a degree.

IE 516 Operations Research II (3.0)
Prerequisite: IE 360.
A selection of the probabilistic topics of operations research are included: queuing and inventory theory, renewal and Markov processes, and simulation.

IE 522 Analysis and Design of Automated Manufacturing Systems (4.0)
Prerequisite: Graduate/Professional or Graduate School standing.
The analysis and design of manufacturing systems with emphasis on computer applications.

IE 530 Industrial Safety Engineering (3.0)
Prerequisite: Second-year professional school standing.
Major areas are safety management, health-related aspects, and safety engineering controls. Typical topics include
Kentucky OSHA, an in-plant safety program, toxicology, industrial hygiene, ergonomics, motivation, and systems analysis.

IE 535 Product Safety Engineering (3.0)
Prerequisite: Second-year professional school standing.
Topics include legal aspects of product liability, insurance, design, analysis, testing, and product safety in specific industries.

IE 541 Simulation (3.0)
Prerequisite: IE 360 or equivalent, IE 240, and IE 241.
The application of simulation to the analysis of systems. Topics covered include Monte Carlo techniques, sampling from and identifying stochastic distributions, methods of estimating performance measures from simulation outputs, practical applications and validation methods. Simulation languages introduced include GPSS, DYNAMO, SLAM, SIMAN, and ARENA.

IE 542 Control of Machines and Processes (3.0)
Prerequisite: CEE 205, ECE 252, EAC 205, IE 320, and second year professional school or Graduate school standing.
Measurement, actuation, and control of industrial hardware systems; analysis and design of linear control systems; fuzzy logic control of hardware and procedural systems; control by human operators.

IE 550 Fundamentals of Logistics Systems (3.0)
Fundamentals of logistic systems from an engineering perspective. Includes topics in all aspects of the supply chain including material handling, inventory management, warehousing, and transportation.

IE 555 Lean Manufacturing Engineering (3.0)
Prerequisites: IE 321, IE 425, IE 430, and 4th year standing.
This course reviews existing manufacturing systems and defines the principles of lean manufacturing. The principles are derived considering factory dynamics, the influence of variability, the human element, and quality.

IE 563 Experimental Design in Engineering (3.0)
Prerequisites: Engineering Statistics for Industrial Engineers (IE 360).
Design of engineering experiments and projects using theory of least squares, analysis of variance and covariance, randomized blocks, Latin squares, factorial experiments and associated topics. Engineering design problems using SAS and equivalent software packages.

IE 565 Linear Statistical Models (3.0)
Prerequisites: IE 360 or equivalent.
Engineering applications of the general linear statistical model using basic regression analysis, inference in regression, indicator variables, ANOVA models. Engineering design problems utilizing computer programs and software packages.

IE 570 Engineering Design Economics (3.0)
Prerequisite: Second-year professional school or Graduate/Professional standing.
The quantitative aspects of economic decision making necessary for project analysis, plant design, or economic control of a functioning plant. A design project is required.

IE 573 Expert Systems for Industrial and Management Systems (3.0)
Prerequisite: Second-year professional school standing.
Artificial intelligence; expert systems; knowledge engineering; building & evaluating expert systems; decision support systems; integrating decision support & expert systems; real-time control systems; integrating real-time control & expert systems.

IE 575 Fuzzy Sets and Systems (3.0)
Prerequisite: Probability & Statistics for Engineers (IE 360).
Fuzzy methodologies; applications to industrial and systems engineering; directions for future research.

IE 580 Engineering Cost Analysis (3.0)
Prerequisite: Second-year professional school or Graduate School standing.
Methods for estimating labor costs, material costs, and overhead charges and doing product estimating, project estimating, and system estimating.

IE 590 Special Topics in Industrial Engineering (1.0-6.0)
Prerequisite: As specified by instructor.
A theoretical and/or experimental investigation of an industrial engineering design topic.

IE 599 Seminar in Industrial Engineering (1.0)
Prerequisite: Second-year professional school standing.
Presentation and/or discussions of topics of current interest.

IE 600 Advanced Manufacturing Methods (3.0)
Prerequisite: Manufacturing Processes (IE 320).
An analysis of computer-aided manufacturing dealing with parts manufacture and assembly. This course includes current applications and long-range programs along with recent advances in the automation of discrete product manufacturing.

IE 601 Computer-Aided Design and Manufacture of Plastics (3.0)
Prerequisite: Materials Science (CHE 253), Manufacturing Processes (IE 320), and IE 600.
Plastics properties, design of plastics products, CAD methods, process analysis tools, injection molding machines, injection mold design, automation and controls.

IE 602 Graduate Internship in Industrial Engineering (2.0)
Prerequisites: Student must be admitted for Graduate Study, and a sponsored member of the Graduate Intern Program.
Supervised professional experience in industry at the graduate level. This course provides the structure and focus for the graduate intern field assignment to ensure that the assignment is appropriate and consistent with the intern's graduate course of study and professional development. May be repeated for credit.

IE 605 Tool and Fixture Engineering (3.0)
Prerequisite: IE 600.
Limits, fits, tolerances accuracy; force requirements for manufacturing operations; design of cutting tools, jigs, fixtures, gages, and pallets; tooling costs.

IE 606 Production Systems and Intelligent Manufacturing (3.0)
Prerequisite: IE 600.
Topics include: analysis of flow lines, group technology, machine cell design, computer networking, and manufacturing automation protocol.

IE 610 Foundations of Optimization (3.0)
Prerequisites: IE 415 or equivalent.
Classical optimization; constrained optima; search techniques; steepest descent techniques. Calculus of variations and optimal control methods as used in engineering, economics, and systems analysis.

IE 611 Discrete Optimization (3.0)
Prerequisite: IE 415.
A study of the techniques and applications of discrete optimization, especially as related to integer and dynamic programming.

IE 621 Facilities Planning (3.0)
Techniques for planning and design of facilities found in both manufacturing and service industries. Emphasis is placed on location, layout and analysis of facilities, material handling systems, warehouses, and logistic operations.

IE 630 Production Planning and Control (3.0)
Prerequisite: IE 360.
Forecasting; inventory management; production planning; line balancing; case studies.

IE 631 Advanced Quality Control (3.0)
Advanced techniques for quality improvement and process control are investigated; these include advanced techniques of SPC, trouble shooting and diagnostics and Taguchi methods of experimental design.

IE 634 Case Studies in Production and Industrial Engineering (3.0)
Prerequisites: IE 415, IE 425, IE 541.
Case studies illustrate the application of industrial engineering techniques to the design of production systems, the control of construction projects, and health care delivery systems.

IE 640 Applied Systems Analysis (3.0)
Prerequisites: IE 360, IE 415, IE 570.
Problem formulation, data collection, alternative design generation, design evaluation, specification, and implementation for large scale systems.

IE 642 Statistical Methodology in Simulation (3.0)
Prerequisite: IE 360.
Discrete simulation modeling, input probability distributions, random variate generators, output data analysis, validation, variance reduction, experimental design and optimization.

IE 643 Analysis for Decision Making (3.0)
Prerequisite: Probability & Statistics for Engineers (IE 360), Introduction to Operations Research (IE 415) or EM 515.
The role of decision analysis in design; techniques for multicriteria decision analysis; systematic creativity in design.

IE 650 Material Flow Systems Design (3.0)
Prerequisite: IE 516.
Material handling and equipment concepts; computerized plant layout; problem formulation; requirements definition; queuing; location analysis; conveyor theory; simulation; developing and evaluating alternative systems; systems implementation.

IE 651 Advanced Facilities Planning and Design (3.0)
Prerequisites: Facility Location and Layout (IE 321), Probability and Statistics for Engineers (IE 360), Introduction to Operations Research (IE 415), Operations Research II: Stochastic Models (IE 516).
Storage system and warehouse location and layout, single- and multifacility location problems, cyclic and acyclic network location models, and advance discrete location models.

IE 652 Warehousing and Transportation (3.0)
This course provides an introduction to the basic missions and functions of a warehouse or storage facility. The course also includes the study of transportation systems, their evolution, performance and management.

IE 655 Supply Chain Engineering (3.0)
Prerequisites: IE 425, IE 430, IE 541, and IE 600.
Manufacturing process design, product design, production planning, inventory control, quality control, reliability, and the flow of data and information through the supply chain are correlated to product quality and cost.

IE 660 Reliability and Maintainability (3.0)
Prerequisite: Probability & Statistics for Engineers (IE 360).
Design, development, and test techniques required to assure the reliability and maintainability of new systems. Design of maintenance programs for new and existing systems.

IE 666 Classical IE Topics (3.0)
Prerequisites: Admission into MSIE or PhD program in IE.
This course treats such classical Industrial Engineering topics as work measurement and methods, facilities location and layout, and manufacturing processes. Students undertake a group project involving an actual industrial system.

IE 670 Advanced Engineering Economy (3.0)
Prerequisite: IE 570.
Inflation; cost of capital; revenue requirements; uncertainty and risk; propagation of errors; Hillier's results; simulation; capital budgeting.

IE 673 Manufacturing Decision Support Systems (3.0)
Application of the technologies of expert systems and simulation for manufacturing decision support and the development of intelligent decision systems.

IE 681 Human Performance (3.0)
Prerequisite: Human Factors Engineering (IE 480).
The effect of physical environment on human sensory, motor, and information processes. Topics include heat, noise, light, vibration, sleep loss, illness, work load, work durations, and work-rest scheduling.

IE 683 Design of Human-Machine Systems (3.0)
Prerequisite: Consent of instructor.
Integration of human factors into the design of complex human-machine systems with attention to the concept, development, evaluation, production, operation, and modification phases of a product life cycle. Human factors design and analysis methods including operator-oriented simulation languages, manual control theory, and experiment design applications are introduced as part of the basis for decisions at key transition points in the product life cycle. Design projects are required.

IE 685 Human Reliability (3.0)
Prerequisite: IE 516 and 681.
Methods for analysis and quantification of human performance; human error probability; applications to the design of new, and the redesign of existing aviation, industrial, management, and power generation systems.

IE 687 Human Aspects of Advanced Manufacturing Technology (3.0)
Prerequisite: IE 600 and 606, and knowledge of computerized manufacturing systems advanced automation.
Organizational, social, ergonomic and safety aspects of advanced manufacturing technology (AMT). Human side of factory automation and computer-aided design.

IE 690 M.S. Thesis in Industrial Engineering (1.0-6.0)
Prerequisite: Consent of major professor.
Research on MS thesis project. Grade shall be deferred by the major professor until evaluation of the thesis by the student's committee. Grade on pass-fail basis by the examining committee.

IE 691 Independent Research (1.0-6.0)
Prerequisite: Consent of instructor and Department Chair.
Independent Research on a problem not related to thesis or dissertation.

IE 692 Research Seminar in Industrial Engineering (1.0)
Prerequisite: Graduate School standing.
Reports on personal research and on current literature, with a critique of the research and of the presentation. Attendance but not course registration is required of all graduate industrial engineering majors during each semester of residence. Only 2 hours of credit may be accumulated. Graded on Pass/Fail basis.

IE 693 Independent Study in Industrial Engineering (1.0-12.0)

IE 697 M. Eng.Thesis in Industrial Engineering (1.0-8.0)
A candidate for the Master of Engineering degree, specializing in the field of industrial engineering, is required to perform a study, design, or investigation under the direction of a faculty member. A written thesis is required to be presented orally and submitted to the faculty for approval.

IE 699 IE 699 Industrial Engineering Masters Project (3.0)
The Industrial Engineering M.Eng. or MS student carries out an engineering project under the supervision of a faculty mentor, prepares an acceptable written report, and presents a seminar on the project.

IE 700 Dissertation Research in Industrial Engineering (1.0-18.0)
Prerequisite: Consent of major professor.
Research on dissertation project. Grade shall be deferred by the major professor until evaluation of the dissertation by the student's committee. Graded on a Pass/Fail basis by the examining committee.

Integrative Master of Business Administration

IMBA 501 Accounting Foundations (1.5)
Prerequisite: Admission to the IMBA Program.
Format of basic financial statements; transaction analysis - the effect of various transactions on the basic financial statements; interaction between financial statements; basic understanding of the financial statements; accounting cycle; and basic understanding of areas of accounting - tax, audit, management accounting, etc.

IMBA 502 Economics Foundations (1.5)
Prerequisite: Admission to the IMBA Program.
The theory and application of economic theories aimed to help students understand the real-world market interactions of individual people, companies and countries. Focuses on the understanding of the scope of economics, important economic concepts, and the application of economic tools.

IMBA 503 Finance Foundations (3.0)
Prerequisite: Admission to the IMBA Program.
Introduces students to key fundamental language, techniques and issues in finance. Discussion on how the financial market system works, financial statements and financial ratios, time value of money concepts, and decision-making tools businesses use for determining whether or not to invest in a project.

IMBA 504 Marketing Foundations (1.5)
Prerequisite: Admission to the IMBA Program.
Examines the concepts and principles involved in marketing analysis and implementation of marketing strategy in consumer, business to business, and service organizations.

IMBA 505 Team Dynamics (1.5)
Prerequisite: Admission to the IMBA Program.
Together, we will discover the techniques and methods of understanding individual and group behaviors in the pursuit of teamwork. Using your experience and combining it with theory, we will study how teams form; functions of teams; and assessment of outcomes. We will identify team roles and assess our effectiveness in these roles. Most importantly, we will learn to appreciate individual behaviors associated with effective teams and explore our strengths and improvement areas. Finally, we will provide feedback to each other and ourselves as a team.

IMBA 610 Financial Strategy (3.0)
Prerequisite: Completion of IMBA Foundations Courses.
Examines the microeconomics of the firm and the markets in which it operates and the financial strategy that firms pursue in seeking to create value. Topics include market structure and pricing strategies, revenue forecasting techniques and translation of cash flows, capital budgeting and capital structure decisions, economics of agency, markets and hierarchies and methods of risk management.

IMBA 620 Information Technology and the Global Business Environment (3.0)
Prerequisite: Completion of IMBA Foundations Courses.
Provides an opportunity to study the issues businesses face when operating internationally and to understand how information technologies can and are being used to compete in the global marketplace. Topics will include the culture, political, legal, economic and financial environments that businesses need to be aware of in deciding whether to expand operations beyond their own country's borders. Course will pay particular attention to the role that information technology plays in these decisions and the problems that arise in managing information technology in a firm that operates internationally.

IMBA 630 Developing High Performance Systems (3.0)
Prerequisite: Completion of IMBA Foundations Courses.
Transformation of the modern organization through the development of high performance systems employing leading-edge human resource practices. Utilizing a "systems" focus and integrating theories drawn from "micro" and "macro" levels of analysis, this module examines the human resource practices of both successful and marginal organizations.

IMBA 640 Integrative Operations Strategy (9.0)
Prerequisite: Completion of IMBA Foundations Courses.
Presents in an organized manner, a comprehensive, integrated treatment of the fields of operations management, cost management and marketing management. Selectively examines the "common body of knowledge" in these areas and then embarks on new overall management philosophies i.e., The Theory of Constraints (TOC) and Activity Based Cost Management (ABCM).

IMBA 651 Lifelong Learning I (1.0)
Prerequisite: Completion of IMBA Foundations Courses.
Explores the reasons for success and failure in the work environment, career planning, and the development of the IMBA portfolio. Design working resume to accurately communicate aspirations, skills, experience, and achievements.

IMBA 652 Lifelong Learning II (1.0)
Prerequisite: Completion of IMBA Foundations Courses.
Explores ongoing activities necessary to continually have value-added skills for the workforce. Each participant will develop a final course resume and a two-year learning plan with specific objectives, outcomes, and expectations.

Justice Administration

JA 520 Capital Punishment -WR (3.0)
Prerequisites: Senior standing or consent of instructor.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Seminar if issues related to the death penalty, including: constitutional questions, the effect of death row incarceration, and public attitudes toward the death penalty. Research on Kentucky will be featured.

JA 521 White Collar Crime -WR (3.0)
Prerequisites: JA 200 and JA 305 or consent of instructor.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
A study of white collar and occupational crime. Course will focus on the concept, theoretical explanations, the extent and nature of various types of white collar and occupational crime in both public and private sectors.

JA 522 Serial Murder (3.0)
Prerequisites: Senior standing or consent of instructor.
Examination of serial murder in the United States. Topics include serial murder and its relation to race and gender; the myth of serial murder; the media and serial murder and profiling.

JA 576 Managing Organizational Performance (3.0)
Examination of factors affecting the management of organizational performance. Designed to help participants develop conceptual diagnostic and problem solving skills required of strategic managers in contemporary law enforcement organizations.

JA 596 Seminar in Criminal Justice (3.0)
An interdisciplinary seminar. Focuses on issues pertinent to the criminal justice system that reflect conflicting perspectives.

JA 597 Ethics in Criminal Justice -WR (3.0)
Prerequisite: Senior standing or consent of instructor.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
A study of the need for ethics in criminal justice. The aims of ethics, ethical theories, ethical issues related to law making, law breaking and law enforcement.

JA 602 History of Police in the United States (3.0)
A study of the historical development of police agencies in the United States. The origin and influence of various European concepts of law enforcement and how they relate to past and present ideas in the United States. An ideological rather than an institutional approach is assumed.

JA 603 Criminal Justice System Planning (3.0)
The application of planning and program evaluation concepts and techniques to the development of comprehensive justice system programs. The integration of the activities of police, judicial and correctional agencies into meaningful crime reduction plans.

JA 605 Police in Our Political and Social Systems (3.0)
An examination of the police function as a component of the political system in the United States. The manner in which police give substance to the political system and are formed by it in turn. The interaction of the police with other governmental institutions in the political system.

JA 606 Personnel Management in the Criminal Justice System (3.0)
Focus is on contemporary personnel management problems confronting agencies in the criminal justice system. Both the historical and the theoretical developments of personnel management are analyzed. Alternatives to current management procedures and systems are presented.

JA 609 Economic Analysis of Crime (3.0)
A study of the economic scope of crime. The role of illegal gambling, loan sharking, labor racketeering, and legitimate business infiltration. The cost of crimes against property. The economic characteristic of high crime jurisdictions. Preventive programs and their costs.

JA 610 Theoretical Foundation of Corrections (3.0)
A study of the psychological, sociological, political, and economic factors which contributed to the concept of corrections. The evolution of correctional thought and its role in contemporary and future reforms.

JA 611 Criminal Justice Administration: Corrections (3.0)
Examines the origins and current practices in the management of correctional programs. Emphasis will be placed on establishing and evaluating new techniques in correctional management and administration.

JA 612 Criminal Justice Administration: Police (3.0)
An examination of the functions of police in society; principles of law enforcement organizations, administration, policy formulation, and management of personnel; statutory limitations on authority and jurisdiction.

JA 613 Comparative Policing Systems (3.0)
An evaluative comprehensive examination of policing systems around the world. History, styles of enforcement and special issues are included.

JA 621 The Criminal Justice System (3.0)
A study of the criminal justice system in the United States. A systems approach to the study of criminal justice and the interrelationships of the various components of the system. Social and political issues related to the criminal justice system are examined in depth.

JA 625 Legal Aspects of Criminal Justice Management (3.0)
Examination of the legal issues within criminal justice management, the effects of constitutional provisions, statutes, ordinances, and judicial decisions on justice administration. A discussion of the legal aspects of selection, promotion, assignment, and termination of justice employees.

JA 640 Seminar in Crime Prevention and Social Control (3.0)
Prerequisite: Consent of instructor.
Study of the concept and principles involved in preventing crime and maintaining positive social controls. Focus will be on the role of criminal justice agencies in initiating and implementing programs.

JA 641 Advanced Criminal Behavior: Treatment (3.0)
A study of the interaction between social institutions and law violators. An analysis of the concepts of behavioral control, law, normal behavior, deviance, crime and the relationships between criminals and victims.

JA 643 Theories of Crime and Delinquency (3.0)
A study of the psychological and sociological factors involved in criminal and delinquent behavior. The relationship of theory to the prevention and control of crime, treatment of offenders and administration of respective criminal justice agencies.

JA 644 Seminar in Juvenile Justice (3.0)
Theoretical and empirical study of the etiology, distribution and extent of delinquency; problems involved in measuring delinquency; role of the police, courts and legal statutes; critical examination of treatment and prevention programs.

JA 648 Seminar in Criminal Justice Program Evaluation (3.0)
Application of social scientific research methods to determine the effectiveness of criminal justice programs. Analysis of reports of evaluative research. Preparation and analysis of evaluation research reports.

JA 649 Applied Statistics in Criminal Justice (3.0)
Focuses on the use of statistical techniques in criminal justice. Emphasis on the application and interpretation of the statistics. Utilization of statistical application computer systems.

JA 650 Research Methods (3.0)
The application of quantitative and qualitative analyses in criminal justice research. The concepts of validity, hypothesis, reliability, measurement, sampling, quasi-experimental construction, errors in reasoning, and statistics and approaches to the problems of the conduct of stringent and useful research.

JA 651 Computer Applications in Criminal Justice (3.0)
Focuses on the use of computer software and hardware in criminal justice agencies. Explores various statistical, analytical, and mathematical applications of automation for police, courts and corrections. Emphasis on applied projects.

JA 665 Special Topics in Justice and Criminology (3.0)
Study of contemporary issues concerning the philosophy, management, and operations of criminal justice agencies.

JA 670 Directed Studies/ Readings (3.0)
Prerequisite: Consent of chair and instructor.
Independent study or research project under the direction of a member of the faculty.

JA 690 Practicum (1.0-6.0)
Prerequisite: Consent of chair.
To practice and to conduct research in a criminal justice or supporting agency under both professional and academic supervisors.

JA 698 Professional Paper (3.0)
Prerequisite: Consent of chair.
Preparation of a paper of publishable quality based on research under the direction of a faculty member.

JA 699 Thesis (1.0-6.0)
Prerequisite: Consent of chair.

Linguistics

LING 518 Foundations of Language (3.0)
Note: Cross-listed with ENGL 518.
A survey of contemporary theories of language from structuralism to transformational grammar; the relationship of linguistics to literature, psychology, philosophy, reading, and sociology.

LING 521 Teaching Techniques in Foreign Languages (3.0)
Prerequisite: Current status as a foreign language teacher or consent of instructor.
Note: Crosslisted with M L 521.
Teaching methods in foreign languages. Recommended for those teaching or preparing to teach languages.

LING 522 Structure of Modern American English (3.0)
Note: Crosslisted with ENGL 522.
An examination of the structure of American English; emphasis on grammatical terminology and systems of classification. Recommended for prospective English teachers.

LING 523 History of the English Language (3.0)
Note: Crosslisted with ENGL 523.
The evolution of modern English in terms of social, historical, linguistic forces which molded it; emphasis on Anglo-Saxon metrics, Latin, French, Danish influences, and cosmopolitan aspects of English.

LING 524 Psycholinguistics (3.0)
Prerequisite: LING/ENGL 518 or PSYC 324.
Note: Cross-listed with PSYC 524.
Psychological aspects of language and their significance for analysis and understanding of cognitive and social processes.

LING 535 Applied Linguistics for English Teachers (3.0)
Prerequisite: ENGL 102 or ENGL 105.
Note: Cross-listed with ENGL 535.
Applied linguistics and its application to an understanding of speaking, listening, reading, and writing processes.

LING 590 Special Topics in Linguistics (3.0)
Prerequisite: LING/ENGL 518.
Intensive investigation of selected topics in current linguistic theory or practice.

LING 600 Independent Study (1.0-3.0)
Prerequisite: 12 graduate hours in Linguistics. Consent of Chair.
Guided independent in depth study of a topic in linguistic theory or practice.

LING 603 Syntax (3.0)
Prerequisite: LING/ENGL 518.
Critical review of recent and current theoretical approaches to syntax and semantics. Focus on revisions of Chomsky's extended standard theory and emerging theories, and will survey contributions made by other approaches.

LING 605 Summer Workshop for Foreign Language Teachers (3.0)
Prerequisite: Current status as a foreign language teacher or consent of instructor.
Intensive 2-3 week workshop exploring a pedagogical topic.

LING 606 Historical and Comparative Linguistics (3.0)
Prerequisite: LING/ENGL 518 and LING 520.
A historical study of phonological, morphological, and semantic changes in language through the comparative method and internal reconstruction; recent trends in diachronic linguistics.

LING 610 Phonetics and Phonology (3.0)
Prerequisites: LING/ENG 518 or consent of instructor.
An introduction to phonetics and phonological theory; study of nature and organization of sound language.

LING 620 Special Topics in Foreign Language Education (3.0)
Prerequisite: Current status as a foreign language teacher or consent of instructor.
A course with variable subject matter designed for foreign language teachers and prospective teachers. Will be offered as need arises.

LING 621 Sociolinguistics (3.0)
Prerequisite: LING/ENGL 518 or consent of instructor.
Note: Cross-listed with ENGL 621.
The nature of language in social context, presented within the theoretical framework of generative grammar.

LING 622 Psychology of Second Language Learning and Teaching (3.0)
Prerequisite: Current status as a foreign language teacher or consent of the instructor.
This course will treat psychological variables in the learning and teaching of foreign languages. Special attention will be focused on aptitude, attitude, and motivation as they affect learning and teaching languages. This is not a methods of teaching foreign languages course.

LING 623 Cultural as the Basis of Foreign Language Teaching (3.0)
Prerequisite: Current status as a foreign language instructor.
Emphasis will be placed on techniques for teaching culture through language, for preparing culturally oriented teaching materials (e.g., cultural assimilators), and for carrying out cultural field work abroad.

LING 624 Language and Cognition (3.0)
Prerequisite: LING/ENGL 518 or consent of instructor.
Note: Cross-listed with PSYC 624.
Examination of the theory and research on the relationship between fundamental processes or cognition and linguistics processes, e.g., organization of thought, memory, discourse, and text.

LING 625 The Teaching of English as a Second Language (3.0)
Prerequisite: Consent of instructor.
Note: Cross-listed with ENGL 625.
A theoretical and practical approach to teaching English to students for whom English is not a native language. The linguistic bases of English, as well as the application of curriculum principles, will be considered.

LING 626 ESL Endorsement Portfolio (1.0)
Prerequisites: All other ESL endorsement requirements completed.
Note: Crosslisted with ENGL 626.
Assists post-service teachers in preparing and submitting their ESL endorsement portfolios for review in order to complete the continuous assessment plan for the endorsement. Review takes place in the final phase of the course, of which self-assessment and peer assessment are components. Restricted to ESL endorsement candidates.

LING 630 Language and Culture (3.0)
Prerequisite: Introduction to Linguistics (LING 302/ENGL 325) or Foundations of Language (LING/ENGL 518).
Introduction to the study of language and speaking as part of daily social life, viewed from an ethnographic perspective.

LING 641 Recent Philosophy of Language (3.0-30.0)
Prerequisite: LING/ENGL 518 or consent of instructor.
Note: Cross-listed PHIL 641.
Intensive study of current theory and research in the Philosophy of language.

LING 690 Seminar in Linguistics (3.0)
Prerequisites: LING 325 or ENGL 325 or ENGL 518.
Cross-listed with ENGL 682.
Selected topics in applied or theoretical linguistics.

Modern Languages

M L 500 Study Abroad (1.0-15.0)
Prerequisite: Membership in a University of Louisville Language Study Abroad Program or a program approved by the department.
Credit awarded upon demonstration of successful completion of program undertaken with prior approval of the department, including a paper or project and an oral or written examination in the language and culture, administered under the supervision of a faculty member.

M L 506 Francophone Women Writers-WR (3.0)
Prerequisite: Junior standing or faculty consent.
Note: Cross-listed with WMST 571.
Note: Approved for the General Education requirement in written communication (WR).
Readings of literary and non-literary texts by women of the French-speaking world.

M L 519 German Intellectual History (3.0)
Prerequisite: Consent of instructor.
Consideration of German thought and sensibility from the Middle Ages to the present.

M L 521 Teaching Techniques in Foreign Languages (3.0)
Prerequisites: Current status as a foreign language teacher or consent of instructor.
Note: Crosslisted with LING 521.
Teaching methods in foreign languages. Recommended for those teaching or preparing to teach languages.

M L 551 Special Topics (3.0)
Prerequisite: Consent of instructor.
Special themes and issues of particular significance as reflected in selected works of foreign language, literature or culture. Topics vary.

M L 552 Special Topics (3.0)
Refer to: M L 551

M L 553 Selected Authors in Foreign Literature -WR (3.0)
Prerequisite: Consent of instructor.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
The life and works of significant authors chosen from the panorama of foreign literature; their literary and/or cultural impact on society. Authors will vary from semester to semester.

M L 561 Masterpieces of Russian Literature (3.0)
Reading and discussion of the three greatest masterpieces of Russian literature: Tolstoy's "War and Peace," Dostoevsky's "Brothers Karamazov," and Pushkin's "Eugene Onegin."

M L 601 Introduction to Graduate Studies (3.0)
Introduction to graduate studies in foreign languages, history of field, research techniques, major areas of study, opportunities, ethics.

M L 605 Summer Workshop for Foreign Language Teachers (3.0)
Prerequisites: Consent of instructor..
Note: Crosslisted with LING 605.
Intensive 2 to three week workshop exploring a pedagogical topic.

Mathematics

MATH 501 Introduction to Analysis I (3.0)
Prerequisite: MATH 301 and MATH 325, or consent of department.
Introduction to the basic concepts of real analysis. Sequences, limits, continuity, and differentiation and integration of functions of one variable.

MATH 502 Introduction to Analysis II (3.0)
Prerequisite: MATH 501.
Convergence of sequences and series of numbers and functions; calculus of functions of several variables.

MATH 505 Introduction to Partial Differential Equations (3.0)
Prerequisite: MATH 301 and MATH 405.
Techniques for solving standard heat, wave, and potential equations, including discussion of Fourier analysis techniques.

MATH 507 Fourier Series (3.0)
Prerequisite: MATH 301 and MATH 405.
A study of expansion in trigonometric and other orthogonal systems of functions.

MATH 508 Advanced Numerical Methods (3.0)
Prerequisite: MATH 407 or consent of instructor.
Numerical methods associated with matrices (including Eigenvalues and Eigenvectors); function approximation, splines and partial differential equations.

MATH 511 Complex Analysis (3.0)
Prerequisite: MATH 301 or consent of instructor.
Note: Credit may be applied towards the M.A.T. degree only.
Introduction to theory of analytic functions, including integration, series, residues, conformal mapping, and analytic continuation.

MATH 520 Theory of Numbers (3.0)
Prerequisite: MATH 205-206 and MATH 325 or consent of instructor.
Note: Credit may be applied towards the M.A.T. degree only.
A study of the integers and their divisibility properties. Particular emphasis on the theory of congruencies, partitions, prime numbers, Diophantine analysis and quadratic residues.

MATH 521 Modern Algebra I (3.0)
Prerequisite: MATH 205-206 and MATH 325 or consent of instructor.
An introduction to the theory of groups, rings, integral domains, and fields.

MATH 522 Modern Algebra II (3.0)
Prerequisite: MATH 521.
Continuation in greater depth of topics introduced in MATH 521; introduction to theory of ideals, field extensions, and abstract vector speces.

MATH 530 Matrix Analysis (3.0)
Prerequisite: MATH 205-206 and MATH 325 or consent of instructor.
Matrix norms, eigenvalues and eigenvectors, matrix decompositions, and canonical forms. Applications and computational considerations discussed.

MATH 535 Modeling I (3.0)
Prerequisites: MATH 405 and MATH 387 or consent of instructor.
Examination of continuous and discrete modeling. Formulation, analysis and use of various models, including optimization and dynamic techniques.

MATH 536 Modeling II (3.0)
Prerequisite: MATH 535.
Continuation of MATH 535. Additional topics include probabilistic methods.

MATH 541 Elementary Topology (3.0)
Prerequisite: MATH 301 and MATH 325 or consent of instructor.
A study of continuity in the setting of metric spaces and topological spaces.

MATH 545 Introduction to Fractal Geometry (3.0)
Prerequisites: MATH 301 and MATH 325; MATH 501 recommended.
Recursively defined sets and self-similarity; metric spaces and iterated function systems; topological, fractal, and Hausdorff dimensions.

MATH 550 Advanced Euclidean Geometry (3.0)
Prerequisite: A year of high-school geometry , MATH 205-206, and MATH 325 or consent of instructor.
Note: Credit may be applied toward the M.A.T. degree only.
Theory of Euclidean geometry contrasted with non-Euclidean from both the axiomatic and algebraic approach. Of special value to secondary teachers.

MATH 551 Geometry (3.0)
Prerequisite: A year of high-school geometry, MATH 205-206, and MATH 325 or consent of instructor.
Study of projective spaces, transformations and invariants. Introduction to related geometries, such as affine, elliptic, and hyperbolic.

MATH 555 Mathematical Logic (3.0)
Prerequisite: MATH 205-206 and MATH 325 or consent of instructor.
Informal development of sentential and general rules of inference, and an axiomatic development of the propositional calculus. Emphasis on the study of the nature of proof; consistency, independence, and deductive completeness of axioms; mathematical models.

MATH 560 Statistical Data Analysis (3.0)
Prerequisite: MATH 205.
Note: Credit may be applied towards the M.A.T. degree only.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Descriptive techniques, inferential techniques, simple and multiple linear regression. Frequent use of statistical computer packages. No previous knowledge of the computer required.

MATH 561 Probability (3.0)
Prerequisite: MATH 205-206, 301.
Probability spaces, probability distributions, moments, moment-generating functions, independence, transformation of variables, sampling distributions, laws of large numbers, central limit theorem, applications.

MATH 562 Mathematical Statistics (3.0)
Prerequisite: MATH 561.
Random samples and statistics, point estimation, sufficiency and completeness, confidence regions, classical theory of hypothesis testing, linear regression, nonclassical procedures.

MATH 564 Probability Models (3.0)
Prerequisite: MATH 561.
Finite probability models, Markov chains, renewal and reliability theory, Brownian motion, stochastic differential equations.

MATH 566 Nonparametric Statistical Methods (3.0)
Prerequisite: MATH 561.
Rank tests for comparing two or more treatments or attributes, the one-sample problem, tests of randomness and independence, nonparametric estimation, graphic methods, and computer programs.

MATH 567 Sampling Techniques (3.0)
Prerequisite: MATH 560 or 561.
Random, systematic, stratified, and cluster sampling techniques. Ratio and proportion estimates. Sample size and strata determination.

MATH 570 Foundations of Actuarial Science (3.0)
Prerequisite: MATH 561.
Fundamental mathematical tools for quantitatively assessing risk. Application of these tools to problems encountered in actuarial science is emphasized. Covers the material of Examination 1 of the Society of Actuaries and Casualty Actuarial Society. Credit may not be applied toward a graduate degree in mathematics.

MATH 572 Theory of Interest (3.0)
Prerequisites: MATH 561.
Accumulation function and the special cases of simple and compound interest. Nominal and effective interest and discount rates and the force of interest - constant and varying. Valuation of discrete and continuous streams of payments. Determination of yield rates on investments. Application of interest theory to amortization of lump sums, fixed income securities, depreciation mortgages. Covers the interest theory portion of the Examination 2 of the Society of Actuaries and the Casualty Actuarial Society.

MATH 573 Actuarial Models I (3.0)
Prerequisite: MATH 570, MATH 572.
Theoretical basis of actuarial models and the application of those models to insurance and other financial risks. The following specific models are introduced: Contingent Payment Models, Survival Models, Frequency and Severity Models, Compound Distribution Models, Stochastic Process Models, Ruin Models. Together with its continuation, Mathematics 574, covers the material on the Examination 3 of the Society of Actuaries and the Casualty Actuarial Society.

MATH 574 Actuarial Models II (3.0)
Prerequisite: MATH 573.
Continuation of MATH 573. It further develops knowledge of the theoretical basis of actuarial models and the application of those models to insurance and other financial risks.

MATH 576 Actuarial Modeling I (3.0)
Prerequisite: MATH 574.
Application of models presented in MATH 573-574. Development of business applications such as: Premium for life insurance and annuity contracts, Premium for accident and health insurance contracts, Premium for casualty or liability insurance contracts, Premium for property insurance contracts, Rates for coverage under group benefit plans, and Risk classification. This course, together with its continuation, MATH 577, covers the material on the Examination 4 of the Society of Actuaries and the Casualty Actuarial Society.

MATH 577 Actuarial Modeling II (3.0)
Prerequisites: MATH 576.
Further development of applications of key actuarial models.

MATH 578 Actuarial Valuation (3.0)
Prerequisites: MATH 577.
Valuation methods used in actuarial practice. Life insurance reserves, pension valuation, health insurance reserves, and property/casualty reserves are studied. Prospective, retrospective, and claim reserves are investigated. Covers the mathematical portion of the material on the Examination 5 of the Society of Actuaries.

MATH 580 Applied Graph Theory (3.0)
Prerequisite: MATH 205-206 and MATH 325 or consent of instructor.
Note: Credit may be applied towards the M.A.T. degree only.
Graphs, directed graphs, signed graphs, intersection graphs, and weighted digraphs with applications in psychology, communications, scheduling, ecology, economics, and education.

MATH 581 Introduction to Graph Theory (3.0)
Prerequisite: MATH 205-206 and MATH 325 or consent of instructor.
Provides an overview of graph theory. Topics include blocks, trees, connectivity, Hamiltonian and Eulerian graphs; topological problems, matrices and groups.

MATH 585 Mathematics for Behavioral and Social Sciences (3.0)
Prerequisite: MATH 205-206 and MATH 325 or consent of instructor.
Modeling through games and choice, measurement and scaling, graphs, similarity and preference, Markov models, stochastic processes, dynamic social systems, ecosystems, catastrophe and stability theories.

MATH 587 Discrete Mathematics for MAT students (3.0)
Prerequisites: MATH 206, MATH 325.
Does not count towards the mathematics major or minor. Credit may be applied toward the MAT degree but not towards any other graduate degree in mathematics. Credit not allowed for both MATH 387 and MATH 587. Topics include: Pigeon-hole principle, counting techniques, binominal coefficients, generating functions, stirling and catalan numbers, permutations and graphs.

MATH 590 History of Mathematics (3.0)
Prerequisite: 500-level course in math (except 560).
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Mathematical history from Mesopotamia to present. Emphasis on doing mathematics, identifying the growth of mathematical concepts and studying prominent mathematicians.

MATH 591 Selected Topics in Mathematics (1.0-3.0)
Prerequisite: Announced in Schedule of Courses.
An examination of one or more topics in mathematics not usually treated in a regularly offered course.

MATH 601 Real Analysis I (3.0)
Prerequisite: MATH 502
Basic set theory and real topology, Lebesgue measure and integration on the real line, differentiation of integrals, L(p) spaces.

MATH 602 Real Analysis II (3.0)
Prerequisite: MATH 601
Elementary Halberd space theory, abstract measure spaces and integration, product spaces. Applications to other areas.

MATH 605 Functional Equations I (3.0)
Prerequisite: MATH 601
Introduction to the theory and application of functional equations in several variables, including Cauchy equations, d'Alembert equation, quadratic functionals.

MATH 606 Functional Equations II (3.0)
Prerequisite: MATH 605 or consent of department.
Continuation of Mathematics 605. It extends further the theory of functional equations to applications in various branches of mathematics, information theory, and the natural and social sciences.

MATH 607 Seminar on Applied Analysis (3.0)
Prerequisite: MATH 605 or consent of department.
Advanced topics in applied analysis. Topics will be determined by the research interests of the students and those of the instructor.

MATH 611 Complex Variables I (3.0)
Prerequisite: MATH 502.
Geometry of the complex plane and complex analysis. Topics include analytic and meromorphic functions, linear
fractional transformations, Cauchy's Theorem and the Residue Theorem.

MATH 612 Complex Variables II (3.0)
Prerequisite: MATH 611.
A continuation of MATH 611, including deeper properties of the space of meromorphic functions, harmonic functions and conformal mappings.

MATH 621 Algebra I (3.0)
Prerequisite: MATH 522.
Advanced theory of Groups, Rings, Integral Domains and Fields.

MATH 622 Algebra II (3.0)
Prerequisite: MATH 621.
A continuation of MATH 621, including Polynomial Rings, Modules, Vector Spaces, Structure of Fields, Galois Theory, Advanced Linear Algebra.

MATH 631 Group Theory (3.0)
Prerequisite: MATH 522.
Abstract Groups, Homomorphisms, Permutation Groups, Abelian Groups, Simple Groups, Sylow Theory, Series, Extensions.

MATH 633 Rings and Ideals (3.0)
Prerequisite: MATH 522.
Ideals and Homomorphisms, Prime Ideals and the Prime Radical, Rings of Endomorphisms, the Jacobson Radical.

MATH 635 Mathematical Modeling I (3.0)
Prerequisites: MATH 325, MATH 425 or equivalent.
An introduction to mathematical modeling including optimization and linear dynamical systems, both discrete and continuous. Topics will include models from genetics, population studies and " battle" problems.

MATH 636 Mathematical Modeling II (3.0)
Prerequisite: MATH 635.
A continuation of Math 635 with discrete and continuous nonlinear models. Topics will include Poincare theory, chaotic models and elementary catastrophes.

MATH 641 Topology I (3.0)
Prerequisite: MATH 502 or MATH 541
Continuous functions, connectedness, compactness, countability, separation, metrizability, and completeness in the context of topological spaces.

MATH 642 Topology II (3.0)
Prerequisite: MATH 641
A continuation of MATH 641; introduction to algebraic topology, including the Fundamental Group and Covering Spaces.

MATH 660 Probability Theory (3.0)
Prerequisite: MATH 501 and MATH 561 or consent of department.
A measure-theoretic approach to topics in probability theory; conditional probability, conditioned expectation, types of convergence, strong law of large numbers, characteristic functions, and the central limit theorem. Offered as needed.

MATH 662 Advanced Mathematical Statistics (3.0)
Prerequisite: MATH 562 or consent of department.
Classical theory of statistical inference, asymptotic theory and robustness, Bayesian inference, and statistical decision theory.

MATH 665 Advanced Linear Statistical Models (3.0)
Prerequisite: MATH 562 (may be taken concurrently) and a semester of linear algebra or MATH 530.
Distribution of quadratic forms, estimation and hypothesis testing in the general linear model, special linear models, applications.

MATH 667 Methods of Classification (3.0)
Prerequisites: MATH 561, 562.
Classification methods used in the industry to handle large databases. Logistic regression, structural equation modeling, multivariate analysis, data mining.

MATH 670 Introduction to the Stochastic Calculus (3.0)
Prerequisites: MATH 661 or consent of the department.
Levy Process, local martingale, stochastic integrals, quadratic variation, Ito's formula, existence and uniqueness of stochastic differential equation. Applications to financial engineering, no arbitrage and martingale measure, Black-Scholes model, edging.

MATH 673 Actuarial Models I (3.0)
Prerequisites: MATH 570, 572.
Theoretical basis of actuarial models and the application of those models to insurance and other financial risks. The following specific models are introduced: Contingent Payment Models, Survival Models, Frequency and Severity Models, Compound Distribution Models, Stochastic Process Models, Ruin Models. Together with its continuation, Mathematics 674, covers the material on the Examination 3 of the Society of Actuaries and the Casualty Actuarial Society.

MATH 674 Actuarial Models II (3.0)
Prerequisites: MATH 673.
Continuation of Math 573/673. It further develops knowledge of the theoretical basis of actuarial models and the application of those models to insurance and other financial risks. The following specific models are introduced: Contingent Payment Models, Survival Models, Frequency and Severity Models, Compound Distribution Models, Stochastic Process Models, Ruin Models. Together with its predecessor, Mathematics 673, covers material on the Examination 3 of the Society of Actuaries and the Casualty Actuarial Society.

MATH 676 Actuarial Modeling I (3.0)
Prerequisite: MATH 673, MATH 674.
Approximately half of the material on the Society of Actuaries/Casualty Actuarial Society examination 4, Actuarial Modeling. Topics include: statistical analysis of simulated data, statistical validation techniques, actuarial credibility, empirical estimation, loss distributions, and introduction to estimation of survival functions.

MATH 677 Actuarial Modeling II (3.0)
Prerequisites: Math 676.
The rest of the material on the Society of Actuaries/Casualty Actuarial Society examination 4, Actuarial Modeling. Topics: Estimation of survival and hazard function. Regression analysis. Multiple regression. Regression in actuarial modeling. Time series models. Properties of stochastic time series. Estimating and forecasting with time-series models. Actuarial modeling with time series.

MATH 681 Combinatorics and Graph Theory I (3.0)
Prerequisite: MATH 521 or MATH 580 or MATH 581 or consent of department.
Fundamental topics in Graph Theory and Combinatorics through Ramsey theory and Polya's theorem respectively. Motivation will be through appropriate applications.

MATH 682 Combinatorics and Graph Theory II (3.0)
Prerequisite: MATH 681.
Fundamental topics in Graph Theory and Combinatorics through Ramsey theory and Polya's theorem respectively. Motivation will be through appropriate applications.

MATH 683 Advanced Combinatorics and Graph Theory I (3.0)
Prerequisite: MATH 681.
Advanced topics in Combinatorics and Graph Theory, including finite planes, coding theory, combinatorial optimization, groups, graphs, and graphs on manifolds.

MATH 684 Advanced Combinatorics and Graph Theory II (3.0)
Prerequisite: MATH 681 and 682.
Course extends the study of advanced topics in Combinatorics and Graph Theory, including Extremal Graph Theory and Algebraic Combinatoris.

MATH 687 Seminar on Discrete Mathematics (3.0)
Prerequisite: MATH 683 or consent of department.
Advanced topics in discrete mathematics.

MATH 690 An Overview of Mathematics (3.0)
Prerequisite: Undergraduate mathematics major or at least four mathematics courses in the graduate program or consent of instructor.
History of mathematics, survey of the major content areas of modern mathematics, discernment of current directions in various mathematical fields.

MATH 691 Independent Study (3.0)

MATH 693 Seminar in Teaching Mathematics (1.0-3.0)
Prerequisite: Consent of instructor.
Selected topics of interest to teachers of mathematics. May be repeated once for credit. Does not count as part of 18-hour minimum in mathematics for M.A.

MATH 694 Graduate Internship (1.0-6.0)
Student's participating in a graduate internship must be registered for this course.

MATH 695 Thesis Guidance (1.0-6.0)

MATH 696 Computer in Teaching Science and Mathematics (3.0)
Prerequisite: One year of teaching experience or consent of instructor (no previous computer experience needed).
Introductory programming and use of computers in a wide range of topics in secondary school science and mathematics. Does not count as part of 15-hour minimum in 600 level mathematics courses for M.A.

MATH 699 Seminar (1.0-12.0)

MATH 700 Doctoral Resesarch (1.0-6.0)
Prerequisite: Permission of department.
Research while enrolled for a doctoral degree under the direction of faculty members.

MATH 710 Doctorial Dissertation (1.0-6.0)
Prerequisites: Consent of department.
Dissertation writing under the direction of the major professor. Grade to be deferred until evaluation of the dissertation by the student's committee. Graded pass-fail, depending on the evaluation by the student's committee.

Microbiology & Immunology

Note: Microbiology and Immunology courses are scheduled according to the School of Medicine calendar; except for MBIO 631 which is on the School of Dentistry calendar.

MBIO 600 Lab Rotations (1.0-2.0)
Research experience in different faculty members' laboratories in areas of interest to the student. The purpose is to help the student select a Research Advisor. Acceptance by the faculty members is required. The course consists of one or two laboratory rotations (one rotation per quarter) with one credit hour per rotation. This course may be taken more than once if deemed necessary. Fall and spring semesters only. Pass/fail grading.

MBIO 601 Introductory Pathogenic Microbiology (3.0)
An introduction to the role of microorganisms in the pathogenesis of infectious diseases. The course will focus primarily on the major bacterial, fungal and viral pathogens. Lecture topics will include a detailed genetic, structural and metabolic examination of these bacteria, fungi, and viruses, including the role of identified virulence factors in the disease process. Most of the major infectious diseases will be discussed, in areas of transmission, disease progression, diagnosis, treatment, and prevention (ie. vaccines). Graded.

MBIO 602 Introductory (2.0)
Prerequisites: BIOC 645 or permission of instructor.
An introduction to the immune system at cellular and molecular levels including: identification of cells of the immune system and their roles in the various immune responses, the role and mechanisms of intercellular communication in induction and regulation of immune responses, and mechanisms of gene rearrangement in the formation of the receptors of the immune system. The cellular and molecular mechanisms are presented in the contexts of the generation of acute inflammatory responses, antibody responses, cytotoxic responses, hypersensitivity reactions and autoimmunity.

MBIO 606 Seminar (1.0)
Prerequisite: Consent of instructor. Pass/Fail grading.

MBIO 618 Topics in Advanced Microbiology (1.0-3.0)
Prerequisites: Consent of instructor.

MBIO 619 Research (1.0-12.0)
Prerequisite: Consent of instructor. Pass/Fail grading.

MBIO 620 Thesis (1.0-6.0)
Prerequisite: Consent of instructor. Pass/Fail grading.

MBIO 631 Dental Microbiology And Immunology (5.0)
Prerequisite: Consent of instructor.
A general course in infectious diseases and immunology. Special emphases are placed on oral infections, immune phenomena, and natural resistance mechanisms. Specific topics include the human immune response, pathogenesis of microbial infections, molecular and microbiological basis of periodontal diseases, pulp and periapical infections and cariogenesis. Graded Summer semester only.

MBIO 658 Cellular and Molecular Immunology (3.0)
Prerequisite: MBIO 602, or consent of instructor.
Cellular and molecular aspects of normal and pathological immune responses including: cells and tissues involved in immune responses, antibody gene rearrangement and expression, antibody structure and function, antigen processing and presentation, T cell receptors, cytokines and co-stimulatory molecules. Graded. Alternate years, Fall semester only.

MBIO 667 Cell Biology (3.0)
Prerequisites: One quarter of graduate level biochemistry or consent of instructor.
An advanced treatment of contemporary cell biology including membrane structure and function, cytoskeleton, signal transduction, regulation of cell cycle, apoptosis, and molecular mechanisms of cellular differentiation. Graded. Spring semester only.

MBIO 670 Molecular Virology (3.0)
Prerequisite: BIOC 645, or consent of instructor.
Deals with fundamental properties of RNA- and DNA-containing viruses of animals and humans including the following subjects: molecular structure and composition of viral particles, intracellular viral replication, viral oncogenesis, recombinant viral vectors, and molecular aspects of viral chemotherapy and immunology. Graded. Alternative years, Spring semester only.

MBIO 680 Microbial Genetics (3.0)
Prerequisites: MBIO 601, BIOC 645, or consent of instructor.
Deals with mechanisms of mutation, genetic exchange and recombination in bacteria, bacteriophage, and fungi. Transformation, conjugation, transduction, lysogeny, gene mapping, and DNA replication and repair will be covered in detail. Graded. Alternative year, Spring semester only.

MBIO 685 Microbial Physiology (3.0)
Prerequisite: BIOC 645, or consent of instructor.
Note: Crosslisted with BIOL 685.
Deals with the fundamental structure-function, metabolic, and reproductive properties of bacteria and other microorganisms under varied environmental conditions, with correlation of morphological and biochemical changes during growth phases. The mechanisms of action of antimicrobial agents will also be considered. Graded. Alternate years, Fall semester only.

MBIO 687 Microbial Pathogenesis (3.0)
Prerequisite: MBIO 601, BIOC 645, or consent of instructor.
Deals with the general principles of host-parasite interactions, with emphasis on the pathogenetic mechanisms of bacteria, fungi and parasites in the human environment. Descriptions of specific diseases will emphasize microbial virulence factors and current research models. Molecular approaches for studying these mechanisms will be discussed. Graded. Alternate years, Spring semester only.

MBIO 690 Research Methods in Microbiology and Immunology (3.0)
A series of lectures and laboratory demonstrations emphasizing current research techniques used in areas of immunology, virology, microbiology, biochemistry and molecular biology. A limited amount of hands-on experience may be utilized in some areas. Fall semester only. Pass/fail grading.

Mechanical Engineering

ME 501 Introduction to Lean Engineering (3.0)
Prerequisites: ME 442 Machine Design II.
Introduction to lean engineering concepts and applications. Material selection, processing and economics. Safety and quality. Value engineering. Legal and ethical issues in design.

ME 510 Thermal Design of Internal Combustion Engines (3.0)
Prerequisite: ME 310.
Thermodynamics and fluid mechanics of internal combustion engine design. Combustion stoichiometry, thermochemistry, and properties of working fluids. Ideal and real engine cycles. Fluid flow processes, combustion processes, pollutant formation and control. Engine operating characteristics.

ME 512 Finite Element Methods for Mechanical Design I (3.0)
Prerequisite: ME 432.
Matrix analysis of static and dynamic structural systems and steady-state heat transfer. Computer aided design of trusses, frames, plane stress structures, as well as one- and two-dimensional thermal systems including conduction and convection.

ME 513 Energy Conversion (3.0)
Prerequisite: ME 310.
A study of nuclear and fossil-fueled steam generators, plus internal combustion prime movers and alternate energy sources. A computerized design project will be required.

ME 515 Mechanical Engineering Lab III (2.0)
Prerequisite: ME 415.
Continuation of ME 415. Specialized and advanced methods for the testing of mechanical systems. Emphasis is placed on dynamics, time varying signal generation, conditioning and analysis.

ME 520 Robotic Manipulator Design and Analysis (3.0)
Prerequisite: ME 410 or equivalent.
Review of kinematics, statics, and dynamics of mechanical linkages; design and analysis of mechanical structures, actuators, transmissions, and sensors. Control system design; trajectory control, force control, adaptive and optimal control. Emphasizes applications in manufacturing processes.

ME 521 Mechanical Vibrations (3.0)
Prerequisite: ME 435.
The theory of vibrating mechanical systems. Modeling of lumped parameter and distributed parameter systems. Free and forced vibration. Damping. Periodic and transient motion. Concept of normal modes. Multiple degree-of-freedom systems. Design applications.

ME 522 Vehicle Engineering (3.0)
Prerequisites: Graduate School Standing and ME 442.
The analysis and design of modern vehicles. Lean engineering and other topics of current interest in the automotive industry. Future trends in vehicle engineering.

ME 523 Intermediate Dynamics (3.0)
Prerequisite: ME 206 and ME 435.
Extension of the dynamics concepts introduced in ME 206. Utilization of rotational coordinate systems and vector dynamics in 3-dimensional motion. LaGrangian analytical methods. Stability of motion. Computer methods for dynamic modeling. Emphasis on design modifications and evaluation using CAE software.

ME 525 Mechanical Design of Internal Combustion Engines (3.0)
Prerequisite: ME 310 and ME 422.
Design of internal combustion engine components and systems for strength, endurance, and optimum performance. Computer applications and open-ended design projects.

ME 530 Advanced Mechanical Design (3.0)
Prerequisite: Graduate Professional or Graduate School standing and permission of graduate advisor.
Application of classical, computational, and experimental methods and analyses to the design of mechanical systems. Topics include component design and analysis, failure analysis, and optimization, with emphasis on computer applications.

ME 531 Analysis and Design of Energy Systems (3.0)
Prerequisite: Graduate Professional or Graduate School standing and permission of Graduate advisor.
The application of classical, computational, and experimental methods and analyses to the design of mechanical energy systems. Topics include design and analysis of static and transient thermal, fluid, electromechanical, and acoustic systems.

ME 532 Experimental Stress Analysis (3.0)
Prerequisite: ME 314, ME 323 and ME 435.
Fundamentals of experimental stress analysis. Brittle coating methods, photoelastic coating and electrical strain gage techniques, strain measurements under static and dynamic loading.

ME 542 Gas Turbines (3.0)
Prerequisite: ME 310 and ME 401.
Theory and design of various types of gas turbine engines used for power and propulsion. Thermodynamic cycle analysis; design basics of turbomachinery, nozzles, diffusers and combustion chambers; engine performance analysis.

ME 545 Tribology (3.0)
Prerequisite: ME 401 and ME 440.
Hydraulic and boundary lubrication, static and dynamic characteristics of gas and liquid journal bearings, and numerical analysis of bearing problems.

ME 552 Direct Energy Conversion (3.0)
Prerequisite: ME 440.
An introduction to the principles of direct energy conversion systems. Design and analysis of thermoelectric, photovoltaic, thermionic, magnetohydrodynamic power generators and fuel cells, and other modes of direct energy converters.

ME 560 Nuclear Engineering (3.0)
Prerequisite: ME 440 or CHE 434.
Introduction to nuclear power. Nuclear physics. Nuclear radiation. Reactor physics. Reactor kinetics and control. Fuel depletion. Energy removal. Studies of typical reactor types.

ME 575 Special Topics in Mechanical Engineering (1.0-4.0)
Prerequisite: Faculty consent.
A special topics course in mechanical engineering topics not covered by regularly scheduled courses.

ME 580 Air Pollution Control (3.0)
Prerequisite: CHEM 202, ME 310 or equivalent.
Origin and fate of air pollutants, combustion and pollutant formation processes, control of emissions of gaseous and particulate pollutants and design of various pollution control devices.

ME 582 Industrial Energy Conservation (3.0)
Prerequisites: ME 310 or equivalent.
Energy use and supply, energy and energy analysis, conservation of energy in manufacturing, business and transportation; environmental effects of energy consumption.

ME 588 Independent Study in Mechanical Engineering (1.0-4.0)
Prerequisite: Faculty consent.
A theoretical or experimental investigation of a problem area related to mechanical engineering.

ME 602 Graduate Internship in Mechanical Engineering (2.0)
Prerequisites: Students must be admitted for Graduate study, and a sponsored member of the Graduate Intern Program.
Supervised professional experience in industry at the graduate level. This course provides the structure and focus for the graduate intern field assignment to ensure that the assignment is appropriate and consistent with the intern's graduate course of study and professional development. May be repeated for credit.

ME 606 Continuum Mechanics (3.0)
Prerequisites: Graduate School Standing, ME 311 & ME 323.
Emphasizes the basic principles of continuum mechanics and the central role these principles play in the formulation of the fundamental equations of fluids and solid mechanics.

ME 610 Data Acquisition and Signal Analysis (3.0)
Prerequisites: ME 314, ME 315, ME 415, ME 435.
Implementation of PC-based data acquisition systems for dynamic signal analysis. The LabView graphical programming language will be used to design virtual instruments for data collection and signal analysis.

ME 612 Finite Element Methods for Mechanical Design II (3.0)
Prerequisite: ME 512.
Use of general purpose software for practical structural, thermal, and fluid design applications, including nonlinear and transient effects. Advanced modeling techniques, and analysis guideline with emphasis on interpretation of results.

ME 614 Heating, Ventilating, and Air Conditioning (3.0)
Prerequisite: ME 440.
Psychometric principles. Detailed calculation of heat loses and heat gain for both heating and cooling of buildings. Basic concepts of refrigeration. Design of actual systems and selection of equipment. Automatic controls. Codes and standards. A design project will be required.

ME 616 Gas Dynamics (3.0)
Prerequisite: ME 401.
The thermodynamics of compressible-fluid flow. A detailed study of constant and varying area adiabatic flow, plane shock waves and losses, oblique shock waves and Prandtl-Meyer flow. Characteristics and design of efficient flow passages.

ME 618 Heat Exchanger Design (3.0)
Prerequisite: ME 401 and ME 440.
Thermal and hydraulic design of heat exchangers. Selection and optimum design of heat exchangers. Cost and construction of heat exchangers.

ME 620 Advanced Mechanics of Solids (3.0)
Prerequisite: ME 432 or equivalent.
Cross-listed with CE 620.
Analysis of stress and strain. Topics include failure theories, unsymmetric bending, curved beams, shear center, torsion, beams on elastic foundations, beams with combined axial and lateral loads, thick-wall cylinders, rotating disc, introduction to elastic stability.

ME 621 Noise and Vibration Control (3.0)
Prerequisite: ME 435 and ME 314.
Practical aspects of noise and vibration control are studied. Methods for measuring and analyzing noise and vibration. Methods for selecting design criteria. Methods for quieting a product.

ME 622 Theory of Plates and Shells (3.0)
Prerequisite: ME 432.
Cross-listed with CE 622.
Elastic and plastic analysis of thin plates; membrane analysis and bending theory of shells; additional topics.

ME 624 Failure Analysis and Accident Reconstruction (3.0)
Prerequisite: CHE 253.
Overview of ferrous metallurgy, dislocation theory, and mechanical properties. Fatigue, creep, brittle fracture, fractography, recovery and recrystallization, corrosion and effects of environment on mechanical behaviors. Vehicular accident reconstruction including skid mark analysis, momentum calculations, lamp bulb examination, etc. Reporting failure analyses and accident reconstructions. Product liability law, the engineer as an expert witness, civil procedures and rules of evidence. Case studies are emphasized.

ME 630 Turbomachinery (3.0)
Prerequisite: ME 310 and ME 401.
The thermodynamics and fluid mechanics of turbomachinery. Dimensional analysis and performance mapping. Preliminary design procedures. Blading and flow path design. Experimental and theoretical methods for determination of flow losses. Flow field calculations and performance prediction.

ME 635 Advanced Mechanical Engineering Analysis (3.0)
Prerequisite: Faculty consent.
Formulation of mathematical models for mechanical engineering problems, such as heat transfer, fluid mechanics, dynamics, etc., with special emphasis on computer solutions.

ME 636 Computer Simulation of Dynamic Systems (3.0)
Prerequisites: ME 380 and ME 435.
Modeling of systems comprised of mechanical, thermal, fluid, and electrical components. Use of general purposes computer simulation programs to implement the models and calculate system response to various inputs. Electromechanical components and their dynamic interaction. Optimization of overall system performance using parametric design studies.

ME 638 Computational Methods in Fluid Flow and Heat Transfer (3.0)
Prerequisite: Consent of instructor.
Solutions of the momentum and thermal boundary-layer equations; methods of solving boundary-value problems using digital computers. Finite-difference methods, finite-element methods, and other methods for solving equations of fluid flow and heat transfer. Turbulence models.

ME 640 Optimum Design Methods (3.0)
Prerequisite: ME 422 and consent of instructor.
Methods and applications of engineering design optimization. Strategies for problem formulation. Transformation methods, search techniques, linearization methods and quadratic approximation methods. Solution evaluation.

ME 641 Advanced Mechanics of Machinery (3.0)
Prerequisites: ME 442 and ME 521.
Machine analysis and design for high speed, high performance applications. Rigid-body kinematics and dynamics of mechanisms, balancing of machinery. Cam-follower mechanisms. Mathematical modeling of mechanisms composed of elastically deformable elements such as gears, bearings, linkages and acuators. Transient and steady-state dynamic response. Failure modes and prevention. A design project is required.

ME 642 Design of Fluid Power Systems (3.0)
Prerequisites: ME 380, ME 401, and ME 435.
Design methodology for hydraulic and pneumatic fluid power systems. Study of the operating principles of pumps, hydraulic motors, compressors, blowers, fans, actuators, accumulators, and control components, with an emphasis on dynamic analysis and computer simulation. Fluid logic control systems. Applied design projects are required.

ME 643 Rapid Product Development (3.0)
Prerequisites: ME 380 and ME 422.
Rapid design and prototyping using engineering workstations, CAD/CAM software, and various rapid prototyping processes, including table-top CNC machining, selective laser sintering, laminated object manufacturing, injection molding, fused desposition modeling, and stereolithography. A design project leading to a functional prototype is required.

ME 644 Mechatronics (3.0)
Prerequisites: ME 435.
Introduction to multi-domain systems. Mechanical, thermal, fluid, electrical, electronic, electromechanical system dynamics. Emphasis on modeling and simulation of hybrid systems using modern computer-aided tools.

ME 645 Mechanical Engineering Structured Research Project (3.0)
Prerequisite: Graduate/professional school standing.
Corequisite: ME 677.
Structured research in a mechanical engineering discipline. A proposal, activity reports and final report are required. Research results are presented for faculty and peer review, and must also be documented in a scholarly paper targeted toward a journal or technical conference. Intended for candidates for the Master of Engineering degree choosing the non-thesis curriculum alternative.

ME 646 Design for Manufacturability and Reliability (3.0)
Prerequisites: ME 442 and IE 360.
Introduction to manufacturing concerns such as efficient assembly, producibility, and quality that should be considered early in the design process. Topics include the product development cycle, manufacturing process selection, tolerancing, design for assembly, quality control techniques, Taguchi's robust design methodology, quality function deployment, value engineering and reliability-based design. Life cycle optimization.

ME 647 Advanced Design Methods (3.0)
Prerequisite: ME 442 and ME 497.
Practical techniques for product definition, concept generation and selection, value analysis, parameter design, design for manufacture, life cycle design and product structuring.

ME 648 Design for Manufacturing (3.0)
Prerequisites: ME 422 and Graduate Standing.
The impact of manufacturing difficult, tooling cost and part cost on the proposed design. This is a major component in lean engineering.

ME 651 Kinematics and Kinetics of Human Movement (3.0)
Prerequisites: ME 206.
Development of analytical tools for evaluating three-dimensional kinematics and kinetics of human motion.

ME 652 Advanced Human Biodynamics (3.0)
Prerequisites: ME 651.
Development of techniques for synthesis and analysis of kinematic and kinetic models of human motion, in conjunction with acquisition of biomechanical data associated with functional human movement.

ME 653 Mechanics of Biomaterials (3.0)
Prerequisites: ME 323 and CHEM 202.
Presentation of fundamental mechanics of biomaterials including: natural biomaterials (skin, bone, cartilage, ligament, tendon, and vasculature) and synthetic materials (metals, ceramics, polymers, and composites) used in biological applications; biocompatability and biological reactions to implanted materials.

ME 654 Advanced Hard and Soft Tissue Mechanics (3.0)
Prerequisites: ME 653.
Presentation of current knowledge and theory pertaining to biological hard and soft tissue with discussion of issues such as tissue formation, growth, damage, and healing, as well as surgical intervention.

ME 655 Biomedical Acoustics (3.0)
Prerequisites: ME 380 or equivalent; ME 435 or ME 521; and BSC 211 and BSC 212, or equivalent.
An introduction to the principles and technology involved in the application acoustic waves to therapeutic and non-therapeutic biomedical applications. Topics include acoustic sources, sonic waveguides, sound radiation, room acoustics, sound measurement, digital audio, biomedical applications, and sound reinforcement applications. Review of current research topics in electro- and biomedical acoustics.

ME 656 Orthopaedic Bioengineering (3.0)
Prerequisites: BSC 211 and BSC 212, or equivalent.
An overview of the fundamentals of bone and joint form, function, pathology, and mechanical considerations. Based on optimum performance, implant design characteristics and pitfalls will be discussed. Special attention will be placed on design issues relating to natural human biomechanical, healing, and adaptive behavior.

ME 657 Computational Biomechanics (3.0)
Prerequisites: BSC 211 and BSC 212, or equivalent and ME 654.
Emphasizes the use of computers in the modeling and analysis of biomechanical structures. Topics include medical imaging, finite element modeling and analysis, kinematic analyses, and computer-aided surgery.

ME 658 Dental Biomechanics (3.0)
Prerequisites: BSC 211 and BSC 212, or equivalent and ME 654.
A study of the biomechanical principles applicable to dentistry and orthodontics with emphasis on computer modeling. Topics include: mechanics of chewing, basic force systems involved appliance design for tooth movement, dental implants, and surgical treatment of patients with dentofacial anomalies.

ME 659 Micro Pressure and Flow Sensors for Biomedical Applications (3.0)
Prerequisites: Graduate/professional standing.
Application of microtechnologies to the development of practical pressure and flow sensors for biomedical applications. Overview of micro-fabrication processes and conventional flow/pressure sensing devices. Application specific criteria supporting the need for miniaturization. Design principles and constraints. Students are required to design either a micro flow or pressure sensor for a specific biomedical application.

ME 661 Advanced Thermodynamics (3.0)
Prerequisite: Faculty consent.
Review of thermodynamic fundamentals, with application to selected topics. Irreversible, non-equilibrium thermodynamics.

ME 663 Heat Conduction (3.0)
Prerequisite: ME 440.
Derivation of governing equations. Classical heat conduction solutions with various boundary conditions. Computer applications.

ME 664 Heat Convection (3.0)
Prerequisite: ME 440.
Derivation of equations of mass, momentum, and energy in boundary layers. Solutions of laminar and turbulent flow problems. Computer applications.

ME 665 Radiation Heat Transfer (3.0)
Prerequisite: ME 440.
A comprehensive study of thermal radiation. Discussion of Planck distribution function and Stefan-Boltzmann equation. Study of geometry of radiation. Combined affects with convection. Computer applications.

ME 668 Advanced Mechanical Vibrations (3.0)
Prerequisite: ME 521.
Analytical and computational methods for mechanical vibration problems. Formulation and solution techniques. Modeling and applications.

ME 669 Advanced Dynamics (3.0)
Prerequisite: Faculty consent.
Kinematics and dynamics of rigid-body motion. An introduction to variational mechanics, including generalized coordinates and Lagrange's equations of motion. Stability of motion, including the Routh-Hurwitz criterion and the Liapounov direct method.

ME 671 Advanced Fluid Mechanics (3.0)
Prerequisite: ME 401.
A study of the Navier-Stokes equation, with application to laminar and turbulent-flow fields for various geometries. Computer applications.

ME 673 Nuclear Reactor Design (3.0)
Prerequisite: ME 560.
Typical power cycles, reactor heat generation and heat transfer, design of reactors, selection and design of power cycle components. Study of the various contemporary nuclear plants.

ME 675 Advanced Topics in Mechanical Engineering (1.0-6.0)
Prerequisite: Faculty consent.
An advanced course in mechanical engineering topics not covered by regularly scheduled courses.

ME 677 Mechanical Engineering Comprehensive Exam (0.0)
Prerequisite: Graduate/Professional School standing.
Corequisite: ME 645.
A comprehensive examination required of all candidates for the Master of Engineering degree choosing the non-thesis curriculum alternative.

ME 688 Independent Study in Mechanical Engineering (1.0-6.0)

ME 690 M.S. Thesis in Mechanical Engineering (1.0-6.0)
Experimental and/or theoretical thesis research performed as part of Master of Science degree requirements.

ME 694 Mechanical Engineering Seminar (0.0)
Prerequisites: Graduate/professional school standing.
Presentations on research projects and current literature. Course begins in the fall semester and concludes in the spring semester.

ME 697 Master of Engineering Thesis in Mechanical Engineering (1.0-8.0)
Prerequisite: Graduate/Professional School standing.
Original design or research activity in a mechanical engineering discipline, under the direction of a faculty member. A written thesis must be presented to a faculty committee and defended. Intended for candidates for the Master of Engineering degree choosing the thesis curriculum alternative.

ME 700 Dissertation Research in Mechanical Engineering (1.0-18.0)
Prerequisites: Completion of doctoral program core and permission of dissertation director.
Original research activity in an appropriate mechanical engineering discipline, under the direction of a Mechanical Engineering graduate faculty member.

Master of Engineering Residency

MENG 600 Master of Engineering Residency (0.0)

Management

MGMT 501 Managerial Statistics (3.0)
Prerequisites: Intermediate Algebra; fulfills a Foundation requirement only.
Note: Crosslisted with PADM 501.
A survey of statistics, regression, ANOVA, and forecasting.

MGMT 600 Advanced Organizational Behavior (3.0)
Examination of the concepts and theories from the behavioral sciences which explains human behavior within organizations. The major focus is on individual behavior and group dynamics with special emphasis on techniques and methods to improve individual functioning and interpersonal processes.

MGMT 601 The Business Environment (3.0)
Examines the interactions between organizations and their demographic, legal, technological, social, political, and ethical environments. The major object is to construct a conceptual framework suited to helping managers develop policies and programs that will bring their organizations into congruence with the societies they must serve. The environment of multinational business is also discussed.

MGMT 607 Advanced Business Statistics (3.0)
Prerequisite: MGMT 501 and matrix algebra.
Four major statistical techniques, analysis of variance, linear regression, multiple regression, and forecasting, will be studied in detail, plus other special topics as time permits. Within each topic attention will be given to the model and its assumptions, the analysis, and applications to business problems. Packaged computer programs will be relied on to facilitate the analysis.

MGMT 610 Production/Operations Management (3.0)
Prerequisite: MGMT 501, CIS 500, and calculus.
This course covers the broad aspects of production and operations management, including both the quantitative and qualitative points of view.

MGMT 615 Seminar in Quantitative Methods (3.0)
Prerequisite: MGMT 501.
Mathematical modeling building for the quantitative analysis and optimization of business decisions. Advanced applications in the areas of inventory control, production scheduling, mathematical programming, simulation, and queuing theory and related topics. Not regularly offered.

MGMT 620 Human Resources Management (3.0)
This course provides an opportunity for students to develop comprehensive understanding of personnel practices and policies. The main objective is to learn how to develop optimum personnel programs within the business organization. Actual cases are studied, giving the student a realistic understanding of the methods and techniques used in administering a sound personnel.

MGMT 630 Labor-Management Relations (3.0)
A study of labor-management issues with emphasis on (1) the organizing stage, (2) problems in the shop, (3) problems at the bargaining table, (4) labor relations and public policy, and (5) an examination of labor relations overseas. These issues are examined through the intensive analysis of factual descriptions. Students are provided with the opportunity to participate in role playing, prepare arguments, and make decisions.

MGMT 635 Developing Entrepreneurial Competence (3.0)
Prerequisites: Graduate Standing.
Skills building approach to improving effectiveness in making discoveries that maximize one's profit and minimize risk. Discussions focus on a variety of classic and contemporary readings. Experimental activities build self-knowledge and development of information processing and decision - making skills

MGMT 640 Organizational Change and Development (3.0)
Prerequisite: MGMT 600.
Examination of theories and methods utilized to promote purposeful change in organizational systems and processes. Emphasis placed on organizational development for improving organizational effectiveness. Topics will include team building and survey feedback.

MGMT 645 Consulting to Entrepreneurial Organizations (3.0)
Prerequisites: Undergraduate Bus Degree or having completed foundations (ACCT 500, CIS 500, MKT 500, FIN 500).
Assist an existing small to medium sized enterprise in addressing some key business needs or problems with a focus upon growth opportunities.

MGMT 650 Organizational Structure and Design (3.0)
Prerequisite: MGMT 600.
Examination of concepts concerning the structures and processes utilized by organizations in managing internal systems and environmental interactions. Topics include information systems, organizational design, and strategic planning as they impact organizational effectiveness.

MGMT 660 Leadership (3.0)
Provides an experiential approach to leadership effectiveness. Discussions focus on a variety of classical and contemporary readings applicable to leadership. Self-knowledge, analytical skills, and innovation characterize case studies and meetings with men and women in leadership roles. Special emphasis is placed upon communication skills and ethical issues in leadership.

MGMT 680 Special Topics in Management (1.0-6.0)
An advanced study of one or more selected topics or issues related to the study of Management.

MGMT 684 Managing Creativity and Innovation (3.0)
A broad overview of innovation, and the managerial decisions that affect innovation performance. Places innovation in its social, economic, technological, and political context.

MGMT 685 New Venture Creation (3.0)
Prerequisites: Concurrent with MGMT 686.
Study of the activities associated with the creation, assessment, development, and preparation of new and emerging ventures. Students will develop new venture management skills through a combination of classroom exercises, case analysis, and the development of a business plan to support the initiation of a new venture.

MGMT 686 Business Plan Development (3.0)
Prerequisite: Concurrent with MGMT 685.
Development of a complete business plan for the creation of a new venture.

MGMT 687 New Venture Finance (3.0)
Prerequisite: MGMT 685.
Organization and presentation of financing plans for new ventures; securing financial support.

MGMT 689 New Venture Implementation (6.0)
Prerequisite: Successful completion of all IMBA modules and enrollment. Current enrollment in Integrative Global Strategy and Lifelong Learning II.
Exploration of topics necessary for the successful implementation of new venture opportunities upon completion of a new venture plan.

MGMT 690 Corporate Entrepreneurship and Global Strategy (3.0)

MGMT 698 Research Seminar in Management (1.0-3.0)
Prerequisite: One 600-level management course and permission of departmental chair.

Marketing

MKT 525 Distribution Management (3.0)
Note: This course does not fulfill credit for MBA.
Examines the flow of good and related information from sources of supply to sources of demand with primary emphasis on inventory management, warehousing, transportation, customer service, and network configuration.

MKT 527 Logistics Management (3.0)
Prerequisites: MKT 525, ACCT 526.
Examines skills required for effective logistics management including leadership, contracts, and decision-making.
Note: This course does not fulfill credit for MBA.

MKT 600 Marketing Management (3.0)
Prerequisites: MKT 500, CIS 675, ECON 600, MGMT 600.
An integrated managerial approach to the study of modern marketing theory, analysis, and strategic decision-making in the context of the firm. Topics include the marketing mix, global opportunities, ethical implications, E-commerce, social forces, legal issues, and electronic communication networks.

MKT 610 Consumer Behavior (3.0)
Prerequisites: MKT 600.
Information from the behavioral and quantitative sciences which relates to consumer behavior. Presents economic, psychological, communications, and cultural information, and research findings which attempt to describe the morphology and structure of consumer behavior.

MKT 612 Supply Chain Management (3.0)
Prerequisites: MKT 500.
Examines the integration of business processes from end users to original suppliers. E-logistics and purchasing issues are discussed along with the integration of information and product/service flows that add value to customers.

MKT 620 Marketing Research (3.0)
Prerequisites: MKT 600.
An application of qualitative and quantitative information relevant to marketing decisions in the organization. Topics include: research design, collection of primary and secondary data, using statistical packages, and employing scanner data and web based techniques for meeting marketing information needs.

MKT 630 Sales Management (3.0)
Prerequisites: MKT 600.
A managerial decision approach involving sales planning, and sales operations in the contemporary context of rapid digital communication wthin the supply chain. Topics include territory management, sales forecasting, relationship building, motivation, recruitment, compensation, and ethical issues.

MKT 670 Global Marketing (3.0)
Prerequisites: MKT 600.
A managerial approach that centers on the needs of contemporary organizations to identify, understand, and serve global markets. Topics include global research, cultural environments, global sourcing, world customers, pricing, competition, and the evolving political, legal, technological, and social environments of world trade.

MKT 680 Special Topics in Marketing (1.0-3.0)
An advanced study of one or more selected topics or issues related to the study of Marketing.

MKT 698 Research Seminar in Marketing (1.0-3.0)
Prerequisite: One 600-level marketing course and permission of departmental chair.

Music Education

MUED 605 Pre-Student Teaching: Orientation and General Methods (Vocal) (3.0)
Prerequisite: Admission to MAT and Music Professional Year Teacher Education Program.
Orientation to general methods in teaching K-12 vocal music, rehearsal techniques, and classroom management.

MUED 606 Pre-Student Teaching: Orientation and General Methods (Instrumental) (3.0)
Prerequisite: Admission to MAT and Music Professional Year Teacher Education Program.
Orientation to general methods in teaching grades 5-12 instrumental music, rehearsal techniques, and classroom management.

MUED 607 Student Teaching Seminar I (2.0)
Prerequisite: Admission to MAT and Music Professional Year Teacher Education Program.
Emphasis on multicultural and multiethnic music and the teaching of the same.

MUED 608 Student Teaching Seminar II (2.0)
Prerequisite: Admission to MAT and Music Professional Year Teacher Education Program.
Emphasis on developing strong programs of instruction in general music, choral music, wind and percussion instruments and string instruments.

MUED 609 Capstone Seminar (3.0)
Prerequisite: Successful student teaching and all other course work for the M.A.T. degree with a music education emphasis.
Present professional portfolios, investigate current issues impacting the lives of students with and without disabilities, and assemble resources to further career goals. Fulfills the exit requirements for the MAT degree with a music education emphasis.

MUED 610 Music Student Teaching in the Elementary/Secondary Schools I (4.0)
Prerequisite: EDUC 501, EDUC 502, and either EDUC 503 or 504 or 505 or 506; EDSD 605, EDSD 607 (or currently enrolled in EDSD 605 or 606), a 2.75 G.P.A. in major and minor teaching fields, admission to teacher education program, and admission to MAT.
Provides supervised observation, participation and teaching.

MUED 611 Music Student Teaching in the Elementary/Secondary Schools II (4.0)
Prerequisite: EDUC 501, EDUC 502 and either EDUC 503 or 504 or 505 or 506; EDSD 605, EDSD 606 (or currently enrolled in EDSD 605 or 606); EDUC 610, a 2.75 G.P.A. in major and minor teaching fields, admission to teacher education program, and admission to MAT.
Provides supervised observation, participation and teaching.

MUED 628 Qualitative Research Methods and Materials in Music Education (2.0)
Qualitative research methods and designs for music educators. Topics include curriculum development, teaching and learning standards, ethnography, case studies, and assessing diverse student populations.

MUED 629 Foundations of Music Education (2.0)
Designed to survey major topics in the areas of history, sociology, psychology, and music education.

MUED 630 Quantitative Research Methods & Materials in Music Education (2.0)
Quantitative research analysis methods for music educators. Applications include evaluating achievement & aptitude as related to test analysis, research design, statistical analysis, & research paradigms.

MUED 639 Learning Theories in Music Education (2.0)
Trends & theories of learning theory & related philosophies in music education. Applications, interpretations, and adaptations of these materials will be addressed.

Music

Numbering System:
Applied music course sequences are 501-504, 511-514, 521-522 (open to Senior College or graduate students) and to the sequences 601-604, 611-614, and 621-624 (open to graduate students). Students enroll for credit in these sequences according to the amount of literature and study they expect to cover and according to the instructor's assessment of the student's ability to perform. Normally, an applied music student will enroll for 4 semester hours on a major instrument or 2 semester hours on a principal or secondary instrument in each of the course sequences.

Exceptional students may be advised to enroll for the greatest amount of course credit.

Applied music majors may use course numbers open only to them; and music history, music education, and music theory-composition majors may use course numbers designated for their enrollment in courses related to their principal instrument. All students will use course numbers reserved for instruction applicable to secondary instruments (521-522).

Instruments:

Piano	Cello
Trumpet	Harpsichord
Bass	French Horn
Organ	Flute
Trombone	Harp
Oboe	Baritone
Voice	Clarinet
Tuba	Violin
Saxophone	Percussion
Viola	Bassoon

MUS 500 Music History Review (0.0)
The purpose of the course is to provide the student with a reasonable method of removing deficiencies revealed by the Graduate Entrance Examination. No graduate student will be allowed to enroll in any graduate course in a historical period in which he has failed to pass the corresponding section of the Graduate Entrance Examination until he has removed his deficiency in the history of the subject. Areas covered are:

- Deficiencies within the period from the Middle Ages to 1530;
- Deficiencies within the period between 1530 and 1750;
- Deficiencies within the period between 1750 and 1850;
- Deficiencies within the period from 1850 to the present.

MUS 501 Major Instrument (2.0)
Prerequisite: Faculty consent.

MUS 502 Major Instrument (2.0)
Prerequisite: Faculty consent.
Refer to: MUS 501

MUS 503 Major Instrument (4.0)

PIANO:
First year: Student will study scales and arpeggios, Bach 2-Part Inventions, Sonatas by Haydn or Mozart, and compositions by such composers as Beethoven, Schubert, Chopin, Mendelssohn, Grieg.

Second Year: Student will study scales and arpeggios, and literature equivalent to Bach 3-Part Inventions or French Suites, Sonatas by Beethoven or Schubert, Mozart Fantasia or Rondo, Scarlatti Sonatas, compositions by Chopin, Schumann, Brahms, Debussy.

Third Year: Student will study technical materials and such materials as Bach English Suites or Preludes and Fugues, Sonatas by Mozart of Beethoven, Haydn Variations, Mozart Concertos or compositions by Chopin, Liszt, Rachmaninoff, Debussy.

Fourth Year: Student will study technical materials and such materials as Bach Partitas and Preludes and Fugues, Sonatas by Beethoven, Schumann, or Chopin, Mozart or Beethoven Variations, compositions by Chopin, Debussy, Ravel, Albeniz, Prokofiev, Copland, Concertos by Mozart, Beethoven, Schumann, Chopin, Rachmaninoff.

Fifth Year: Advanced work and literature beyond senior level.

ORGAN:

By the end of the eighth semester, the student should have acquired the ability to play compositions of a grade representative of the more difficult works of Bach Preludes, Fugues, and Sonatas, and representative works by principal composers from the various musical periods.

VIOLIN:
By the end of the fourth semester, the student should have acquired the ability to play compositions of a grade similar to the Viotti Concerto No. 22, the Spohr Concerto No. 2, Bach and Handel sonatas for violin and piano.

By the end of the eighth semester, the student should have acquired an adequate technical background in scales, arpeggios, bowing and phrasing, and the ability to perform works of the difficulty of the Mendelssohn E Minor Concerto, the Bruch G Minor, or the Spohr No. 8.

ORCHESTRAL INSTRUMENTS:

The courses of study for cello, viola, bass, woodwind, and brass instruments follow the general outline of the violin course, and students of these instruments will be expected to acquire a proficiency comparable to that required for violin.

VOICE:

By the end of the fourth semester, the student should demonstrate a recognition of the importance of breath management, tone placement, vocal legato, correct singing diction, and a sense of peotic interpretation and musical style; should be able to sing arpeggios, major/minor scales, and various vocalizes as prescribed by the teacher for the student's stage of musical and vocal development; and should have covered a repertoire of twenty (principals) or thirty (majors) songs.

By the end of the eighth semester, the student should be able to sing at sight a song of the difficulty level of Schubert's "Heidenroeslein"; should have sung two opertic arias and two oratorio arias in their original languages; should have a knowledge of recitative in both free and measured forms; and should have acquired the vocal and musical expertise to present a recital of 50 minutes of music representing four languages in varying styles and historical periods.

MUS 504 Major Instrument (4.0)
Refer to: MUS 503

MUS 509 Major Ensembles (1.0)
Open to all qualified students after consultation with the director. Symphony Orchestra; Symphonic Band; Early Music Ensemble; Opera Theater; Jazz Band; Concert Band; Pep Band; Wind Ensemble; Wind Symphony, New Music Ensemble; Marching Band; University Chorus; Collegiate Chorale.

MUS 511 Principal Instrument (2.0)
Prerequisite: Faculty consent.
For students majoring in music education, music history, or theory/composition.

MUS 512 Principal Instrument (2.0)
Prerequisite: Faculty consent.
For students majoring in music education, music history, or theory/composition.

MUS 513 Principal Instrument (4.0)
Prerequisite: Faculty consent.

MUS 514 Principal Instrument (4.0)
Prerequisite: Faculty consent.

MUS 519 Minor Ensembles (0.5)
Open to all qualified students after consultation with the director. Piano; String; Woodwind; Brass or Percussion; Ensemble; Improvisation; Guitar; Jazz Combo (Instrumental); Vocal Jazz Ensemble; Jazz Ensemble; Brass Quintet Trumpet, Trombone, Tuba or Tuba/Euphonium; Saxophone Ensemble; Opera Workshop; Clarinet, Flute, Harp Ensemble; Community Band; Historical Instruments.

MUS 521 Secondary Instrument (1.0)
Prerequisite: Faculty consent.
A secondary applied music course carried in addition to the student's major or principal field.

MUS 522 Secondary Instrument (1.0)
Prerequisite: Faculty consent.
A secondary applied music course carried in addition to the student's major or principal field.

MUS 527 Choral Music in the Modern Secondary School (2.0)
Procedures and techniques for use with the high school chorus including such topics as selection of repertoire, voice production, diction, rehearsal psychology, and performance practice.

MUS 529 Honors Ensembles (0.0)
University Singers. Admission by audition only.

MUS 533 Functional Study (1.0)
Prerequisite: Permission of instructor.
For the local piano teacher wishing to refresh or keep current with all aspects of piano teaching. Includes methods, procedures, and materials for all levels of students.

MUS 534 Functional Study (1.0)
Prerequisite: Faculty consent.
One half-hour private lesson weekly in an applied area.

MUS 535 Music Industry I (2.0)
Prerequisite: Sixty hours of credit.
A study of current practices affecting the professional musician and a survey of career opportunities relating to music and industry.

MUS 536 Music Industry II (2.0)
Prerequisite: MUS 535.
Continuation of Music Industry I. Includes broadcast, performance, marketing, retail sales, audio/video engineering, publishing, law and labor relations.

MUS 537 Advanced Techniques for Marching Bands (2.0)
Prerequisite: MUS 337 or permission of instructor.
Problems in preparing the half-time show. Arranging for the marching band.

MUS 539 Studies in Jazz (2.0)
Focus on aural skills, transcription methods, and advanced jazz harmony topics. Extended functional harmony and advanced rhythmic concepts. Examples will focus on transcribed solos by established jazz masters.

(03) Standard Jazz Repertoire
Prerequisite: MUS 138 and permission of instructor.
This course will focus on learning compositions from standard jazz repertoire. While improvisation is stressed as an important part of the learning process, the main objective will be to learn and memorize melodies and chord progressions of selected pieces from a number of musical styles. Each class session will concentrate on a specific style, composer, and/or type of composition tune. A variety of tempos and keys will be chosen. Selected compositions may be performed with play-a-long recordings or with other students in the class.

MUS 543 Advanced Composition (2.0)
Prerequisite: MUS 346 and MUS 444 or permission of instructor.
Continuation of MUS 444.

MUS 544 Advanced Composition (2.0)
Prerequisite: MUS 346 and MUS 444 or permission of instructor.
Continuation of MUS 444.

MUS 545 Advanced Orchestration (2.0)
Prerequisite: MUS 346 or permission of instructor.
A combination of the prerequisite orchestration course with special problems for the advanced student.

MUS 546 Advanced Orchestration (2.0)
Prerequisite: MUS 346 or permission of instructor.
A combination of the prerequisite orchestration course with special problems for the advanced student.

MUS 547 Chromatic Harmony and Analysis (2.0)
Prerequisite: MUS 242, MUS 347.
A study of chromatic harmony and voice leading, expanded tonality, and extended forms. Analysis of music of the late 19th and early 20th century; creative writing in styles of this period.

MUS 548 Analysis of Twentieth Century Music (2.0)
Prerequisite: MUS 242, MUS 547.
Survey of 20th century analytic techniques. Analysis of atonal, serial, centric, and post-serial compositions.

MUS 549 Counterpoint I (2.0)
Prerequisite: MUS 242.
A study of 16th century vocal counterpoint in the style of Palestrina and Lassus. Two- and three-part setting of Latin texts.

MUS 550 Counterpoint II (2.0)
Prerequisite: MUS 549.
A study of 18th century counterpoint, emphasizing Bach's style and leading to chromatic writing of the late 19th century.

MUS 553 Computers & Music I (2.0)
Prerequisite: Consent of instructor.
Fundamentals of MIDI, electronic keyboards, sound modules and ancillary components of computer-assisted music production.

MUS 554 Computers & Music II (2.0)
Prerequisite: MUS 553 or permission of instructor.
Advanced sequencer and notation software techniques, MIDI applications in audio engineering, machine control and related devices.

MUS 555 Instrument Repair (2.0)
Repair of woodwind and brass instruments.

MUS 557 Piano Technology I (2.0)
Prerequisites: Permission of instructor.
Study of the complex inner workings of the piano. Includes basics of tuning and maintenance.

MUS 558 Piano Technology II (2.0)
Prerequisites: Permission of the instructor or MUS 557.
Study of the complex inner workings of the piano. Includes basics of tuning and maintenance.

MUS 559 Instrumental Conducting and Score Reading (2.0)
Prerequisite: MUS 346 (Orchestration II) and MUS 446 (Band Scoring) or permission of instructor.
Conducting techniques and problems for the public school instrumental director. Reading from full score. Survey of literature.

MUS 560 Choral Conducting and Literature (2.0)
Prerequisite: Choral conducting technique.
A survey of choral repertoire from Machaut through Penderecki; representative works from each style period will be analyzed and performance problems discussed.

MUS 561 Literature (2.0)
Offered under the various subtitles as:

Piano Literature:
Prerequisite: MUS 361 series or permission of instructor.

A survey of piano repertoire from Haydn to the present day; offered in alternate years.

Band Literature:
A survey of literature for wind and percussion instruments in large ensemble combinations focusing upon material for the standard instrumentation of the concert band. Emphasis will be given to dramatic change in the repertoire from 1950 to the present, particularly the implications for instrumental music education. Course work will include both artistic and practical considerations with study of works by Hindemith, Stravinsky, Schoenberg, Persichetti, Gould, and Ives.

Organ Literature:

A comprehensive study in the field of organ literature from Schlich to Hindemith. No performance required.

Vocal Literature:
A survey of vocal literature from the 18th century to the present day, with emphasis on standard repertorie. Program analysis and program building.

MUS 562 Literature (2.0)
Refer to: MUS 561

MUS 563 Literature (1.0)
Performance literature for orchestral instruments.
Offered under the various sections as:
- Violin Literature;
- Flute Literature;
- Trumpet Literature;
- Opera Literature.

MUS 564 Literature (1.0)
Refer to: MUS 563

MUS 565 Church Music Literature (2.0)
Designed to acquaint the student with church music repertoire of the past and present and to give practical training in service playing and accompanying.

MUS 566 Church Music Literature (2.0)
Refer to: MUS 565

MUS 570 Studies in Music History (3.0)
Prerequisite: See note below.
Areas of study are Medieval Music, Renaissance Music, Baroque Music, Viennese Classicism, Romantic Music, Twentieth-Century Music, Jazz.
Note: Courses 570, 580, and 585-586 are intended for masters and for advanced undergraduates admitted by permission of the instructor and with the recommendation of the undergraduate advisor. Master's degree students may, however, enroll in these courses at the 600-level under two conditions: (1) when 600-level courses are required by a specific curriculum (e.g., M.M. in Music History), and (2) with the approval of the student's advisor. Undergraduates may not register in these courses at the 600-level without the approval in writing of the chair of the Music History Department.

The following criteria, subject to adjustment by the instructor according to the nature of the course and its organization, will distinguish the work of students registered under one or the other number.

Students enrolled in either 500- or 600-level courses are required to write term papers. Research papers at the 600-level are expected to demonstrate originality and the ability to use resources in at least one foreign language, and in general are expected to be of a quality appropriate to a professional paper.

While students enrolled at either level are required to participate in a seminar be presenting reports and papers, those registered at the 600-level may be required to assume full responsibility for the development and direction of a study, by the whole class, of a particular subject or problem.

MUS 571 Pedagogy (2.0)
Piano Pedagogy:
Prerequisite: MUS 371, 372, 471, 472.
Examination, evaluation, and discussion of piano teaching materials at all levels.

Voice Pedagogy:
Prerequisite: 3 years of college-level voice study.
For advanced students wishing to study the principles and techniques involved in teaching voice, with supervised practice teaching designed to give practical studio teaching experience.

MUS 572 Pedagogy (2.0)
Refer to: MUS 571

MUS 573 Piano Pedagogy Practicum (0.0-2.0)
Prerequisite: MUS 372.
Corequisite: MUS 471-472.
Supervised practice teaching of a beginning piano student. Observation of lessons given by class members. Discussions on teaching problems.

MUS 574 Piano Pedagogy Practicum (2.0)
Refer to: MUS 573

MUS 580 Seminars in the Music of the Great Composers (3.0)
Prerequisite: See note following course MUS 570.
The seminar may be repeated under different subtitles.

MUS 582 Seminar in Historical Performance Practice (3.0)
Prerequisite: Graduate standing or faculty consent. Knowledge of one foreign language helpful, but not required.
Study and application of performance techniques from different eras based on period sources and modern study.

MUS 583 Notation and Analysis (3.0)
Prerequisite: Permission of instructor.
Paleography, transcription and editing of musical manuscripts and publications through the Renaissance.

MUS 585 Seminars in the History of Forms, Media, Philosophy, or Techniques of Composition (3.0)
Prerequisite: MUS 361 series; See note following course MUS 570.
Study of selected topics relating to development or history in one of the following subject areas:

- Chamber Music;
- Sacred Vocal Music;
- Orchestral Music;
- Secular Vocal Music;
- Compositional Techniques;
- Literature and History;
- 19th Century Lied;
- Neo-Classicism;
- Concerto.

MUS 590 Independent Study (0.5-3.0)
Students may take no more than 6 hours of Independent Study in fulfilling requirements for any degree.

MUS 591 Special Topics (1.0-3.0)
Prerequisites: Permission of instructor.
One or more advanced topics not treated comprehensively in regular course offerings.

MUS 597 Recital (0.0)
A grade of "CR'' credit will be given when the recital is complete. A student must be simultaneously enrolled in at least one applied music course.

MUS 601 Applied Music (2.0)
Courses MUS 601-604 open only to music majors for work and study on the student's major or principal instrument.

MUS 602 Applied Music (2.0)
Refer to: MUS 601

MUS 603 Applied Music (4.0)
Refer to : MUS 601

MUS 604 Applied Music (4.0)
Refer to: MUS 601

MUS 605 Jazz Applied (2.0)
Prerequisites: Admission to MM Degree in Jazz.
Applied Instrumental study for jazz students.

MUS 606 Jazz Applied (2.0)
Prerequisites: MUS 605.
Applied instrumental study for jazz students.

MUS 607 Bibliography and Research Methods (3.0)

MUS 611 Applied Music (2.0)
Courses MUS 611-614 open only to music majors for work and study on the student's major or principal instrument..

MUS 612 Applied Music (2.0)
Refer to: MUS 611

MUS 613 Applied Music (4.0)
Refer to: MUS 611

MUS 614 Applied Music (4.0)
Refer to: MUS 611

MUS 615 Jazz Applied (2.0)
Prerequisites: MUS 605, MUS 606.
Applied instrumental study for jazz students.

MUS 616 Jazz Applied (2.0)
Prerequisites: MUS 605, 606, 615.
Applied instrumental study for jazz students.

MUS 621 Applied Music (1.0)
Courses MUS 621-624 open only to music majors for work and study on the student's major or principal instrument.

MUS 622 Applied Music (1.0)
Refer to: MUS 621

MUS 623 Applied Music (4.0)
Refer to: MUS 621

MUS 624 Applied Music (4.0)
Refer to: MUS 621

MUS 627 Advanced Elementary Music Methods (2.0)

MUS 631 Advanced Methods of Teaching Brass Instruments (2.0)
Problems in teaching brass instruments in the public schools. Research in methods and materials.

MUS 633 Advanced Methods of Teaching Woodwind Instruments (2.0)

MUS 637 Advanced Secondary Music Methods (2.0)
Improves sightreading and sightsinging and the teaching of pitch and rhythm. Also covers techniques for designing curricular materials and recruiting and retaining students.

MUS 638 Organization and Administration of Instrumental Groups (2.0)
Organizing, financing, and promoting the instrumental program.

MUS 641 Pedagogy of Theory I (2.0)
An analysis and discussion of the various methods of teaching the elements of music theory, including a survey of available textbooks and supplementary materials.

MUS 642 Pedagogy of Theory II (2.0)
Refer to: MUS 641

MUS 643 Advanced Private Instruction in Composition and Orchestration (2.0)

MUS 644 Advanced Composition and Orchestration II (2.0)

MUS 645 Advanced Composition and Orchestration III (2.0)

MUS 646 Advanced Private Instruction in Composition and Orchestration (2.0)
Refer to: MUS 643

MUS 647 Advanced Chromatic Harmony and Analysis (3.0)
Prerequisites: Graduate standing.
Chromatic harmony and voice leading in the context of expanded tonality and extended tonal forms; analytical approaches to the music of the late 19th and early 20th century.

MUS 648 Advanced Analysis of Twentieth Century Music (3.0)
Prerequisites: Graduate standing.
Analytical approaches to the organization of pitch, rhythm, form, and other elements in the atonal serial, centric, and post-serial music of the twentieth century.

MUS 649 Advanced Counterpoint I (2.0)
Prerequisite: MUS 550.
A continuation of the prerequisite counterpoint courses but for the advanced student in the field.

MUS 650 Advanced Counterpoint II (2.0)
Refer to: MUS 649

MUS 651 Schenkerian Analysis (3.0)
Prerequisite: Graduate standing.
The graphic analytic techniques developed by Heinrich Schenker and the theoretical constructs on which they are based.

MUS 652 Foundations of Music Theory (3.0)
A study of selected theoretical writings from the Middle Ages and Renaissance as related to Gregorian Chant and the development of Polyphony.

MUS 653 Advanced Analysis (3.0)
Prerequisites: Graduate standing.
Development of the aural and visual comprehension of the elements contributing to style and cohesion in music. May cover diverse historical periods of focus on one period.

MUS 655 Advanced Jazz Improvisation (2.0)
1 lecture, 1 lab.
Prerequisites: Completion of Jazz Theory, Improvisation (138) and at least 4 semesters of Combo or 4 semesters of Jazz Ensemble, or permission of instructor.
Understanding jazz improvisation through the study of harmony, theory, improvisation, ear training, transcribed solos, articulation, the various song forms/types, basic piano composing and melodic composition.

MUS 656 Advanced Jazz Arranging (2.0)
Prerequisites: Jazz Arranging I and II (MUS 435 and 436) or permission of instructor.
Focus on linear approaches to jazz ensemble arranging and orchestration, idiomatic counterpoint, non vertical systems and advanced harmonic substitution. Includes study of non-traditional instrumentation, hybrid ensembles, contemporary big band, and traditional styles and forms.

MUS 657 Film/TV Scoring (2.0)
Prerequisites: MUS 435-436 or permission of instructor.
Overview of film scoring techniques from inception of the art to the present. May also explore contemporary media (internet, video games).

MUS 659 Seminar in Conducting I (2.0)
Advanced conducting techniques as they apply to choral and instrumental ensembles. Literature to be studied drawn from masterworks of every age.

MUS 660 Seminar in Conducting II (2.0)
Refer to: MUS 659

MUS 670 Studies in Music History (3.0)
Areas of study are Medieval Music, Renaissance Music, Baroque Music, Viennese Classicism, Romantic Music, Twentieth-Century Music.

MUS 671 Advanced Piano: Pedagogy I (2.0)
Prerequisite: Piano pedagogy, including supervised teaching.
A continuation of the analysis and evaluation of pedagogical materials and techniques of the prerequisite courses. Includes supervised practice teaching.

MUS 672 Advanced Piano: Pedagogy II (2.0)
Refer to: MUS 671

MUS 675 Master's Practice in Collegiate Teaching (1.0)
Experience under the guidance of faculty members in classroom techniques and practices of collegiate teaching. TBA seminars in professional problems. For masters in music history.

MUS 676 Master's Practice in Collegiate Teaching (1.0)
Refer to: MUS 675

MUS 680 Seminars in the Music of Great Composers (3.0)
Note: This course may be repeated under different subtitles.

MUS 682 Seminar in Musicology (3.0)

MUS 690 Independent Study (0.5-3.0)
A maximum of 6 credit hours of independent study may be taken in fulfilling requirements of any music degree at the master's level.

MUS 691 Special Topics (1.0-3.0)

MUS 694 Research (1.0-12.0)
Subtitles may accompany the course title to indicate the area of research.

MUS 695 Thesis Guidance (2.0-4.0)
Prerequisite: Master's candidates in music education, music theory-composition, and music history.

MUS 697 Graduate Recital (0.0)
A grade of "CR" credit will be given when the recital is complete. A student must be simultaneously enrolled in at least one 600-level applied music course.

MUS 698 Professional Paper (0.0)
Prerequisites: For Masters of Music Education students only.
Culmination of music education research project. Journal-length scholarly work of publishable quality and length using primary and secondary sources.

NOTE: 700-level course ior students enrolled in the doctoral program that is offered jointly by the University of Louisville and the University of Kentucky. This course represents the fields of specialization of the graduate faculty in musicology of both institutions.

MUS 700 Dissertation Research (1.0-9.0)
Prerequisites: Consent of major professor.
NOTE: 700-level course for students enrolled in the doctoral program is offered jointly by the University of Louisville and the University of

Kentucky. This course represents the fields of specialization of the graduate faculty in musicology of both institutions.
Research on dissertation project. Grade shall be deferred by the major professor until dissertation submitted for final defense by the student's committee.

Music Education (MUSE)

Note: Not open to music majors.

MUSE 525 Public School Music (3.0)
Note: Not open to Music majors. Undergraduate or graduate credit. Music fundamentals for the classroom teacher. Work based upon the processes of Carl Orff and Zoltan Kodaly. A laboratory setting of approximately 60 hours of class time.

MUSE 590 Independent Study (1.0-3.0)
Note: Not open to music majors.

Nursing

NURS 550 Foundations for Advanced Practice (3.0)
Focus is on the analysis and application of selected nursing and family theories for advanced practice. Fall.

NURS 552 Health Care Systems (3.0)
Emphasis is placed on informed participation in policy making processes and the impact of health policy on advanced practice. Spring.

NURS 615 Advanced Clinical Practice: OB-GYN (4.0-13.0)
Prerequisite: NURS 550, NURS 655, NURS 656, NURS 658, and PHTX 650.
Explores theoretical and practice applications of the OB/GYN nurse practitioner role with the assistance of a variety of clinical preceptors. Students must have a total of 13 credits in this course to graduate.

NURS 622 Advanced Clinical Practice: Adult Clinical Nurse Specialist I (6.0)
Prerequisites: NURS 550, NURS 655, NURS 656, NURS 658, and PHTX 650. Pre or corequisite NURS 653. Explores the theoretical and practice applications of the Adult CNS in a variety of settings. The clinical practicum is designed by faculty and students to promote CNS competencies in the sphere of influence: patient/client.

NURS 623 Advanced Clinical Practice: Adult Clinical Nurse Specialist II (7.0)
Prerequisites: NURS 622.
Explores the theoretical and practical applications of the Adult CNS in a variety of clinical settings. The clinical practicum is designed by faculty and students to promote CNS competencies in the spheres of influence: nursing personnel and organization/network.

NURS 625 Advanced Clinical Practice: Adult NP (4.0-13.0)
Prerequisite: NURS 550, NURS 655, NURS 656, NURS 658, and PHTX 650.
Pre or corequisite: NURS 653.
Explores theoretical and practical applications of the adult nurse practitioner roles with the assistance of a variety of clinical preceptors. Students must have a total of 13 credits in this course to graduate.

NURS 629 Advanced Health Assessment of the Neonate (3.0)
An in-depth study of neonatal assessment techniques and normal versus abnormal variations seen in the newborn. Emphasis is on the clinical presentation of the newborn utilizing concepts from developmental anatomy and physiology as well as intrauterine factors that may alter development.

NURS 635 Advanced Clinical Practice: Neonatal NP (3.0-4.0)
Study of theoretical concepts and research related to the knowledge and clinical proficiency necessary to assess and manage physiologic functions that are deviations from the normal during the transition to extrauterine life as well as the physical, emotional, developmental and nutritional needs of high-risk infants and young children. Includes stabilization of the high-risk newborn, assessment and clinical management of high-risk infants and young children, and expanded assessment of family development. Students must have a total of 12 credits in this course to graduate.

NURS 636 High- Risk Clinical: Neonatal NP (2.0-8.0)
Prerequisites: NURS 629;
NURS 635-51.
Clinical course that allows the neonatal nurse practioner the opportunity to apply theoretical knowledge to the care of the neonate in multiple settings, but particularly in the Level III NICU. Emphasis will be on the transfer of theoretical knowledge and the individualization of patient care. Family dynamics will be assessed and are considered integral to the management plan. The student will be expected to demonstrate leadership behaviors in the clinical setting.

NURS 645 Advanced Clinical Practice: Adult Psychiatric-Mental Health CNS (6.0-13.0)
Prerequisite: NURS 647, NURS 649, PHTX 650 and NURS 656.
Focuses on the use and evaluation of short-term models of psychotherapy; psychoeducation; and prevention strategies in advanced practice. Culturally specific interventions are emphasized. Examines major mental health problems. Implements and evaluates interventions with individuals, groups and communities. Students must have a total of 13 credits in this course to graduate.

NURS 647 Psychopathology For Clinical Decision Making (3.0)
Focuses on psychopathology using current diagnostic categories. Biological and behavioral theories are explored. Cultural manifestations and influences are considered. Additional assessment strategies related to mental illness are reviewed.

NURS 649 Clinical Psychopharmacology (1.0)
Prerequisite or Corequisite: PHAR 650
Focuses on the major pharmacological issues related to mental illness. Expected therapeutic outcomes, indications, and contraindications for the use of psychiatric drugs in the clinical setting are covered. Ethical and legal issues related to psychopharmacology are considered.

NURS 651 Nursing Research (4.0)
Prerequisite: NURS 550.
Pre or corequisite: NURS 652.
Provides an orientation and introduction to the methods of nursing and health care research. Spring.

NURS 652 Statistics (3.0)
Prerequisite: Consent of instructor. Applied descriptive and inferential statistics using computer software.

NURS 653 Advanced Practice Roles (3.0)
Focuses on the advance practice roles of educator, consultant, researcher, leader and expert practitioner.

NURS 654 Informatics in Health Care (2.0)
Focus on how nurses use technology to manage data, information and knowledge. Fall.

NURS 655 Pathophysiology: Clinical Decision Making (3.0)
Prerequisite: Basic pathophysiology. Pathophysiological concepts essential for critical thinking and clinical decisions by the nurse in an advanced practice role.

NURS 656 Advanced Clinical Assessment (3.0)
Prerequisite: Basic health assessment skills.
Builds on basic assessment skills and enriches nurse to use holistic approach to advanced assessment. Fall.

NURS 657 Interventions For Health Promotion and Illness Prevention (3.0)
Theoretical and research foundation for health promotion and illness prevention. Cultural approaches to health and implications of environmental influences on health. Introduction to the use of herbs as therapy.

NURS 659 Primary Care Advanced Practice Nursing (2.0)
Prerequisites: NURS 550, NURS 651, NURS 655, Pharm 650.
Pre-Co Requisite: NURS 653.
Focuses on the advanced practice nurse's management of select common and stable chronic health problems of individuals across the lifespan. Emphasis will be placed on differentiating signs and symptoms to formulate possible diagnoses and determining the effect of the illness on the family. Students will demonstrate proficiency in accessing, diagnosing, managing and evaluating chronic health problems based on appropriate standards of care.

NURS 660 Advanced Clinical Practice: Family Nurse Practitioner Seminar I (1.0)
Pre or Corequisites: NURS 653, NURS 656.
Prerequisites: NURS 550, NURS 651, NURS 655, PHTX 650.
This course is a bridge course for Advanced Family Practice Nursing. Students will critically examine the philosophy and scope and standards of Advanced Family Practice Nursing and complete a family community assessment. Selected theory related to individual learning needs including childbearing families will be included

NURS 661 Advanced Clinical Practice: Family Nurse Practitioner Clinical I (3.0)
Prerequisites or Corequisites For Generic Students: NURS 660, NURS 725 (UK College of Nursing).
Prerequisites or Corequisites for Post MSN ANP Students: NURS 660, NURS 664.
This clinical course places an emphasis on the role of the advanced practice nurse as a member of the health care team across a variety of settings. The clinical experience focuses on comprehensive patient assessment, diagnosis and management of acute health problems for individuals and their families.

NURS 662 Advanced Clinical Practice: Family Nurse Practitioner Clinical II (2.0)
Prerequisites or Corequisites for Generic Students: NURS 661, NURS 726 (UK College of Nursing).
Prerequisites or Corequisites for Post MSN ANP students: NURS 661, NURS 664.
This clinical places an emphasis on the role of the advanced practice nurse as a member of the health care team across a variety of settings. The clinical experience focuses on comprehensive patient assessment, diagnosis and management of chronic health problems for individuals and their families.

NURS 663 Advanced Clinical Practice: Family Nurse Practitioner Internship (6.0)
Prerequisites or Corequisites for Generic Students: NURS 662, NURS 726 (UK College of Nursing).
This clinical experience focuses on synthesis of theoretical, scientific, and clinical knowledge as well as practice-based skills in the diagnosis and management of existing and potential health problems based on appropriate standards of care. Emphasis will be placed on the collaborative and leadership roles of the advanced practice nurse in health care delivery.

NURS 664 Common Health Problems of the Pediatric and Adolescent Client (2.0)
Prerequisites or Corequisites for Generic Students: NURS 662, NURS 726 (UK College of Nursing).
Prerequisites or Corequisites for Post MSN ANP students: NURS 660.
Focus is on the Family Nurse Practitioner's role in the identification and management of selected acute, chronic, and emergent health problems of the pediatric and adolescent client. Emphasis is on the role of the Family Nurse Practitioner as a collaborative member of the health team as a supportive resource for parents.

NURS 665 Advanced Clinical Practice: Gerontology (4.0-13.0)
Prerequisite: NURS 550, NURS 655, NURS 656, NURS 658, and PHAR 650.
Pre or corequisite: NURS 653.
Explores theoretical and practical applications of the gerontology nurse practitioner roles with the assistance of a variety of clinical preceptors. Students must have a total of 13 credits in this course to graduate.

NURS 690 Special Topics (0.5-15.0)
Prerequisite: Consent of instructor.
Selected topics in nursing and health care. Semester topic will be indicated in Schedule of Courses.

NURS 696 Independent Study (1.0-3.0)
Prerequisite: Departmental approval.
Provides opportunity for the student, under the supervision of a departmental faculty member, to develop objectives and protocol for independent work related to the practice of nursing.

NURS 698 Research Project (2.0-3.0)
Prerequisite: NURS 651.
Provides the student an opportunity to develop, implement and present results of a research study of limited scope.

NURS 699 Thesis (1.0-6.0)
Prerequisite: NURS 651.

Oral Biology

OBIO 501 Biomedical Data Analysis: Experimental Design and Statistics (3.0)
This course is designed for graduate and professional students in health sciences who require a working knowledge of the experimental design and statistical methods most often utilized in the biomedical sciences. The focus is upon the initial evaluation of scientific literature, the formulation of research protocols, and the interpretation of data. Special attention is given to those areas of data interpretation most common in the health sciences. Fall.

OBIO 600 Concepts in Oral Biology (4.0)
Prerequisite: Consent of course director.
A multidisciplinary presentation of the biology of the oral cavity, integrating relevant aspects of basic and clinical sciences. Examples of areas covered include: skeletal metabolism, mineral homeostasis (bone healing, periodontal disease); secretory immune defense mechanisms, oral microbial ecology (odontopathic disease); neuromuscular and neurosensory physiology (pain control).

OBIO 601 Introduction to Oral Biology Research (2.0)
Prerequisite: Acceptance to the degree program or consent of course director.
Introduction to modern research methodology in oral biology. Designed to acquaint the student with a broad spectrum of experimental techniques and concepts which will help prepare for successful design of a research project. Major emphasis is placed on research design, research methodology, critical evaluation of basic research literature, and scientific writing.

OBIO 602 Bone and Calcium Physiology (3.0)
Prerequisite: Consent of instructor.
Contemporary concepts and literature in bone and calcium physiology. Lectures and student-led discussions.

OBIO 604 Oral Microbiology (3.0)
Prerequisite: OBIO 601 or professional school courses in microbiology and biochemistry.
An in-depth study of the microbiota and host defense mechanisms with an emphasis on the ecology, nutrition, and biochemistry of the indigenous bacteria.

OBIO 606 SEMINAR (1.0)
Prerequisites: OBIO 601: Introduction to Oral Biology Research.

OBIO 610 Advanced Topics in Oral Biology (1.0-4.0)
Prerequisite: OBIO 600 or consent of instructor.
Selected areas will be investigated in depth, using one or more of a variety of formats including lectures, seminars, tutorials, and research projects.

OBIO 611 Craniofacial Osteology (1.0-3.0)
Prerequisites: OPGD 801 and OPGD 805 or equivalents.
Explores the hard tissue interrelationships of the cranifacial complex. Includes the mechanical properties, origins and maturation of facial bones. Complements the cephalometric course; designed to link clinical applications to anatomic locations.

OBIO 612 Craniomaxillofacial Diagnostic Imaging (2.0-4.0)
2 lecture, 2-4 lab.
Prerequisites: One of the following: 1 Admission to the Graduate School for studies in Oral Biology; 2 a DMS/DDS degree or its foreign equivalent; 3 a MD/DO degree or its foreign equivalent.
To teach principles of safety, quality assurance, selection criteria and interpretation for current diagnostic imaging modalities of interest to the health care provider treating the craniomaxillofacial complex.

OBIO 613 The Diagnosis & Treatment of Temporomandibular Disorders (1.0)
Prerequisites: D.M.D. or D.S.D. degree or instructor approval.
Will present the basic concepts of Temporomandibular Disorders. Emphasis is on Etiology, Examination, Recognition, Diagnosis and Treatment of Facial Pain/TMJ Disorders and Occlusal Abnormalities.

OBIO 614 Advanced Oral Diagnosis and Oral Medicine (1.0)
Prerequisites: One of the following: Admission to the M.S. Oral Biology program; a DDS or DMD degree or its foreign equivalent; consent of the instructor.
Will present advanced topics on diagnostic methods and therapy relative to oral-maxillofacial and systematic diseases, and the inter-relationships between oral and systemic disease.

OBIO 615 Advanced Clinical Pharmacology (1.0)
Prerequisites: One of the following: Admission to the M.S. Oral Biology program; a DDS or DMD degree or its foreign equivalent; consent of the instructor.
To present advanced topics in clinicalpharmaacology with specific emphasis on antibiotics, analgesics, local anesthetics, anxiolytic, antifungal and antiviral drugs.

OBIO 616 Overview of Medical Genetics in Ora-Facial Disease (1.5)
Prerequisites: One of the following: Admission to the M.S. Oral Biology program; a DDS, DMD or MD degree or its foreign equivalent; consent of the instructor.
The student will study the medical genetic influence on development and growth as well as dysmorphology and disease, of the human body. Risk factors, probabilities and clinical outcomes are emphasized.

OBIO 617 Advanced Oral Pathology (1.0)
Prerequisites: One of the following: Admission to the M.S. Oral Biology program; a DDS, DMD, or MD degree or its foreign equivalent; consent of the instructor.
Introduction to the clinical and radiographic manifestations of diseases of the oral cavity and para-oral region. Also included will be the clinical differential diagnosis oral lesions and the etiology and histology of common oral lesions. Clinical evaluation and management of oral lesions will be discussed as well.

OBIO 619 Research (1.0-8.0)
Taught on Pass/Fail basis.

OBIO 620 Thesis (1.0-8.0)
Prerequisite: Consent of instructor and acceptance to degree program in oral biology.
This course allows graduate credit to be obtained for performing research and completing a thesis.

OBIO 631 General Pathology (5.0)
General principles and concepts of systemic disease taught in a lecture seminar and laboratory format. The etiology, pathogenesis, sequelae, and prognosis of specific diseases are discussed. In addition, recognizable signs and symptoms of general and specific diseases and treatment for these diseases are presented. 3 hrs. lect., 3 hrs. lab.

Public Administration

PADM 600 Public Administration and Organizational Theory (3.0)
Note: Crosslisted with POLS 625, PLAN 613, & UPA 661.
Basic principles of public administration with analysis of problems of bureaucracy, organization, financial management and public policy.

PADM 601 Statistics for Public Affairs (3.0)
2 lecture, 1 lab.
Note: Crosslisted with PLAN 602.
Covers descriptive statistics, probability, sampling, tests of significance, correlation, regression analysis, and the use of statistical software packages.

PADM 602 Applied Research Methods (3.0)
Note: Crosslisted with PLAN 604.
Provides students with the basic analytical tools commonly used by professional planners and public administrators. The use of computers in applying these tools will be emphasized.

PADM 603 Policy Analysis and Program Evaluation (3.0)
Note: Crosslisted with UPA 621.
The course describes techniques of practical program evaluation as well as institutional context of policy formulation, adoption, implementation, and evaluation. Process evaluation, qualitative approaches, outcome monitoring, natural experiments, quasi-experiments, ratings, use of expert judgment, surveys, role-playing, and focus group topics are covered. The course also describes theories of policy making, the policy environment, agenda setting and decision making.

PADM 604 Public Budgeting and Finance (3.0)
Note: Crosslisted with UPA 647 and PLAN 609.
Examines public budgeting and finance from economics, political, and institutional perspectives. Topics include: budget process, approaches and techniques of budgeting, ethics, intergovernmental fiscal relations, revenue-raising, capital budgeting, debt administration and risk management.

PADM 605 Strategic Management and Planning (3.0)
Note: Crosslisted with UPA 672 & PLAN 610.
Administration of the organization from the point of view of management. Formulation and administration of policies and practices. Development of long range strategic plans as well as the diagnosis, analysis, and evaluation of specific organizational problems.

PADM 606 Public Policy (3.0)
Introduction to public policy, providing an overview of the formulation, implementation, qualitative evaluation, and ethical aspects of public policy. Political, legal and administrative institutions will be examined for their effect on the policy process, as well as, evaluated as to their capabilities to effectively implement and monitor policy.

PADM 607 Planning Theory (3.0)
Note: Crosslisted with UPA 684 and PLAN 601.
In-depth examination of urban and regional planning theory, with special focus on the rational comprehensive model.

PADM 608 E-Government (3.0)
Addresses problems and possibilities of internet use in the public realm providing an overview of basic uses, laws and regulations related to e-government.

PADM 609 Introduction to NonProfit Management (3.0)
Provides an overview of nonprofit management on a range of issues and practices. Examines empirical and theoretical literatures.

PADM 610 Administrative Law and Process (3.0)
Note: Cross-listed with POLS 615/UPA 662
Study of processes of law-making and application by governmental executive departments. Encompasses substantive issues facing agencies in designing and implementing effective regulation and court efforts to interpret and control agencies' activities.

PADM 611 Financial Management for Public Administrators (3.0)
Examines accounting and financial management for managers of not-for-profit organizations.

PADM 612 Non Profit Grantsmanship (3.0)
A critical examination of methods and tools for developing grant proposals.

PADM 620 Intergovernmental Relations (3.0)
An overview of the ways in which governmental policy, especially fiscal activities, may be used to shape the nature and form of activities at the local, state and federal levels.

PADM 621 The Politics of Urban Development (3.0)
Crosslisted with UPA 651.
The role of political processes in the formulation and implementation of urban development policy; federal regulations and development; community competition and conflict.

PADM 623 Comparative Urban Development (3.0)
Note: Crosslisted with UPA 623.
Examines Urban development in a cross national perspective. Traces the formulation, strategy and implementation or management of urban development policy in a number of nations. While the emphasis is on North America and West Europe, the lessons have broader relevance for other parts of the world, and will be applied to developing areas.

PADM 624 Ethics in Public Administration (3.0)
Analyzes and explains the role of ethics for the practice of public administration. The development of ethical codes is traced from moral and constitutional roots. Course will include case studies and legal precedents.

PADM 625 Advanced Organizational Behavior (3.0)
Crosslisted with UPA 660.
Concepts and theories from the behavioral sciences that explain human behavior within organizations. Individual behavior and group dynamics with special emphasis on techniques and methods to improve individual functioning and interpersonal processes.

PADM 626 Housing and Community Development (3.0)
Note: Crosslisted with UPA 648, PLAN 617.
Examines issues in housing and community development.

PADM 627 Environmental Policy (3.0)
Note: Crosslisted with PLAN 620, UPA 679.
Survey of environmental issues and policies designed to address these issues.

PADM 628 Historic Preservation (3.0)
Problems of and procedures for identifying buildings and other physical entities with social, historical, and/or architectural value and the development and implementation of preservation policies.

PADM 629 Transportation Systems (3.0-0.0)
Analytical methods used by transportation planners; development of transportation plans, policies, and programs.

PADM 630 Environmental Policy and Natural Hazards (3.0)
Note: Crosslisted with PLAN 623 and UPA 687.
Explores the relationship of environmental policy and planning with natural hazards and disasters, with an emphasis on preparation for and mitigation of impacts.

PADM 640 Urban Economics (3.0)
Prerequisites: PLAN 500, ECON 500, or consent of instructor.
Note: Crosslisted with ECON 605, UPA 603 & PLAN 603.
Application of economic theory to urban policy issues including metropolitan development and job creation, poverty, crime, transportation, environment, spatial structure, and other issues.

PADM 642 Human Resources Management (3.0)
Note: Crosslisted with UPA 667 & PLAN 611.
Basic theories , public policies, laws, regulations, problems, and prospects of human resource development and management within the context of the public sector.

PADM 644 Collective Bargaining (3.0)
Current issues facing unions and employers in their relations with others, with emphasis on the substantive matters involved in negotiating contracts in both the public and the private sectors.

PADM 645 Economic Development (3.0)
Note: Crosslisted with UPA 640.
The use and application of static and dynamic models for urban community development. Includes economic base industry and firm location models, and community growth. Topics include transportation, energy, pollution, income distribution, and employment.

PADM 647 Arbitration (3.0)
Role and function of arbitration in labor-management relations; analysis of the principles and practices of arbitration; laws governing arbitration processes; preparation of materials for arbitration cases; conduct of an arbitration hearing; preparation of arbitration findings.

PADM 648 Mediation and Dispute Resolution (3.0)
Note: Crosslisted with PLAN 612.
Designed principally for incipient practitioners of the mediation process. Class participation, serving as a mediator in cases presented to the class, and a short paper depicting mediating in process are the course requirements.

PADM 649 Legal Aspects of Labor Relations (3.0)
Survey and analysis of labor relations laws that provide the framework for collective bargaining. Problems in administering and enforcing labor legislation.

PADM 651 Trade Unions (3.0)
Role of trade unions in the American economy; the organizational structure and operation of trade unions ranging from national to local units. Special problems facing contemporary unions.

PADM 652 Equal Opportunity and the Workplace (3.0)
Special problems women, the disabled, and minorities face in labor markets and on the job. The effects of various compensatory employment programs and policies in dealing with these problems.

PADM 654 Special Topics in Worker-Management Relations (3.0)
Prerequisite: Consent of instructor.
Selected issues within the general area of worker-management relations.

PADM 671 Special Topics in Public Policy Analysis (3.0)
Selected issue(s) in the general area of public policy analysis.

PADM 680 Independent Research in Public Administration (1.0-3.0)
Prerequisite: Permission of coordinator.

PADM 682 Practicum/ Internship (1.0-6.0)
Prerequisite: Permission of internship-practicum coordinator.

PADM 683 Topical Seminar in Public Administration (1.0-3.0)
Prerequisite: Permission of instructor.
Exploration of a specific topic or problem area in administration.

PADM 688 Land Use and Planning Law (3.0)
Note: Crosslisted with PLAN 605 & UPA 678.
Examination of pertinent legal issues, including ordinances, state and federal legislation, and court rulings, impinging on planning and land use activities.

PADM 695 Thesis (1.0-6.0)
Prerequisite: Permission of internship-practicum coordinator.

Pan-African Studies

PAS 500 Cooperative Internship in Pan African Studies (3.0-6.0)
Prerequisites: 12 hours PAS above introductory level.
Assignment with a public agency or organization. Written report and periodic consultation with a professor may be required. May be repeated for credit but only 3 hours apply towards major or minor.

PAS 505 The Black Atlantic (3.0)
Prerequisite: 12 hours PAS credit or consent of instructor.
Examination of the intercultural and transnational linkage of Africans in England, North and South America, the Caribbean and the African continent. (Social Sciences)

PAS 506 Service Learning (3.0)
Placement of students in nonprofit organizations in the Louisville metropolitan region to provide research or programmatic assistance to local community groups. Written reports and frequent consultation with a professor may be required.

PAS 508 Independent Study (3.0)
Prerequisite: Overall gpa of 3.0, a gpa of 3.5 in the department and at least 18 semester hours credit in the department.
Independent study on a topic related to the African Diaspora.

PAS 510 Advanced Topics in Afro-American and African Studies (3.0)
Advanced study of a particular topic, issue or area in African-American culture or history, to be announced in Schedule of Courses. May be repeated as topics vary, but no more than six hours will be accepted in the major.

PAS 512 Gender, Race, Work and Welfare (3.0)
Note: Crosslisted with WMST 512/SOC 512.
Introduction to theory and research on labor market and welfare state with focus on gender and race/ethnicity as they influence women's experiences of and ideas about work and welfare.
Note: Credit may not be earned for both PAS 512/WMST 512 and PAS 612/WMST 612.

PAS 514 History of Pan-African Social Thought (3.0)
Prerequisite: Consent of instructor.
Contributions of African and African-American social theorists from Marcus Garvey to Cornell West; role of ideology in relations of domination and oppression. (Social Sciences)

PAS 515 Race and Racism (3.0)
Prerequisite: 12 hours PAS credit or consent of instructor.
Manifestations, dynamics and impact of racism in the contemporary American social order. Topics covered include affirmative action, multiculturalism, and inequality. (Social Sciences)

PAS 520 The Black Family -WR (3.0)
Prerequisite: Senior standing.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR) .
Nature and function of African-American familial systems from the slave era to the present. Emphasis on impact of public policy on socioeconomic and political status of Black family structures. (Social Sciences)

PAS 528 History of African American Education (3.0)
Prerequisite: Senior standing or consent of instructor.
The role of education in the history of African Americans. The struggle to secure educational opportunity, access to educational institutions, the types of education available, the prevailing philosophical and political issues related to the education of African Americans will be examined in the larger contexts of African American and American educational history. (Social Sciences)

PAS 529 Teacher Institute on African-American Issues (3.0)
Note: Crosslisted with EDEM/EDSD 590.
An introduction to Pan-African Studies focusing on multicultural educational strategies for public school educators. (Social Sciences)

PAS 531 Survey of African-American History and Culture for Teachers (3.0)
Note: Crosslisted with EDEM/EDSD 592.
An intensive survey of the history and culture of African-Americans for teachers. (Social Sciences)

PAS 532 Slave Trade and Slavery in the African World (3.0)
Prerequisites: Senior or Graduate Standing.
An in-depth examination of the evolution and characteristics in the western world, the mechanics and organization of the African slave trade, the nature and types of slave societies established in Europe and the Americas, and the impact of slave trade in Africa. (Social Sciences)

PAS 533 The History and Popular Culture of the African Diaspora (3.0)
Prerequisites: Senior or Graduate Standing.
An intensive, comparative examination of selected topics linking the history and culture of persons of African ancestry in the United States, the Caribbean region, Latin America and Africa. (Social Sciences)

PAS 535 History of African Americans in Kentucky (3.0)
Prerequisite: Senior standing or faculty consent.
The history of African Americans in Kentucky from the settlement of the trans-Appalachian region to the present. Special attention to the history of African Americans in Louisville and Jefferson County. The use of primary, secondary, and oral historical sources will be emphasized. (Social Sciences)

PAS 540 Pedagogy of African Studies (3.0)
Designed for teachers preparing to introduce African studies materials to primary and secondary school students. (Social Sciences)

PAS 542 Black Women Voices - WR (3.0)
Prerequisites: At least 6 (six) credit hours in SS or HU or consent from faculty.
Note: Crosslisted with WMST 543.
Note: Approved for the Arts & Sciences upper-level requirement in written communication (WR).
Global synopsis of black women's studies and social thoughts. Highlights roadblocks and bridges experienced. Captures race, gender, class and spatial dimensions. (Social Sciences)
Note: Credit may not be earned for both PAS 542/ WMST 543 and PAS 643/ WMST 643.

PAS 550 African Popular Culture (3.0)
Examination of the popular arts of Africa, focusing on the variety of esthetic forms, performance styles, and the sociocultural and political contexts in which they are found. (Humanities)

PAS 551 Studies in African American Literature (3.0)
Note: Crosslisted with ENGL 550.
Prerequisites: English 102 or 105 and junior standing.
In-depth study of selected movements, topics, or groupings of African-American writers. (Humanities)

PAS 560 Geography and Nutrition Among Africans and African Americans (3.0)
Prerequisite: Consent of instructor.
Note: Crosslisted with GEOG 520.
Comparison of geographical conditions, food culture, technology and socioeconomic factors among Africans and African Americans affecting health and nutrition. (Social Sciences)

PAS 562 Women's Health in Africa - WR (3.0)
Prerequisite: Introduction to Pan African Studies (PAS 200) or faculty consent.
Note: Crosslisted with WMST 540.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Examination of population growth, early marriage, family size, and cultural and religious beliefs on reproduction on the health of the contemporary African woman. (Social Sciences) Credit may not be earned for both PAS 562/WMST 540 and PAS 662/WMST 640.

PAS 566 Race and Gender in Psychological Research (3.0)
Note: Cross-listed with PSYC 566.
Critical review of psychology with respect to issues of race and gender. Examines theory and research paradigms, modern, postmodern and Afrocentric methodologies. (Social Sciences)

PAS 567 Post-Colonial Voices: Writing "Experience" in African Literature - WR (3.0)
Prerequisites: ENGL 102 or 105 or junior standing.
Note: Crosslisted with ENGL 567.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Examination of 'post-coloniality' through a selection of fiction and literacy criticism by African writers. (Humanities)

PAS 575 Genre Studies in African-American Literature (3.0)
Note: Crosslisted with ENGL 575.
Prerequisites: English 102 or 105 and junior standing.
In-depth study of a selected genre of African-American Literature. (Humanities)

PAS 577 The Harlem Renaissance (3.0)
Note: Crosslisted with ENGL 577.
Prerequisites: English 102 or 105 and junior standing.
In-depth study of the literature of the Harlem Renaissance in relation to other literary and artistic productions of the period and to cultural and historical contexts. (Humanities)

PAS 581 Pan-African Art: Form and Content (3.0)
Prerequisite: Consent of instructor.
Note: Cross-listed with ARTH 544.
Similarities and differences in African-American folk art, Caribbean folk art and traditional African art. (Humanities)

PAS 586 Field Research (3.0-6.0)
Prerequisite: 12 hours PAS credit or consent of instructor.
On-site field study of a particular aspect of society in the African Diaspora. Maximum of 6 credit hours, depending upon project.

PAS 590 Studies in African History (3.0)
Note: Crosslisted with HIST 590.
Prerequisites: Junior standing or faculty consent.
Intensive study of a particular topic chosen by the instructor, for example, slavery and the slave trade, traditional kingdoms. (Social Sciences).
9 hours of HIST or PAS is recommended.

PAS 601 Pan-African Research (3.0)
Prerequisite: Admission to Graduate School.
Students learn the tools necessary to conduct research and challenge Eurocentric biases in traditional modes of inquiry. It asks: Are there distinctive methods that are appropriate in studying people and issues from the African Diaspora and other Non-Western Societies?

PAS 602 Theories And Issues in Pan-African Studies (3.0)
Prerequisites: Admission to Graduate School.
PAS 602 explores the historical development, major theoretical perspectives, salient contemporary issues, long-term research agenda and future trends of the multi-discliplinary field of Pan-African Studies.

PAS 604 Thesis (1.0-3.0)
Prerequisites: Completion of 24 hours toward M.A. in Pan-African Studies.
Thesis research for the Masters of Arts in Pan-African Studies.

PAS 605 Special Topics in Pan African Studies (3.0)
Examination of a specific social, cultural or historical theme related to persons of African ancestry, past or present, in one or more regions of the world.

PAS 606 Independent Study (1.0-3.0)
Prerequisites: Graduate Standing.

PAS 612 Gender, Race, Work and Welfare (3.0)
Note: Crosslisted with WMST 612 / SOC 612.
Introduction to theory and research on the labor market and welfare state with focus on gender and race/ethnicity as they influence women's experiences of and ideas about work and welfare.

PAS 614 History of Pan-African Social Thought (3.0)
Prerequisites: Graduate standing.
Writings and critiques of the major African decended thinkers of the 20th Century. Special emphasis on the ideas of Booker T. Washington, W.E.B. DuBois, Marcus Garvey, Martin Luther King, Jr., and Malcolm X.

PAS 615 Advanced Seminar on Race (3.0)
Prerequisites: Graduate standing.
An intensive examination of the evolution, meaning, and significance of race and racism as historical and social constructs.

PAS 616 African American Philosophy (3.0)
Note: Crosslisted with PHIL 616.
Analysis of works and theories of major recent and contemporary African-American philosophies within the themes of Pan African debates.

PAS 619 Advanced Seminar in African American Studies (3.0)
Prerequisites: Graduate Standing.
An intensive examination of selected topics in African American history and culture.

PAS 625 African Americans in Contemporary American Society (3.0)
An intensive, multi-disciplinary examination of the status of African-Americans in the Post-Civil Rights Era (since 1970). Focus specifically on the demography, politics, social-cultural, educational and economic realities of contemporary African-Americans.

PAS 657 African Philosophy (3.0)
Prerequisites: Graduate Standing.
Note: Crosslisted with PHIL 657.
This course gives students a general descriptive and analytical introduction to the ideas and themes in African philosophy through careful readings of the texts which address a cluster of topics.

PAS 660 Geography and Nutrition Among African and African American Populations (3.0)
Note: Crosslisted with GEOG 620.
An in-depth examination of the nutritional status of Africans, African-Americans and persons of African descent. The course will focus on comparison of epidemiological transition, political economy of nutrition, politics of food welfare programs, food-aid, over-nutrition (obesity), under-nutrition and dietary-related diseases among African-Americans, Africans and other persons including blacks in Diaspora.

PAS 664 Approaching African-American Theatre (3.0)
Theoretical approaches and practical methods of performing, designing, staging and teaching theatre, literature, and art that spring from an afrocentric perspective. Designed to prepare students to integrate African-American topics into their teaching and to collaborate successfully as artists.

PAS 686 Field Study (3.0-6.0)
Prerequisites: Admission to Graduate School.

Public Health Clinical Investigation

PHCI 501 From Bench to Bedside: Introduction to Clinical Research (1.0)
Designed to introduce students in health professions to the intellectual challenges and rewards of clinical research.

PHCI 521 Introduction to Clinical Research Administration (1.0)
Students will be introduced to the field of clinical research and how it is organized, conducted and regulated.

PHCI 522 Intermediate Clinical Research Administration (1.0)
Prerequisites: PHCI 521 or instructor approval.
Students will be introduced to the specific operations of a clinical trail.

PHCI 601 Evaluating Health Care Literature (1.0)
Prerequisites: PHCI 611, PHCI 621, or instructor approval.
A review of formal methods for evaluating the medical literature including those of the University of Rochester Clinical Pharmacology Group; and the Evidence Based-Medicine Group. Meta-Analysis: sources of information, using medical informatics, selection of trails, pooling of data, analyzing pooled data and interpreting results, problems and limitations of meta analysis will be covered.

PHCI 602 Health Services and Outcomes Research (2.0)
Prerequisites: PHCI 611,PHCI 621 or instructor approval.
Understanding the multiple dimensions of health status and conceptual basis for measuring health status and outcomes; review and evaluation of the strengths and weaknesses of common measures. Formalization of research questions and design of appropriate methodology including sample selection, measurement, data, collection and statistical analysis.

PHCI 603 Program Evaluation (2.0)
Describes the major strategies for formative, process and outcome evaluation of health care interventions with particular emphasis on the evaluation of government sponsored programs in healthcare.

PHCI 604 Quality Assessment in Health Care (2.0)
Prerequisites: PHCI 621 or equivalent.
This course would review the major efforts to measure Quality in health care including the development of the HEDIS,SF-36 and other measures, alternative methods risk of adjustment, and the organizations involved in health care quality assurance and accreditation.

PHCI 605 Survey Research Methods (2.0)
Previews the advantages and disadvantages of alternative methodologies for the collection of health data including record reviews, face-to -face and telephone interviews as well as the design of data collection instruments, scale construction, and data management. Special consideration is given to the sources of bias in alternative data collection strategies and to the reliability and validity of the data. Attention is also given to data management issues.

PHCI 606 Health, Law & Policy (2.0)
Note: Crosslisted with PHDA 606.
Will introduce students to the broad legal and policy context of health care, with diverse topical areas that are useful for demonstrating the broad range of legal and policy responses.

PHCI 610 New Drug & Device Development (2.0)
This course introduces the rationale for, practical aspects of, and new issues in drug and device development as well as the relevant industry and government policies and regulations.

PHCI 611 Introduction to Clinical Epidemiology (2.0)
A comprehensive introduction to public health with an emphasis on population-based approaches to health issues. Both classical and clinical epidemiology will be presented. The course will cover health status indicators, including morbidity, mortality, vital statistics and measures of quality of life. The global applications of epidemiology and international health through investigations of the leading causes of morbidity and mortality in developed, developing and under developed nations. Epidemiological concepts will be linked with computer exercises to re-enforce learning and practical applications

PHCI 612 Epidemiology of Cardiovascular Disease (1.0)
Prerequisites: PHCI 611, PHCI 621, or equivalent, or instructor's approval.
Surveys the current clinical epidemiology studies operating nationally for research on cardiovascular disease (CVD) outcomes in the United States and Europe. Focuses on federal agency documents announcing these programs, and on published literature related to the design and conduct of these studies.

PHCI 613 Cancer Epidemiology (1.0)
Prerequisites: PHCI 611, PHCI 621 or equivalent, or instructors approval.
This course reviews the epidemiology of selected cancers and the relationship between environmental and genetic factors in cancer etiology. The roles of risk assessment and screening for cancers in selected organ systems is also addressed.

PHCI 614 Infectious Disease Epidemiology (1.0)
Prerequisites: PHCI 611, PHCI 621 or equivalent.
This course covers epidemiology of infectious diseases with an emphasis on basic methods as applied to dynamics of transmission, vaccine effectiveness, acute respiratory infections including tuberculosis, diarrheal diseases, sexually transmitted diseases (e.g. HIV), and hepatitis.

PHCI 621 Fundamentals of Biostatistics (2.0)
An introduction to descriptive and inferential statistics including measurement theory; Bayesian Probability; the logic of hypothesis testing (alpha, beta and power); confidence intervals; the Normal, Student's t, Chi Square and F sampling distributions and their application will be covered. Computer assisted instruction and laboratory assignments including an introduction to SAS and SPSS.

PHCI 622 Case Control Studies (2.0)
Prerequisites: PHCI 621 or equivalent or permission of instructor.
Advantages and disadvantages of case-control designs, population based controls, matching, sources and types of bias, confounding, statistical methods including Chi Square, log-linear methods, analysis of variance, logistic regression, and McNemar's Test.

PHCI 623 Design and Analysis of Cohort Studies (2.0)
Prerequisites: PHCI 621or equivalent or permission of instructor.
Advantages and disadvantages of prospective and retrospective designs, sources of bias in cohort studies, quality of data in retrospective designs, registries, case loss, controlling for confounders, cross classification and procedural methods, multivariate statistical methods, and applications of the general linear model.

PHCI 624 Clinical Trails I: Planning and Design (2.0)
Prerequisites: PHCI 621 or equivalent or permission of instructor.
Phases of trials, experimental designs, inclusion and exclusion criteria, randomization and blinding, the general linear model and mixed and fixed effects repeated measures analysis of variance, intention to treat methods, survival analysis.

PHCI 625 Clinical Trails II (2.0)
Prerequisites: PHCI 624 or permission of instructor.
Protocol development; patient recruitment and retention; safety and efficacy; benefit to risk assessment; monitoring and auditing trials; terminating or extending clinical trials; and, regulatory, patent and legal considerations.

PHCI 626 Clinical Trials III: Practicum in Clinical Trials (2.0-4.0)
Prerequisites: PHCI 624, PHCI 625, PHCI 632 or equivalent, permission of instructor and Program Director.
Designed to give the CREST trainee practical experience in all stages of a Phase III or Phase IV clinical trial including: IRB submission, patient recruitment, safety monitoring and data analysis in accordance with GCP and ICH guidelines.

PHCI 628 Fundamentals of Biostatistics Computing Laboratory (1.0)
Prerequisites: Must be enrolled in PHCI 621 or have permission from instructor.
Provides students with an opportunity to learn the biostatistical computing techniques and computing programs required in PHCI 621 Fundamentals of Biostatics.

PHCI 629 Special Topics in Epidemiologic Research Methodology (1.0-6.0)
Prerequisites: PHCI 611, PHCI 621,equivalents or CREST Program Director approval.
Provides an opportunity for students to address specific methodological issues such as bias or confounding or specific statistical problems in clinical research. Topics covered depend upon student interest and faculty availability.

PHCI 630 Pharmaovigilance (2.0)
Review of Good Clinical Practice (GCP) requirements and quality assurance methods for clinical trials and post-marking surveillance.

PHCI 631 Social and Behavioral Sciences in Health Care (2.0)
This course introduces public health students to social science perspectives and research on selected topics in health and health care. The course is organized into the following units: the sociology of knowledge and health behavior modeling; the social distribution of health, disease and utilization by social variables; social problems (e.g., violence and substance abuse) as public health concerns; health care industry and policy health behavior and the psychology of illness; international health and health care systems; and genetics and public health.

PHCI 632 Ethical Conduct of Health Care Research (2.0)
An introduction to the ethical principles and topics of medical research and data collection and evaluation. The basic ethical principles to be covered including autonomy, beneficence, rights and justice. Specific topics include: the ethics of treatment of patients versus research on human subjects; informed consent including proxy consent; subject confidentiality in research and publication; and the special problems of pediatric research.

PHCI 633 Legal Aspects of Biomedical, Behavioral & Public Health Research (2.0)
Students will examine the legal, ethical, and policy aspects of current topics and controversies in research ethics, including topics related to human subject protection, research integrity and conflicts of interest.

PHCI 642 Programs and Research in Maternal and Child Health (1.0)
Prerequisites: PHCI 611, PHCI 621, or equivalent, or instructor's approval.
Review of significant Federal and State programs targeted at improving the health of newborns and mothers.

PHCI 643 Programs and Research in Adult Health (1.0)
Prerequisites: PHCI 611 and PHCI 621, or equivalent, or instructor's approval.
An intermediate, survey class of the "other chronic diseases". Focus of the course content is on describing the myriad disease control and client support programs implemented through public health departments, voluntary agencies, and related agencies (e.g. universities and institutes).

PHCI 644 Programs and Research in Geriatric Health (1.0)
Prerequisites: PHCI 611, PHCI 621, or equivalent, or instructor's approval.
Review of special research issues related to the geriatric population, which will include health service, methodological and conceptual issues such as frailty and comorbidity.

PHCI 645 Programs and Research in Women's Health (1.0)
Prerequisites: PHCI 611, PHCI 621, or equivalent, or instructor's approval.
A review of significant Federal and State programs targeted at improving the health of women. The organization, delivery of service and evaluation of access, cost-effectiveness and quality is stressed.

PHCI 646 Programs and Research in Minority Health (1.0)
Prerequisites: PHCI 611, PHCI 621, or equivalent, or instructor's approval.
A review of significant Federal and State programs targeted to improve the health of minorities. The organization, delivery of service and evaluation of access, cost-effectiveness and quality is stressed.

PHCI 647 Program & Research in Urban Health (1.0)
A review of significant Federal and State programs targeted at improving health of the population in the urban environment. The organization, delivery of service and evaluation of access, cost-effectiveness and quality is stressed.

PHCI 650 Introduction to Medical Decision Analysis (2.0)
Note: Crosslisted with PHDA 601.
Introduction to decision analysis in health care. Students will learn the principles and application of decision analysis and to use decision science software. Topics: identification of problems suitable for decision analysis, utility theory and measurement, importance and estimation of probability , creation/analysis of decision trees, including sensitivity analysis, advanced methods of decision modeling, and illustration and presentation of results.

PHCI 651 Introduction to Environmental Health (2.0)
The course will lay a foundation for students to build upon their medical and scientific background in applying clinical skills in the resolution of real, in-the-field, community-based problems. The course will cover: Environmental molecular epidemiology; Environmental toxicology principles and practices; Exposure assessment in environmental sciences; Fundamentals of residential health surveillance; Fundamentals of occupational health surveillance; Air monitoring for toxic substances; principles and practices; Hazardous waste management; Fundamentals of health risk assessment.

PHCI 661 Introduction to Public Health Informatics (1.0)
Students will learn the fundamentals of HTML; the use of MEDLINE, Ovid, PubMed, and Grateful Med; become familiar with the roles and domains for computer scientists, epidemiologists, policy makers and programmers in information system development; be able to think in terms of information systems and underlying technologic infrastructure; have a basic understanding of computer networking; understanding the basics of database management systems and current database technology.

PHCI 662 Health Care Economics (2.0)
The course aims to provide a comprehensive groundwork in the economics of health care and a health care sector. The trainee will be able to effectively analyze issues in the health sector from an economic perspective and determine primary and secondary effects of change in the health care market. Attention is given to the basic theory and techniques of cost-benefit, cost-effectiveness and cost-utility analysis as well as methods for valuing outcomes.

PHCI 663 Role of Federal Government in Health Care (2.0)
This course introduces non-lawyers to the important role of both the Federal and state governments in public health. Their roles in such issues as individual rights and privacy, public health initiatives, and legal rights to access health care are examined using judicial opinions, statutes and regulations.

PHCI 665 Genetics and the Law (2.0)
Will explore the many legal issues in genetics, including but not limited to reproduction, access to health care, discrimination, forensics, and gene therapy.

PHCI 667 Reproductive Health Law & Ethics (2.0)
Addresses technological developments in reproduction (e.g., acceptability of human cloning, stem cell research) which has raised a host of legal and ethical concerns.

PHCI 668 Legal Medicine (2.0)
Focus on the legal principles and constraints applicable to health services and the health professions.

PHCI 669 Readings in Law, Medicine & Health (1.0-6.0)
Deals with various special topics in law as they pertain to medicine and health. Particular focus will be directed towards current and emerging topics arising from developments in medicine and science.

PHCI 671 Preventive Medicine I: Community Health (2.0)
This course focuses on the development, implementation and evaluation of disease prevention-health promotion programs at the community level. Theories of community organization are reviewed with an emphasis on population based efforts to improve public health.

PHCI 672 Preventative Medicine II: Individual Health Assessment and Behavioral Risk Factor Modification (2.0)
This course examines techniques for assessing and evaluating the health behaviors of individuals and on the techniques and strategies for modifying individual's risk factors for illness. Risk factors for cardiovascular disease, cancer, infectious diseases, STD's (e.g. HIV) and other chronic diseases are emphasized.

PHCI 699 Mentored Research-Thesis Preparation (1.0-6.0)
Prerequisites: Completion of 1st year PHCI courses.

PHCI 796 Effective Grant Writing (1.0)
This course is designed to prepare students to write competitive grant proposals. Topics to be covered include overall strategy for grant writing, concerns commonly cited by reviewers, how NIH applications are reviewed, and grant administration.

PHCI 799 Dissertation Research (1.0-18.0)

Public Health Decision Science

PHDA 601 Introduction to Medical Decision Analysis (2.0)
Note: Crosslisted with PHCI 650.
Introduction to decision analysis in health care. Students will learn the principles and application of decision analysis and to use decision analysis software. Topics: identification of problems suitable for decision analysis, utility theory and measurement, importance and estimation of probability, creation/analysis of decision trees including sensitivity analysis, advanced methods of decision modeling, and illustration and presentation of results.

PHDA 602 Biostatistics-Decision Science Seminar (1.0)
.5 lecture, .5 independent study.
Students are given an evaluation protocol for each semester and must turn in a written evaluation of the presentation. The protocols will vary according to the presentation topic, but each will focus on a critical component of research design or analysis.

PHDA 603 Biostatistics-Decision Science Public Health Practicum I (1.0-2.0)
A student is assigned to a health care agency and works with the staff of that agency on a policy issue facing that agency.

PHDA 604 Biostatistics-Decision Science Public Health Practicum II (1.0-2.0)
Prerequisites: PHDA 603.
A study is assigned to a health care agency and works with the staff of that agency on a policy issue facing that agency.

PHDA 605 Ethics and Bioethical Decision Making (2.0)
Prerequisite: consent of instructor.
A study of ethical issues in contemporary bioethics. Ethical dilemmas in medical science will be analyzed for the philosophical assumptions, interplay of facts and values, the role of rules and principles, and the contextual factors involved. Such topics as abortion, elective death, genetic engineering, organ transplants, and health care reform will be explored.

PHDA 606 Health, Law & Policy (2.0)
Note: Crosslisted with PHCI 606.
Introduce students to the broad legal and policy context of health care, with diverse topical areas that are useful for demonstrating the broad range of legaland policy responses.

PHDA 660 Mathematical Tools (4.0)
Prerequisites: Math 190 or equivalent or consent of instructor.
This course focuses on the basic techniques of analytic geometry, differential and integral calculus, and matrix algebra; topics include limits, the chain rule, higher-order derivatives, partial derivatives, integration by parts, improper integrals, multiple integrals, sequences and series, vector and matrix arithmetic, and eigenvalues

PHDA 661 Probability (3.0)
Prerequisites: Mathematical Tools (PHDA 660) or equivalent.
This course in introductory probability theory; includes probability spaces, random variables, probability distributions, moments, moment generating functions, mathematical expectation, joint distribution, transformations of random variables, sampling distributions.

PHDA 662 Mathematical Statistics (3.0)
Prerequisites: Mathematical Tools (PHDA 660) and Probability (PHDA 661) or equivalent.
This course in introductory statistical theory; includes limiting distributions, central limit theorem, point estimation, maximum likelihood estimation, least squares, sufficiency and completeness, confidence intervals, Bayesian estimation, Neyman-Pearson theory of hypothesis testing, statistical power, uniformly most powerful tests, likelihood ratio tests, non-central distributions, advanced topics as time permits.

PHDA 663 Decision Analysis (3.0)
Prerequisites: Mathematical Tools (PHDA 660), Probability (PHDA 661) and Mathematical Statistics (PHDA 662) or equivalent.
This course teaches methods for making decisions in complex situations especially those involving conflicting values, uncertainty, or risk. Thinking from the early foundations in economics through current methods is covered. Included are methods of value or utility elicitation and probability assessment. Analysis methods covered include decision trees, conjoint measurement, and multiattribute utility theory. Also covered are findings from psychology on cognitive errors, which are common in decision making.

PHDA 666 Master's Thesis Research (1.0-6.0)
Prerequisites: Completion of 1st year PHDA courses.
Mentored research; Thesis Preparation.

PHDA 671 Special Topics in Biostatistics and Decision Science (1.0-3.0)
Prerequisites: Consent of instructor.
A treatment of one or more topics in advanced Biostatisticsand /or Decision Science not usually covered in a regularly offered course. May be repeated under different subtitles.

PHDA 673 Biostatistics-Decision Science Research (3.0)
Prerequisites: consent of instructor.
A doctoral student rotates through at least two research projects of theBiostatics-Decision Science Program faculty, conducting research and learning the details of the design, implementation, and analysis of the project. PHDA 673 must be taken initially during the first year of residence in the doctoral program. PHDA 673 may be repeated once, focusing on one research project of the Program Faculty, with the consent of the Graduate Studies Director or the student's major professor.

PHDA 675 Independent Study in Biostatistics (1.0-6.0)
Prerequisites: Consent of Instructor.
Advanced study conducted under the direction of a faculty member. May be repeated under different subtitles.

PHDA 680 Biostatistical Methods I (3.0)
Corequisites: PHDA 661 or equivalent or consent of instructor.
A mathematically sophisticated presentation of principles and methods of: exploratory data analysis; statistical graphics; point estimation; interval estimation; hypothesis testing of means, proportions and counts; chi-square analysis; rate ratio; and Mantel-Haensel analysis. Matrix algebra is required. Data sets will be analyzed using statistical computer packages; examples will be drawn from the biomedical and public health literature. Emphasis will be placed on methods and models most useful in clinical research.

PHDA 681 Biostatistical Methods II (3.0)
Prerequisites: PHDA 680 or equivalent or consent of instructor.
A mathematically sophisticated introduction to: general linear models; regression; correlation; analysis of covariance; one and two-way analysis of variance; and multiple comparisons. Matrix algebra is required. Data sets will be analyzed using statistical computer packages; examples will be drawn from the biomedical and public health literature. Emphasis will be placed on methods and models most useful in clinical research.

PHDA 682 Multivariate Statistical Analysis (3.0)
Corequisites: PHDA 681 or equivalent or consent of instructor.
Focuses on the multivariate statistical methods; topics include the multivariate normal distribution, inference for mean vectors; inference for covariance and correlation matrices, analysis of covariance structure, analysis of serial measurements, factor analysis, and discriminant analysis. Instruction will also be given in the proper use of software to carry out these analyses. Emphasis will be placed on methods and models most useful in clinical research.

PHDA 683 Survival Analysis (3.0)
Corequisites: PHDA 681 or equivalent or consent of instructor.
Focuses on statistical methods for analyzing survival data, including both parametric and nonparametric methods. Topics include life-table analysis, proportional hazard models, log-rank tests, parametric survival distributions, graphical methods, and goodness- of -fit tests. Emphasis will be placed on methods and models most useful in clinical research.

PHDA 684 Categorical Data Analysis (3.0)
Corequisites: PHDA 681 or equivalent or consent of instructor.
Focuses on statistical methods for analyzing categorical data; topics include inference for two-way contingency tables; models for binary response variables, including logistic and logit models; models for ordinal data; mutinominal response data; and analysis of repeated categorical response data. Emphasis will be placed on methods and models most useful in clinical research.

PHDA 691 Bayesian Inference and Decision (3.0)
Prerequisites: PHDA 660.
Focus on the use of Bayesian probability and statistics in both scientific inference and formal decision analysis. The frequency and subjective interpretations of probability are explored, as well as probability and decision making.

PHDA 777 Dissertation Research (1.0-12.0)
Prerequisites: Satisfactory completion of PhD qualifying examination and permission of dissertation director.
The PhD student may take a total of up to 24 hours credit for the planning, data collection, analysis, and writing of the research project that results in the doctoral dissertation. PHDA 777 must be taken under the direction of the student's major professor. Dissertation research hours are seen as a major component of the doctoral program.

Philosophy

PHIL 501 Independent Study (1.0-3.0)

PHIL 503 Philosophical Writing and Research -WR (3.0)
Prerequisite: Two courses in Philosophy.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Development of analytical abilities in philosophical reading and writing; argument analysis and construction in various modes and styles.

PHIL 504 Philosophy of History (3.0)
Note: Cross-listed with HIST 504.
Speculations of the meaning of history from ancient times to the present; discussion of such contemporary issues as the nature of explanation, objectivity, truth in history.

PHIL 505 Selected Topics (3.0)
Prerequisite: To be determined by instructor, in the light of the topic chosen for that semester.

PHIL 512 Advanced Symbolic Logic (3.0)
Prerequisite: PHIL 312 or consent of instructor.
Topics in the theory and application of modern logic.

PHIL 518 Feminist Philosophical Literature (3.0)
Prerequisites: Junior Standing.
Note: Crosslisted with WMST 560.
Examination of central works by feminist philosophers in such subdisciplines as ethics, political philosophy, and epistemology.

PHIL 521 Ethical Theory - WR (3.0)
Prerequisite: One course in ethics or consent of instructor.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Recent developments in ethical theory, such as examinations of the status of moral facts; moral realism; impartiality and personal attachments; or moral agency.

PHIL 522 Virtue Ethics (3.0)
Prerequisite: Two courses in Philosophy or consent of instructor.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Historical and contemporary approaches to ethics that emphasize virtue and character.

PHIL 523 Selected Topics in Applied Philosophy (3.0)
Prerequisites: One course in Philosophy or consent of instructor.
Intensive study of one or more philosophical problems of individual or collective behavior in institutions, professions, or community affairs.

PHIL 524 Philosophies of Peace (3.0)
History of peace movements; analysis of concepts of nonviolence pacifism, positive and negative peace; approaches to conflict resolution and negotiation for global and local conflicts. Multi-disciplinary. Credit may not be earned for both 524 and 624.

PHIL 528 Philosophy of Mind (3.0)
Prerequisite: Two semesters of philosophy or consent of instructor.
Philosophical analysis of contemporary theories about the mind.

PHIL 531 Aesthetics (3.0)
An examination of philosophical theories of art, works of art, creative activity, and aesthetic experience, from Plato to the present. Credit may not be earned in both 53l and 63l.

PHIL 535 Political Philosophy (3.0)
Prerequisite: Two courses in philosophy and/or political science.
The main concepts of contemporary political thought: Rights, law, power, ideology, legitimacy, democracy, tyranny, the state, and justice, with the focus on the topic of political action in both its individual and collective forms. Credit cannot be earned in both 535 and 635.

PHIL 536 Philosophy of Science (3.0)
Prerequisite: Two courses in philosophy and two courses in biology, chemistry, physics, or geology or consent of instructor.
Philosophical problems connected with scientific explanation, laws, theories, concepts, goals and methods.

PHIL 537 Philosophy of the Social Sciences (3.0)
Prerequisite: One philosophy course and one upper-level course in political science, psychology, sociology, anthropology, economics, or geography; or consent of instructor.
Critical analysis of methodological, valuational, and metaphysical problems in the social sciences.

PHIL 553 Plato and Platonism (3.0)
Prerequisite: Ancient Philosophy (PHIL 301) or consent of instructor.
Plato's dialogues, and the course of Platonist thought through Plotinus and the Christian philosophers, to modern times.

PHIL 554 Aristotle and Aristotelianism (3.0)
Prerequisite: PHIL 301 or consent of instructor.
Aristotle's basic works and their influence on St. Thomas Aquinas and others in the Middle Ages.

PHIL 572 Phenomenology (3.0)
Prerequisite: PHIL 303 or consent of instructor.
The development of the phenomenological method and its use from Husserl to the present.

PHIL 573 Existentialism (3.0)
Prerequisite: Two semesters of philosophy or consent of instructor.
The thought of Kierkegaard, Nietzsche, Heidegger, Jaspers, Sartre, Marcel, and others, and its significance.

PHIL 575 Postmodernism (3.0)
Multidisciplinary examination of challenges to ideals, norms, and beliefs of modernity, and identifying characteristics of postmodern thought, as they appear in various disciplines and in cultures. Credit may not be earned for both 575 and 675.

PHIL 576 Philosophical Analysis (3.0)
Prerequisite: PHIL 304.
Selective study of 20th century philosophy in the English-speaking world.

PHIL 601 Independent Study (1.0-3.0)
Directed study and research.

PHIL 602 Independent Study (1.0-3.0)
Refer to: PHIL 601

PHIL 603 Philosophical Writing and Research (3.0)
Development of analytical abilities in philosophical reading and writing; argument analysis and construction in various modes and styles.

PHIL 605 Special Topics (3.0)
Prerequisite: To be determined by instructor, in the light of the topic chosen for that semester.

PHIL 608 Aquinas (3.0)
The works of Thomas Aquinas studied from historical and systematic viewpoints.

PHIL 610 Descartes (3.0)
The works of Rene Descartes, studied from historical and systematic viewpoints.

PHIL 616 African-American Philosophy (3.0)
Note: Crosslisted with PAS 616.
Analysis of works and theories of major recent and contemporary African-American philosophers within the themes of Pan-African debates.

PHIL 620 Kant (3.0)
The works of Immanuel Kant, studied from historical and systematic viewpoints.

PHIL 623 Applied Philosophy (3.0)
Prerequisites: One course in Philosophy or consent of instructor.
Intensive study of one or more philosophical problems of individual or collective behavior in institutions, professions, or community affairs.

PHIL 624 Philosophies of Peace (3.0)
History of peace movements; analysis of concepts of nonviolence pacifism, positive and negative peace; approaches to conflict resolution and negotiation for global and local conflicts. Multi-disciplinary.
Credit may not be earned for 524 and 624.**PHIL 625 Hegel (3.0)**
The works of Hegel, studied from historical and systematic viewpoints.

PHIL 631 Aesthetics (3.0)
An examination of philosophical theories of art, works of art, creative activity, and aesthetic experience, from Plato to the present. Credit may not be earned in both 531 and 631.

PHIL 633 William James (3.0)
The works of William James, studied from historical and systematic viewpoints.

PHIL 635 Political Philosophy (3.0)
Prerequisite: Two courses in philosophy and political science.
The main concepts of contemporary political thought: Rights, law, power, ideology, legitimacy, democracy, tyranny, the state, and justice, with the focus on the topic of political action in both its individual and collective forms. Credit cannot be earned in both 535 and 635.

PHIL 640 Epistemology (3.0)
Conceptual and historical background to analysis of knowledge claims; intensive study of theoretical approaches to knowledge, such as naturalized epistemology, socialized epistemology, feminist epistemology, postmodern critiques of normative conceptions of knowledge. (Credit may not be earned for both 540 and 640.)

PHIL 641 Recent Philosophy of Language (3.0)
Note: Cross-listed with LING 641.
Intensive study of current theory and research in the philosophy of language.

PHIL 657 African Philosophy (3.0)
Prerequisites: Graduate Standing.
Note: Crosslisted with PAS 657.
Descriptive and analytical introduction to the ideas and themes in African philosophy through careful readings of texts which address a cluster of topics.

PHIL 660 Wittgenstein (3.0)
The works of Wittgenstein, studied from historical and systematic viewpoints.

PHIL 671 Heidegger (3.0)
The works of Martin Heidegger, studied from historical and systematic viewpoints.

PHIL 674 Sartre (3.0)
The works of Jean-Paul Sartre, studied from historical and systematic viewpoints.

PHIL 675 Postmodernism (3.0)
A multi-disciplinary examination of challenges to ideals, norms, and beliefs of modernity, and identifying characteristics of postmodern thought, as they appear in various disciplines and in culture. Credit may not be earned for 575 and 675.

PHIL 681 Philosophies of Community (2.0-3.0)
Historical survey of some major theories of community, critical analysis of the concept, and the development of individual theories.

PHIL 695 Thesis Guidance (3.0)

PHIL 696 Thesis Guidance (3.0)
Refer to: PHIL 695

Public Health, Knowledge and Cognitive Science

PHKC 610 Introduction to Health Informatics (3.0)
Prerequisites: Admission to Graduate School or graduate level professional school.
Exploration and analysis of the foundation principles used in studying information utilization in health-related activities through case studies of selected problems and applications.

Pharmacology and Toxicology

PHTX 601 Principles of Medical Pharmacology (7.0)
Graduate student enrollment is required. The course encompasses the principal classes of drugs. Fall semester, yearly.

PHTX 603 Pharmacology and Dental Therapeutics (4.0)
Prerequisite: Consent of instructor.
Course encompasses the principal classes of drugs. Spring semester, yearly.

PHTX 606 Seminar (1.0)
Participation by attendance and oral presentation of current topics in Pharmacology and Toxicology. Fall and Spring semesters, yearly.

PHTX 607 Seminar in Genetics and Molecular Medicine (1.0-2.0)
Participation by attendance and oral presentation of current topics in genetics and molecular medicine. Fall and spring semesters, yearly.

PHTX 616 Advanced Pharmacology (1.0-12.0)
Work conducted outside the thesis area and with a preceptor other than the thesis director. By special arrangement.

PHTX 618 Topics in Pharmacology & Toxicology (1.0-12.0)
Prerequisite: Department majors only.
Topics of current interest in Pharmacology and Toxicology. By special arrangement.

PHTX 619 Research (1.0-12.0)

PHTX 620 Thesis (1.0-6.0)

PHTX 630 Toxicology: Principles and Application (3.0)
Prerequisites: PHTX 601 and PHY 605/606.
A survey of the interdisciplinary science of toxicology, providing an introduction to concepts concerning adverse effects of toxic agents on physiological systems. By special arrangement.

PHTX 633 Biochemical Neuropharmacology (2.0)
Prerequisite: PHTX 601 or concurrently taken.
A course on the biomedical basis of neurotransmitter action, with particular emphasis on the central nervous system. Recent advances in neurotransmitter mechanisms will be emphasized. By special arrangement.

PHTX 636 Biomedical Molecular Pharmacology (2.0)

PHTX 650 Advanced Nursing Pharmacology (3.0)
Provides the basic pharmacological foundation for the nurse practitioner and clinical specialist in advanced practice.

PHTX 660 Principles of Drug and Chemical Action (3.0)
Prerequisite: A biochemistry and physiology course, or consent of instructor.
Fate of drugs and chemicals following their administration. Distribution, metabolism, molecular mechanisms of action, and tolerance. Fall semester.

PHTX 661 Molecular Mechanisms of Drug Action (2.0)
Prerequisite: PHTX 667 and BIOC 668, or consent of the instructor.
Considers the molecular interactions of several classes of drugs and toxicants on a variety of cytoplasmic and nuclear processes, including signal transduction pathways, cell cycle checkpoints, DNA repair and DNA replication.

PHTX 663 Neuropharmacology (2.0)
Prerequisite: PHTX 601 or 660 and consent of instructor.
Biochemical effects of drugs which act on the autonomic and central nervous system. By special arrangement.

PHTX 665 Research Methods in Pharmacology and Toxicology (1.0-12.0)
A laboratory course exploring experimental design, modern pharmacological techniques, data analysis and microcomputer application.

PHTX 667 Advanced Cell Biology (3.0)
Prerequisite: One quarter of graduate level Biochemistry or consent of instructor.
Note: Crosslisted with BIOC 667, ASNB 667, BIOL 667 and MBIO 667.
Advanced treatment of contemporary cell biology including membrane structure and function, cytoskeleton, signal transduction, regulation of cell cycle, apoptosis, and molecular mechanisms of cellular differentiation. Spring semester only.

Physiology and Biophysics

PHY 601 Mammalian Physiology (9.0)
Prerequisite: Permission of departmental chair.
Consideration of the fundamental principles of general physiology combined with systematic discussion of mammalian and especially human physiology. Some applications of these principles are made to interpretation of disease. Classes meet according to Medical School schedule. Spring.

PHY 605 Systemic Physiology I (3.0)
Basic description of physiologic concepts and principles that explain the mechanisms of human physiological function.

PHY 606 Systemic Physiology II (3.0)
Prerequisites: PHY 605.
Continuation of Systematic Physiology I, to complete description of basic physiologic principles that explain mechanisms of human physiology.

PHY 607 Principles of Oral Presentations (3.0)
Prerequisite: Consent of instructor.
A discussion of methods of seminar and scientific research meeting presentations. Students will practice the skills which are discussed. Fall, every odd-numbered year.

PHY 608 Principles of Written Presentations I (3.0)
Prerequisite: Consent of instructor.
A discussion of methods for manuscript and grant proposal preparation. Students will practice the skills which are discussed. Fall.

PHY 609 Integrated Systemic Physiology (3.0)
Prerequisite: PHY 601 and consent of instructor.
Designed to provide reinforcement, expansion and integration of basic physiologic concepts of human organ systems.

PHY 610 Principles of Written Presentation II (3.0)
Prerequisite: Consent of instructor.
Discussion of methods for grant proposal preparation. Students will practice the skills which are discussed. Spring.

PHY 611 Advanced Human Physiology (4.0)
Prerequisites: PHY 605 or consent of instructor.
PHY 611 utilizes lectures on the physiological and biochemical processes in the heart, blood vessels and blood elements to provide more detailed mechanisms from molecular to systematic levels and normal to pathological states.

PHY 616 Selected Topics in Physiology and Biophysics (1.0-12.0)
Detailed discussion of physiological and biophysical problems of particular interest to students and staff. Topics will be announced in the schedule.

PHY 617 Seminar in Physiology and Biophysics (1.0)

PHY 619 Research (1.0-20.0)

PHY 620 Thesis (1.0-6.0)

PHY 621 Methods in Cellular Fluorescence (3.0)
Prerequisite: BIOC 602.
Examines the use of modern fluorescence techniques to monitor alterations in membrane properties and cellular activation. Theory of fluorescence spectroscopy and imaging, and applications of fluorescence techniques to monitor biochemical and biophysical events within the cell.

PHY 625 Experimental Physiology Laboratory I (3.0)
Prerequisite: Consent of instructor.
Practical experience with techniques common to physiological research, including instrumentation, surgical procedures and experimental design. Fall.

PHY 626 Experimental Physiology Laboratory II (3.0)
Prerequisite: Consent of instructor.
Continuation of 625. Spring.

PHY 652 Renal Mechanisms in Pathological Conditions (3.0)
Prerequisite: PHY 601 and consent of instructor.
Pathological mechanisms causing alterations in renal function. Primary emphasis will be placed on shock and hypertension mechanisms. Lectures, seminars, and student presentations. Spring, every odd-numbered year.

PHY 667 Cardiopulmonary Physiology: Mechanisms and Control (3.0)
Prerequisite: PHY 601 and consent of instructor.
This advanced physiology course reinforces and expands upon the basic physiological mechanisms which regulate and integrate cardiac and pulmonary function.

PHY 680 Physiology of Inflammation (3.0)
Prerequisite: PHY 601 and consent of instructor.
The influence of microcirculation; macromolecular permeability, tissue water balance, and tissue blood flow on the process of inflammation. Fall, odd-numbered years.

PHY 683 Vascular Smooth Muscle Function (3.0)
Prerequisite: PHY 601 and consent of instructor.
Review of current concepts of vascular smooth muscle function including vascular smooth muscle ultrastructure, biochemistry and factors influencing vascular reactivity. Spring, even-numbered years.

PHY 686 History of Physiology and Medicine (2.0)
Review of the historical background which binds Physiology and Medicine. Readings and discussion of history from Aristotle to the present. Fall.

PHY 799 Dissertation (1.0-12.0)
Prerequisite: Permission of departmental chair.
The terminal research course for the Ph.D. degree to finalize data analyses and manuscript preparation for the Ph.D. Dissertation.

Physics

PHYS 501 Independent Study (1.0-3.0)

PHYS 502 Independent Study (1.0-3.0)
Refer to: PHYS 501

PHYS 520 Vibrations and Sound (3.0)
Prerequisite: PHYS 298, PHYS 299 and MATH 206.
Vibrating bodies, propagation of sound waves, physical acoustics, and ultrasonics. 3 hrs. lec.

PHYS 530 Thermodynamics (3.0)
Prerequisite: PHYS 299 and MATH 301.
The laws of thermodynamics, relations between thermodynamics properties. Behavior of gases, magnetic materials, elastic materials. Low temperature phenomena.

PHYS 531 Introductory Statistical Physics (3.0)
Prerequisite: PHYS 530.
Elementary probability theory applied to the understanding of properties of macroscopic matter in terms of their microscopic constituents. Kinetic theory of gases, transport phenomena. Equations of state derived from ensemble theory.

PHYS 541 Electromagnetic Fields (3.0)
Prerequisite: PHYS 298, PHYS 299 and PHYS 300.
Electrostatic and magnetostatic fields in free space and in material media, solutions of Poisson's equation, time dependent fields, Maxwell's equations.

PHYS 542 Electromagnetic Radiation (3.0)
Prerequisites: PHYS 450, 451.
Propagation of electromagnetic fields with applications to optics and microwave physics.

PHYS 545 Advanced Optics (3.0)
Prerequisite: PHYS 355 and PHYS 542; or consent of instructor.
Topics in optical physics including optical system design, lasers, and quantum optics.

PHYS 546 Advanced Optics Lab (1.0)
Prerequisites: Optics (PHYS 355) or equivalent.
Laboratory experiments illustrating fundamental optical phenomena, the interaction of light and matter, lasers, and quantum optics.

PHYS 555 Elementary Quantum Mechanics (3.0)
Prerequisites: PHYS 450,460.
Shrodinger equation and solutions. Introduction to perturbation theory; applications.

PHYS 556 Quantum Theory of Matter (3.0)
Prerequisite: PHYS 555.
Application of quantum mechanics and relativity to atomic spectroscopy, molecular physics, quantum statistics, band theory of solids, basic properties of nuclei and particles.

PHYS 561 Mathematical Physics I (3.0)
Prerequisites: PHYS 450 or equivalent.
Selected mathematical techniques and their applications to various fields of physics.

PHYS 562 Mathematical Physics II (3.0)
Refer to: PHYS 561

PHYS 565 Computational Physics (3.0)
Prerequisites: PHYS 390, and 555 or 561 taken concurrently; familiarity with a programming language.
Introduction to modern computational methods in physics with application to problems in different branches of physics.

PHYS 570 Atomic and Molecular Physics (3.0)
Prerequisite: PHYS 541 and 555; or consent of instructor.
The structure of atoms and diatomic molecules, the production of coherent radiation and its interaction with matter.

PHYS 575 Solid State Physics (3.0)
Prerequisite: PHYS 541, 555, or consent of instructor.
Crystal structure, elastic waves, lattice dynamics, phonons, band theory of solids and conductivity phenomena. 3 hrs. lect. Alternate years.

PHYS 580 Nuclear Physics (3.0)
Prerequisite: PHYS 541 and 555; or consent of instructor.
Phenomenological study of nuclear properties. Nuclear structure and reactions, radioactive decay, interaction of charged particles with matter. 3 hrs. lec. Alternate years.

PHYS 585 Elementary Particle Physics (3.0)
Prerequisite: PHYS 541 and 555, or consent of instructor.
Properties of elementary particles. Detectors and accelerators. Weak and electromagnetic interactions. Quark model of hadrons, strong interactions.

PHYS 589 General Relativity (3.0)
Prerequisite: MATH 301 and PHYS 460.
Review of classical gravitation and special relativity, Riemannian geometry, Einstein field equations, exact solutions, tests of the theory, gravitational collapse and black holes, gravitational waves, cosmology.

PHYS 590 Astrophysics (3.0)
Prerequisites: PHYS 307, PHYS 455.
Physics applied to the interstellar medium; the atmospheres, structure, and evolution of stars; galaxies.

PHYS 595 Special Topics (1.0-3.0)
Introduction to an advanced topic or elaboration of an intermediate topic not treated comprehensively in a regular course.

PHYS 605 Theoretical Mechanics (3.0)
Prerequisite: Mechanics (PHYS 460), PHYS 561 and 562 and consent of instructor.
Analytical dynamics of systems of particles and rigid bodies. Hamiltonian and Lagrangian formulations, special relativity, canonical transformations, Hamilton-Jacobi theory and action-angle variables. 3 hrs. lect.

PHYS 611 Electromagnetic Theory I (3.0)
Prerequisite: PHYS 542 and 561 and consent of instructor.
Microscopic and macroscopic Maxwell's equations; The energy-momentum tensor; multipole radiation; radiation from accelerated charges; scattering and dispersion; and covariant formulation. 3 hrs. lect. Fall and Spring.

PHYS 612 Electromagnetic Theory II (3.0)
Refer to: PHYS 611

PHYS 621 Quantum Mechanics I (3.0)
Prerequisite: PHYS 556 and 605 and consent of instructor.
Nonrelativistic quantum mechanics. Hilbert space formalism, Schrodinger and Heisenberg representations, angular momentum theory, perturbation theory, scattering theory. Systems of identical particles and symmetries. Applications. 3 hrs. lect. Fall and Spring.

PHYS 622 Quantum Mechanics II (3.0)
Refer to: PHYS 621

PHYS 623 Relativistic Quantum Mechanics (3.0)
Prerequisite: PHYS 622 and consent of instructor.
Relativistic wave equations. Dirac theory of the electron. Neutrino theory. Applications. 3 hrs. lect. Offered as needed.**PHYS 625 Statistical Mechanics (3.0)**
Prerequisite: PHYS 531 and 555 and consent of instructor.
Application of ensemble or information theory to derivation of the laws of thermodynamics for classical or quantum systems. Properties of perfect and imperfect gases, magnetic phenomena, fluctuation phenomena, and the Onsager equations. 3 hrs. lect. Offered as needed.

PHYS 640 Solid State Physics I (3.0)
Prerequisite: PHYS 575 and concurrent registration in Quantum Mechanics and consent of instructor.
Quantum mechanical foundation of the theory of solids, the many-body problem, the band approximation, and other approximate methods. Electron-photon interaction, theory of superconductivity, electronic transport processes. 3 hrs. lect.
Offered as needed.

PHYS 641 Solid State Physics II (3.0)
Refer to: PHYS 640

PHYS 670 Special Topics (1.0-12.0)
Prerequisite: Concurrent or previous registration in PHYS 605, 611, or 621 and consent of instructor.
One or more advanced topics not treated comprehensively in the regular courses.

PHYS 690 Independent Study (1.0-12.0)
Prerequisite: Consent of instructor.
Advanced study conducted under the direction of a faculty member.

PHYS 695 Research Seminar (1.0-12.0)
Prerequisite: Consent of instructor.
Regular but informal meetings of faculty members and graduate students active in an area of research to discuss problems of mutual interest, and to review the current literature.

PHYS 699 Research (1.0-12.0)
Prerequisite: Consent of instructor.

Planning

PLAN 500 Foundations of Economics (3.0)
Prereqisites: Consent of instructor.
Note: Crosslisted with ECON 500.
Survey of supply and demand analysis, cost and production, and price determination in different market organizations. Analysis of GDP, unemployment, inflation, and economic growth.

PLAN 501 Urban Environmental Quality (3.0)
2 lecture, 2 field work.
Prerequisites: Consent of instructor.
Note: Crosslisted with GEOG 561.
A study of environmental aspects of urban areas and analysis of inter-and intra-city variations in environmental quality.

PLAN 600 Planning History and Issues (3.0)
Prerequisites: Consent of instructor.
Note: Crosslisted with GEOG 628.
The history of planning and contemporary issues with a special emphasis on the role of planners, zoning and law.

PLAN 601 Planning Theory (3.0)
Note: Crosslisted with PADM 607 and UPA 684.
In-depth examination of urban and regional planning theory, with special focus on the rational comprehensive model.

PLAN 602 Statistics for Public Affairs (3.0)
Note: Crosslisted with PADM 601.
Covers descriptive statistics, probability, sampling, tests of significance, correlation, regression analysis, and the use of statistical software packages.

PLAN 603 Urban Economics (3.0)
Prerequisites: PLAN 500, ECON 500 or consent of instructor.
Note: Crosslisted with ECON 605, UPA 603, and PADM 640.
Application of economic theory to urban policy issues including metropolitan development and job creation, poverty, crime, transportation, environment, spatial structure, and other issues.

PLAN 604 Applied Research Methods (3.0)
Note: Crosslisted with PADM 602.
Provides students with the basic analytical tools commonly used by professional planners and public administrators. The use of computers in applying these tools will be emphasized.

PLAN 605 Land Use & Planning Law (3.0)
Note: Crosslisted with PADM 688 & UPA 678.
Examination of pertinent legal issues, including ordinances, state and federal legislation, and court rulings impinging on planning and land use activities.

PLAN 606 Professional Practice (3.0)
Topics include: government organization; the role of planning in governmental decision-making; the planner's relations with citizens, politicians and administrators; strategies for dealing with conflict, pressure, and uncertainty; and ethics.

PLAN 607 Land Use Planning (3.0)
Note: Crosslisted with UPA 683.
This course provides an understanding of the history and current characteristics of land use planning and policy. Topics include the comprehensive plan, regulatory controls such as zoning, fiscal mechanisms of control, land use and environmental disputes, regional planning, and growth management.

PLAN 608 Geographic Information Systems (3.0)
Prerequisites: Consent of instructor.
Note: Crosslisted with GEOG 657and UPA 629.
Application of GIS to real world projects. An emphasis will be placed on the development of a digital spatial database.

PLAN 609 Public Budgeting and Finance (3.0)
Note: Crosslisted with UPA 647 and PADM 604.
Examines public budgeting and finance from economic, political, and institutional perspectives. Topics include: budget process, approaches and techniques of budgeting, ethics, intergovernmental fiscal relations, revenue-raising, capital budgeting, debt administration and risk management.

PLAN 610 Strategic Management and Planning (3.0)
Note: Crosslisted with UPA 672 and PADM 605.
Administration of the organization from the point of view of top level management. Formulation and administration of policies and practices. Development of long-range strategic plans as well as the diagnosis, analysis, and evaluation of specific organizational problems.

PLAN 611 Human Resources Management (3.0)
Note: Crosslisted with PADM 642 and UPA 667.
Basic theories, public policies, laws, regulations, problems, and prospects of human resource development and management within the context of the public sector.

PLAN 612 Mediation and Dispute Resolution (3.0)
Note: Crosslisted with PADM 648.
Designed principally for incipent practitioners of the mediation process. Class participation serving as a mediator in cases presented to the class, and a short paper depicting mediating in process are the course requirements.

PLAN 613 Public Administration and Organizational Theory (3.0)
Note: Crosslisted with PADM 600, POLS 625, and UPA 661.
Basic principles of public administration, with analysis of problems of bureaucracy, organization, financial management, and public policy.

PLAN 614 Retail Site Analysis (3.0)
Prerequisites: Consent of Instructor.
Note: Crosslisted with GEOG 635.
Examination of market structure, retail environment, and physical site characteristics. Utilizes current practices in discipline to determine optimum retail location.

PLAN 615 Spatial Statistics (3.0)
Prerequisites: PLAN 602 or consent of instructor.
Note: Crosslisted with GEOG 656.
The analysis of spatial patterns and processes through the use of spatially-based statistics.

PLAN 616 Analytical Urban Geography (3.0)
Prerequisites: GEOG 328, SOC 305, or consent of instructor.
Note: Crosslisted with GEOG 658.
Advanced analysis of urban spatial processes and patterns with an emphasis on qualitative models.

PLAN 617 Housing and Community Development (3.0)
Note: Crosslisted with UPA 648, PADM 626.
Examines issues in housing and community development.

PLAN 618 Urban Demography (3.0)
Prerequisites: GEOG 328 or consent of instructor.
Note: Crosslisted with GEOG 631.
A spatial analysis of the distribution, characteristics, growth and change of the population of a metropolitan area.

PLAN 619 Urban Geographic Information Systems Applications (3.0)
Prerequisites: PLAN 608, UPA 629, or GEOG 657.
Application of advanced GIS concepts to urban planning database projects.

PLAN 620 Environmental Policy (3.0)
Note: Crosslisted with PADM 627 & UPA 679.
Survey of environmental issues and policies designed to address those issues.

PLAN 621 Urban Infrastructure (3.0)
Note: Crosslisted with UPA 696.
Planning, financing, implementation, and operation of urban infrastructure systems.

PLAN 622 Urban Design (3.0)
2 lecture, 1field work.
Note: Crosslisted with UPA 682.
Covers theories, principles, and processes of urban design, including applications to actual design problems.

PLAN 623 Environmental Policy and Natural Hazards (3.0)
Note: Crosslisted with PADM 630 and UPA 687.
Explores the relationship of environmental policy and planning with natural hazards and disasters, with an emphasis on preparation for and mitigation of impacts.

PLAN 624 Urban Transportation Planning (3.0)
Prerequisites: ECON 605, PADM 640, PLAN 603, or UPA 603.
Note: Crosslisted with UPA 690.
Analysis of characteristics and costs of existing and innovative urban transportation systems. Role of planning methods in estimating transportation usage and choosing optimal plans.

PLAN 628 Economic Conditions and Forecasting (3.0)
Prerequisites: ECON 600 or ECON 605/UPA 603/PLAN 603/PADM 640.
Note: Crosslisted with ECON 620 and UPA 624.
Develops quantitative tools for the analysis and forecasting of economic phenomena. Both structural & time models are presented. Basic econometric methods are used to fit models and evaluate their forecasting properties.

PLAN 632 Independent Study (1.0-6.0)

PLAN 649 Planning Internship (1.0-3.0)
Prerequisites: Consent of instructor.
Provides an opportunity for students to obtain and reflect upon professional experience in urban planning.

PLAN 650 Capstone Studio (3.0)
This course integrates the various elements of the planning program while providing the opportunity to work on real planning problems.

PLAN 680 Special Topics in Urban Planning (1.0-6.0)
An advanced study of a selected topic in urban planning.

Political Science

POLS 501 Topics in American Politics (3.0)
An advanced examination of one or more selected contemporary problems in American government, such as national-state relationships, civil rights, foreign policy, labor relations, and taxation policy. Topics to be varied from year to year. Individual research projects and reports will be required.

POLS 502 Topics in Comparative Politics (3.0)
A comparative study of governments of selected countries, stressing one or more subjects such as party systems, policy-making processes, administration, regulation of economics, and others to be determined each time course is offered.

POLS 504 Topics in Political Theory -WR (3.0)
Prerequisite: Senior standing or faculty consent.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
An examination of one or more selected topics in the study of political philosophy. Individual research projects and reports are required.

POLS 505 Topics in Urban and Public Policy (3.0)
An interdisciplinary study of metropolitan problems, providing an opportunity to probe into basic long-range trends and human factors.

POLS 506 Topics in International Relations (3.0)
Prerequisite: Consent of instructor.
An advanced focus on one or more selected topics in world politics. Research projects, reports and simulations will likely be required.

POLS 510 Practicum (1.0-3.0)
Prerequisite: Consent of instructor.
Practical internship in government. Application must be made before enrollment. Placement opportunities are limited.

POLS 511 Practicum (1.0-3.0)
Refer to: POLS 510

POLS 519 Urban Poverty and Policy -WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
An examination of the causes of the poverty problem in American cities and the public policy responses to that problem.

POLS 530 International Negotiation (3.0)
An examination of the politics of interstate bargaining. Various theoretical perspectives are examined as well as several real world examples. Students will participate in role-playing exercises.

POLS 552 Politics through Film (2.0-3.0)
An examination of authority patterns, political change, using cinematic portrayals as the primary literature base for investigation.

POLS 554 Democratization and Regime Change (3.0)
Prerequisite: POLS 202 or POLS 299, and consent of instructor.
An analysis of regime types including authoritarian, totalitarian, and types of regime transformations: war, revolution, coup d'etat, and reform. Special attention given to the process of democratization.

POLS 563 Women in Developing Countries -WR (3.0)
Note: Cross-listed with WMST 558.
Note: Approved for the Arts and Sciences upper-level requirement in Written Communication (WR).
Follows the progress of the international women's movement by focusing on the emergence of women leaders and their work in developing countries since the First World Conference on Women 1975 to the present.

POLS 568 Feminist Theory - WR (3.0)
Note: Cross-listed with WMST 556.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Survey of the history and scope of the feminist tradition with emphasis upon liberal, radical, Marxist, socialist, psychoanalytic, and postmodern approaches to feminist theory. Credit may not be earned for both WMST 556/POLS 568 and WMST 656/ POLS 668.

POLS 602 Urban Political Economy (3.0)
Examines the role of public/private sectors in shaping policy in community and consequences for urban growth and quality of life.

POLS 609 Seminar in Urban Problems (3.0)
Exploration of field of urban politics/government with focus on urban institutions, governance and selected urban problems and policies.

POLS 615 Administrative Law and Process (3.0)
Note: Cross-listed with PADM 610/UPA 662.
Study of processes of law-making and application by governmental executive departments. Encompasses substantive issues facing agencies in designing and implementing effective regulation and court efforts to interpret and control agencies' activities.

POLS 619 Seminar in Public Policy (3.0)
Formulation, implementation, qualitative evaluation, ethical aspects of public policy including political, legal, and administrative aspects.

POLS 620 Topics in Public Policy (3.0)
An examination of one or more selected topics in the study of public policy.

POLS 625 Public Administration and Organizational Theory (3.0)
Note: Crosslisted with UPA 661, PADM 600, & PLAN 613.
Basic principles of public administration, with analysis of problems of bureaucracy, organization, financial management, and public policy..

POLS 626 Public Personnel Policy (3.0)
An examination of functions and processes of public personnel administration, such as staffing, classification, training, evaluation, and labor relations. Development of theoretical frameworks for personnel field.

POLS 629 Seminar in American Politics (3.0)
Current approaches, issues in American politics, evaluation of state of knowledge in various subfields of American government, politics.

POLS 630 Topics in American Politics (3.0)
Investigation of selected problems in American politics.

POLS 638 Seminar in American Foreign Policy (3.0)
Issues and perspectives in American foreign policy topics include theories of American foreign policy, historical epochs in the Cold War era, alternative strategies in nuclear deterrence, America's responses to the post-Cold War environment.

POLS 639 Seminar in International Relations (3.0)
Study of world politics, focusing on central theoretical, perspectives and substantive issues affecting interstate conflict and cooperation.

POLS 640 Topics in International Relations (3.0)
Study of selected substantive or theoretical issues involving world politics. Topics will vary from semester to semester.

POLS 647 Seminar in Latin America (3.0)
The political and social-economic developmental processes of Latin American nations. Testing of hypotheses concerning political parties, electoral processes, elites, and development.

POLS 649 Seminar in Comparative Politics (3.0)
Survey of major theories, concepts, approaches of comparative politics, development of the field and methodology of comparative political analysis.

POLS 650 Topics in Comparative Politics (3.0)
Study of politics and government in selected countries/regions, or study of processes, institutions or policies from a cross-national perspective.

POLS 652 Presidents and Prime Ministers (3.0)
A comparative study of the chief of state and heads of government roles in presidential and parliamentary systems of government examining the American and other selected systems.

POLS 670 Scope of Political Science (3.0)
An examination of the substantive areas of inquiry in political science, and the diverse bases for explanation of political phenomena undertaken within the field of political science. (Required of all graduate students.) Fall.

POLS 671 Methods of Political Research (3.0)
A survey of research techniques in the field of government.

POLS 691 Independent Study I (1.0-12.0)
Credit according to achievement.

POLS 692 Independent Study II (1.0-12.0)
Credit according to achievement.

POLS 695 Directed Research (3.0)
Prerequisite: Student must be in last semester of his/her course work. An intensive independent research project directed by a department faculty member. Intended for students completing the nonthesis degree

Psychology

PSYC 501 History of Psychology (3.0)
Prerequisites: PSYC 201 or consent of instructor.
Emergence of experimental and clinical psychology from its philosophical and physiological origins.

PSYC 514 Advanced Statistics (3.0)
Prerequisites: Junior standing or consent of instructor.
Note: Fall only.
Review of elementary statistics from a theoretical point of view; probability theory including sample spaces, random variables, density and distribution functions, expectations, and moments; estimation and properties of estimators; hypothesis testing, regression and correlation, and nonparametric methods.

PSYC 516 Introductory Mathematical Psychology (3.0)
Prerequisites: PSYC 201 or consent of instructor.
Survey of basic applications of probability and mathematics to models and theories in learning, perception, and social psychology.

PSYC 524 Psycholinguistics (3.0)
Prerequisite: PSYC 322 or LING 518.
Note: Cross-listed with LING 524.
Psychological aspects of language and their significance for analysis and understanding of cognitive and social processes.

PSYC 531 Sensation and Perception (3.0)
Prerequisite: Consent of instructor.
A survey of phenomena in sensation and perception, including the study of methods and mechanisms.

PSYC 543 Sensory Processes (3.0)
Prerequisites: PSYC 201 or consent of instructor.
Survey of physiological, neurological, and psychological bases of vision, audition, somesthesis, and other senses.

PSYC 544 Animal Behavior and Behavioral Ecology (3.0)
Prerequisites: PSYC 201 or consent of instructor.
Survey of sensory and behavioral characteristics of animal species, with stress upon ecological variables.

PSYC 556 Human Engineering (3.0)
Prerequisites: PSYC 201 or consent of instructor.
Application of experimental methods and data to problems of engineering and production.

PSYC 561 Evolutionary Psychology (3.0)
Prerequisites: PSYC 201 or consent of instructor.
Evolution of epigenetic processes and reproductive and parental strategies. Emphasis upon primate and human psychosocial development.

PSYC 566 Race and Gender in Psychological Research (3.0)
Note: Cross-listed with PAS 566.
Critical review of psychology with respect to issues of race and gender. Examines theory and research paradigms, modern, postmodern and Afrocentric methodologies.

PSYC 571 Special Topics in Psychology (3.0-4.0)
Prerequisites: Consent of instructor.
Survey and analysis of current theory, research and application in a specialized topic of current interest. Undergraduate, Psychology Honors, or Graduate credit available with consent of instructor.

PSYC 581 Introduction to Behavioral Medicine (3.0)
Prerequisites: PSYC 201 or consent of instructor.
Survey of theory and research on psychological factors which contribute to the occurrence, severity, and remediation of illness and disease.

PSYC 582 Introduction to Clinical Psychology (3.0)
Prerequisites: Junior, Senior, or M.A., level student with 9 or more credit hours in Psych beyond 101.
Examines the history, theoretical foundations, and methods of clinical psychology. Emphasis on areas of clinical practice, along with understanding how basic research methods are employed to explore clinical questions and support clinical practice.

PSYC 600 Research in Cognition (1.0-3.0)
Prerequisite: Consent of Area Coordinator.
Supervised research on topics in cognition. May be repeated.

PSYC 601 Research in Social Psychology (1.0-3.0)
Prerequisite: Consent of area coordinator.
Supervised research on topics in social psychology. May be repeated.

PSYC 602 Research in Perception and Sensory Physiology (1.0-3.0)
Supervised research on topics in perception and sensory physiology. May be repeated.

PSYC 603 Master's Research (1.0-6.0)
Prerequisite: Consent of instructor.
Research leading to master's degree, to be planned and carried out under the guidance and direction of a committee of faculty members. This research can take the form of either a Master's Thesis project or a research portfolio as specified by the student's program.

PSYC 604 Independent Study (Reading) (1.0-6.0)
Prerequisite: Consent of instructor.
Pass/Fail grading.

PSYC 605 Independent Study (Research) (1.0-6.0)
Prerequisite: Consent of instructor.
Pass/Fail grading.

PSYC 606 Professional Development Lab (1.0-3.0)
Prerequisite: Clinical psychology program
An orientation course for newly enrolled graduate students in clinical psychology. Covers tools needed to succeed in graduate school (e.g., computer technology and library skills), introduces faculty research areas, provides discussion of issues related to clinical supervision and ethical behavior, and provides students with assistance in developing and implementing research ideas for their thesis projects.

PSYC 607 Computer Applications in Psychology I (1.0-3.0)
Prerequisite: PSYC 514 and 611 (may be taken concurrently) or consent of instructor.
An introduction to computer systems, program languages, and existing analysis packages as used in psychological research and applications.

PSYC 608 Computer Applications in Psychology II (3.0)
Prerequisite: PSYC 607 or consent of instructor.
A survey course of advanced uses of computers as research tools. Simulation techniques, including data structures, Monte Carlo techniques, and random-number generation; artificial intelligence; laboratory control; numerical methods.

PSYC 609 Topical Seminar in Psychology (3.0)
Prerequisite: Major in psychology or related area and consent of instructor.
Seminars dealing with interdisciplinary issues of modern psychology. Subject matter to be indicated in semester schedules.
3 hrs. lect., 3 hrs. lab.

PSYC 611 Advanced Statistics II (3.0)
Prerequisite: PSYC 514.
A second course for graduate students in experimental design and statistical analysis.

PSYC 612 Advanced Statistics III (3.0)
Prerequisite: PSYC 514 and 611.
Develops a facility on the part of the student in the application of the techniques of multivariate analysis of variance, regression analysis, multidimensional scaling.

PSYC 613 Research Design and Methods (3.0)
Prerequisite: PSYC 514, 606, and 611, or consent of instructor.
Intensive analysis of designs and methods for laboratory and field research. Topics include experimental, quasi-experimental, and correlational research. Fall.

PSYC 614 Advanced Multivariate Modeling (3.0)
Prerequisite: SOC 610 or PSYC 612 or equivalent.
Note: Cross-listed with SOC 616.
Multivariate statistical techniques in both theoretical and applied sociological research settings.

PSYC 620 Human Learning (3.0)
Prerequisite: Consent of instructor.
Analysis of basic concepts and techniques of conditioning and discussion of major theoretical issues.

PSYC 621 Cognitive Processes (3.0)
Prerequisite: Consent of instructor.
Discussion of attention, memory, thinking, and concept learning; language; and problem solving.

PSYC 622 Proseminar in Cognition (1.0-3.0)
Prerequisite: Consent of Area Coordinator.
Critical study of theory and research in cognitive psychology. May be repeated.

PSYC 624 Language and Cognition (3.0)
Prerequisite: PSYC/LING 524
Note: Cross-listed with LING 624
Examination of theory and research on the relationship between fundamental processes of cognition and linguistic processes, e.g., organization of thought, memory, discourse, and text. Fall-spring, alternate years.

PSYC 626 Training and Skill (3.0)
Prerequisite: PSYC 620, 621, or consent of instructor.
Survey of research and theory in the analysis of human skilled performance and in the applied psychology of skill acquisition.

PSYC 632 Principles of Visual Science (3.0)
Prerequisite: PSYC 543 and 631 or consent of instructor.
An introduction of the structure and functioning of the visual system including normal and disrupted visual performance. Surveys and integrates findings from neuroanatomical, electrophysiological, psychophysical and clinical research.

PSYC 633 Visual Processes (3.0)
A consideration of the low-level processes and mechanisms of seeing, including: (1) the sampling and filtering of the image in the eye, (2) the neural representation of the image, and (3) the interpretation of this representation. Emphasis is on form, color and motion abilities.

PSYC 634 Intermediate - Level Vision (3.0)
Intermediate Vision is a multidisciplinary subject. The following topics covered in this course will emphasis the integration of the various approaches such as psychophysics, cognition, neuroscience, computational theory, etc: Stereopsis and 3-D Space Perception; Texture Segregation and Visual Search; Visual Surface Perception; Structure from Motion.

PSYC 636 Human Memory (3.0)
Prerequisite: Two semesters of cognitive psychology.
Survey of major theories and research pertaining to memory, including memory disorders, memory development, and related cognitive processes.

PSYC 637 Thinking and Problem Solving (3.0)
Prerequisite: Consent of instructor.
Analysis of major research and theory pertaining to concept learning, deductive reasoning, and problem solving. Twice yearly.

PSYC 638 Decision Making, Judgment, and Choice (3.0)
Prerequisite: Consent of instructor.
Study of information processing and cognitive theories of decision making, judgment, and choice in both risky and nonrisky environments. Fall, spring, alternate years.

PSYC 641 Psychopharmacology (3.0)
Prerequisite: PSYC 542 and consent of instructor.
The effects of various classes of chemical compounds on experience and behavior.

PSYC 642 Behavioral Neuroscience (3.0)
Prerequisite: Consent of instructor or program director.
Survey of the neural and physiological factors which influence behavior.

PSYC 643 Principles of Neuroscience (3.0)
Prerequisite: PSYC 542 and 631 or consent of instructor.
A survey of the processes underlying the functioning of neurons and neural systems.

PSYC 644 Hearing (3.0)
Prerequisite: PSYC 543 and 631 or consent of instructor.
Survey of contemporary theory and research in audition, including psychophysical and physiological studies of auditory phenomena.

PSYC 645 Cognitive Neuroscience (3.0)
Prerequisites: Consent of instructor.
Neuroanatomical basis of cognitive and motor functions, including attention, memory, and language. Primary focus on brain imaging studies of cognition in normal adults.

PSYC 648 Methods of Psychopharmacology (3.0)
Prerequisite: Consent of instructor.
Survey of behavioral techniques for assessing the effects of various classes of chemical compounds on behavior, with emphasis on experimental design, hypothesis testing, data collection, and statistical analysis.

PSYC 652 The Educational Applications of Psychology of Learning (3.0)
Prerequisite: Graduate standing in education or consent of instructor.
Survey of theory and experimental results emerging from the study of learning, especially operant conditioning, with discussion of applications to class and individual student control.

PSYC 655 Law and Psychology (3.0)
Prerequisite: Consent of instructor.
Note: Cross-listed with LAW 399.
The course emphasis is on seminar discussions of the mutual concerns of law and psychology (insanity defense, involuntary civil commitment, etc.).

PSYC 656 Legal, Professional, and Ethical Issues in Clinical Psychology (3.0)
Prerequisite: Clinical Psychology program or consent of instructor.
An examination of the ethical principles and professional issues in the field of clinical psychology, including aspects related to clinical research. Particular attention is paid to legal problems related to these issues.

PSYC 657 Environment and Behavior (3.0)
Prerequisite: PSYC 556, or three previous psychology courses and consent of instructor.
Effect of mechanical and physical stressors, such as heat, noise, and vibration, and the built and natural environment on work, performance, and life quality.

PSYC 661 Advanced Developmental Psychology (3.0)
Prerequisite: Consent of instructor.
Survey of the major areas of developmental psychology and of special problems encountered in research with infants and children.

PSYC 663 Human Growth and Development (3.0)
Prerequisite: Graduate standing in education or consent of instructor.
Central core of the course is the interest in heredity and environment in the course of development. Stress is placed upon the roles of early and continued cognition stimulation.

PSYC 670 Advanced Social Psychology (3.0)
Prerequisite: Social Psychology (PSYC 372) or consent of instructor.
Advanced study of major areas in social psychology: social learning, person perception, attitudes and attitude change, group dynamics, social structure, and change. Offered as needed.

PSYC 671 Social Psychology Proseminar (1.0-3.0)
Prerequisite: Consent of Area Coordinator.
Critical study of theory and research in major areas of Social Psychology. May be repeated.

PSYC 672 Social Psychology: Group Dynamics (3.0)
Prerequisite: Consent of instructor.
A lecture-demonstration course designed to instruct the student in theories, methodology, and content concerning behavior in small groups. Major topics are leadership, performance in groups, structural properties of groups, pressures to uniformity, power relations and influence, and membership variables.

PSYC 673 Advanced Personality Theory (3.0)
Prerequisite: PSYC 575 and consent of instructor.
A selective and critical examination of current theory and research in the area of personality.

PSYC 674 Organizational Psychology (3.0)
Prerequisite: Consent of instructor.
Structure and process in organizational development, internal communications, intraorganizational conflicts. Organization theory, consideration of various types of organizational setting: educational, military, institutional, business, and industrial.

PSYC 675 Social Psychology Methods (1.0-3.0)
Presentation and use of current methods in the field of social psychology. Emphasis on developing professional skills. May be repeated.

PSYC 676 Psychology of Sex Differences (3.0)
Prerequisite: Consent of instructor.
An analysis of the interaction of psychosocial and biogenetic factors in the determination of differences in the behavior of the sexes.

PSYC 679 Introduction to Assessment and Clinical Skills (1.0-3.0)
Prerequisite: Enrollment in Psychology Doctoral Program or permission of Director of Training.
A general introduction to psychological assessment, test development, psychometric theory, basic interviewing, legal considerations, theories of prediction and clinical judgment.

PSYC 680 Intellectual and Cognitive Assessment (3.0)
Prerequisite: PSYC 679 and clinical psychology program, or consent of Director of Training.
Administration, scoring, and interpretation of intelligence, aptitude, and academic achievement tests. Psychometric properties and applications are considered.

PSYC 681 Behavioral and Personality Assessment (3.0)
Prerequisite: Clinical psychology program or consent of Director of Training.
Covers administration, scoring, and interpretation of the MMPI/Rorschach (Exner system), and principles of cognitive and behavioral assessment techniques.

PSYC 683 Psychological Interventions I (3.0)
Prerequisite: Enrollment in Clinical Doctoral Program or permission of Director of Training.
Presents theory and techniques in one or more major therapeutic intervention orientations, along with considerations in applying these interventions such as special populations and varying modalities. Integrated laboratory allows students to apply techniques. Emphasis is on empirically validated techniques.

PSYC 684 Psychological Interventions II (3.0)
Prerequisite: PSYC 683 or consent of Director of Training.
Presents theory and techniques in one or more major therapeutic intervention orientations, along with considerations in applying these interventions such as special populations and varying modalities. Integrated laboratory allows students to apply techniques. Emphasis on empirically validated techniques. Continuation of PSYC 683.

PSYC 685 Clinical Psychology Practicum (1.0-3.0)
Prerequisite: PSYC 680 and clinical psychology program.
Supervised experience in psychological assessments and interventions utilizing various evaluation techniques and treatment approaches.

PSYC 686 Supervised Clinical Psychology Practicum (1.0-6.0)
Prerequisite: PSYC 685 and clinical psychology program.
Supervised experience for specialized problems or in particular techniques, typically for the most advanced students. May be repeated.

PSYC 687 Topical Seminar in Clinical Psychology (3.0)
Prerequisite: Consent of instructor.
Survey in depth of current theories, practice, and research in selected areas relevant to clinical psychology.

PSYC 689 Clinical Psychopathology (3.0)
Prerequisite: Consent of instructor.
A review of the causes and manifestations of psychopathology, with particular emphasis on the relevance of the research literature to the analysis and treatment of clinical cases. (Non-psychology majors must receive permission of instructor to enroll.)

PSYC 690 Practicum in College Teaching (1.0)
Guidance and training in college teaching of undergraduate psychology courses.

PSYC 691 Program Evaluation (2.0-3.0)
Review of issues and methods for the assessment of services or treatment efficacy, program effectiveness, and organizational performance in the health and human service areas. Prepares students for conceiving, planning and budgeting, reporting, and implementing program evaluations, need assessments, and client satisfaction studies. Includes preparation for application.

PSYC 692 Program Evaluation Project (1.0)
Prerequisite: PSYC 691.
Continues review of issues and methods covered in PSYC 691. Focus is on using the evaluation methods and organizational approaches reviewed in PSYC 691 for students to carry out actual program evaluation projects. Includes writing proposals, collecting and analyzing data, preparing reports, and working with organizations to help in the utilization of findings for organizational decisions and policies.

PSYC 693 Interviewing Skills Practicum (1.0)
Prerequisite: Acceptance into doctoral clinical program or consent of instructor.
For first-year clinical doctoral students to receive training in basic interviewing skills, on which all future assessment and psychotherapy skills build. Involves a series of skills modules and videotaped role-play interviews, culminating in a live client interview in the Psychological Services Center. Supervision and training in this course is provided by advanced doctoral students under the supervision of a faculty member.

PSYC 694 Supervision Practicum (1.0)
Prerequisite: Enrollment in doctoral clinical program.
A companion course to PSYC 693. Students registered for this course will be fourth-year doctoral students (in exceptional cases, third-year student) who wish to develop their supervisory skills. Under the supervision of a faculty member, students registered for these courses will train first-year students acquiring interviewing skills in PSYC 693.

PSYC 696 Clinical Aspects of Child Psychopathology (3.0)
A review of current diagnostic and therapeutic techniques used by clinical psychologists in treating children. Spring.

PSYC 697 Psychotherapy Research (3.0)
Prerequisite: PSYC 683 or PSYC 684, or consent of instructor.
An examination of psychotherapy research designed to evaluate the current status of psychotherapy and to develop psychotherapy research techniques.

PSYC 701 Dissertation Research (1.0-12.0)
Prerequisite: Satisfactory completion of preliminary examination and permission of dissertation director.

PSYC 702 Advanced Topics in Psychology (3.0)
Prerequisite: Consent of instructor.
Survey and analysis of current theory and research in a specialized area of psychology.

PSYC 785 Clinical Psychology Practicum in Professional Settings (1.0-10.0)
Prerequisite: Clinical psychology program.
Experience in clinical psychology in professional settings under the supervision of professional clinical psychologists.

Sociology

SOC 500 Special Topics (3.0)
Prerequisite: Nine hours of core courses or consent of instructor.
Exploration of well-defined topics in sociology not treated in regular courses. Topic will be announced in Schedule of Courses.

SOC 503 Political Sociology (3.0)
Focuses on the theoretical and empirical issues pertaining to the relationship between political processes, political structures, the state, and society.

SOC 508 Social Networks: Concepts, Techniques, and Applications (3.0)
Prerequisites: Consent of instructor.
Network concepts, measurement, and analysis. Wide usefulness illustrated by examination of acquaintance networks, patterns of communication, business transactions, kinship ties, influence and authority relationships, etc.

SOC 510 Computerized Data Analysis (3.0)
Prerequisite: SOC 209, SOC 301, and SOC 303, or consent of instructor.
Multivariate statistical analyses, focusing on multiple regression using standard computer packages (e.g., SPSS, SAS) operating in Windows.

SOC 511 Marxist Social Theory (3.0)
Prerequisite: Consent of instructor.
Introduction to Marxist social theory. Attention will be paid to both “classical” and recent approaches within this tradition.

SOC 512 Gender, Race, Work, and Welfare (3.0)
Note: Crosslisted with WMST 512, PAS 512.
Introduction to theory and research on labor market and welfare state with focus on gender race/ethnicity as they influence women’s experiences of and ideas about work and welfare.
Note: Credit may not be earned for both SOC 512 / WMST 512 / PAS 512 and SOC 612 / WMST 612 / PAS 612.

SOC 521 Social Transformation in Eastern and Central Europe (3.0)
Prerequisite: Nine hours in sociology or consent of instructor.
Using classical and contemporary theories of social change, this course explores the causes, nature, and extent of transition taking place in the social, political, and economic sectors of states in Eastern and Central Europe.

SOC 530 Visual Sociology (3.0)
Prerequisite: Permission of instructor required.
3 lecture, 3 lab.
Note: Spring only.
A field-oriented, laboratory-based course using the camera as a tool in studying and documenting selected elements of the rich and complex social environment. Students must have a 35mm SLR camera.

SOC 550 Voluntarism (3.0)
Prerequisite: SOC 209, SOC 320, and SOC 323; or consent of instructor.
Investigation of issues and topics related to voluntary activity. May also include contact with voluntary organizations in the local community.

SOC 600 Thesis or Internship Report (1.0-6.0)

SOC 601 Topical Seminar in Sociology (3.0)
An exploration of a specific topic or problem area of importance in contemporary sociology.

SOC 602 Independent Study (Readings) (1.0-5.0)

SOC 603 Independent Study (Small-Scale Research Problem) (1.0-5.0)

SOC 604 Proseminar in Sociology (1.0)
Designed to provide new graduate students with an introduction to sociology as a profession and to the Department of Sociology.

SOC 610 Seminar in Statistics (3.0)
Prerequisite: SOC 510.
Review of multivariate analytic techniques and a brief introduction to modeling procedures in the social sciences. Students will be instructed in the use of SPSS procedures and are expected to employ these in their seminar work. A laboratory period will be required.

SOC 612 Gender, Race, Work, and Welfare (3.0)
Prerequisites: Graduate status.
Note Crosslisted with WMST 612, PAS 612.
Introduction to theory and research on labor market and welfare state with focus on gender and race/ ethnicity as they influence women’s experiences of and ideas about work and welfare.
Note: Credit may not be earned for both SOC 612/ WMST 612/ PAS 612/ and SOC 512/ WMST 512/ PAS 512.

SOC 615 Seminar in Research Methodology (3.0)
Intensive review of research design, instrumentation, survey procedures, data collection and processing techniques, analysis, and report writing.

SOC 616 Advanced Multivariate Modeling (3.0)
Prerequisite: SOC 610 and 615.
Note: Cross-listed with PSYC 614
Multivariate statistical techniques in both theoretical and applied sociological research settings.

SOC 617 Program Evaluation and Impact Analysis (3.0)
Prerequisite: SOC 610 and 615.
Note: Cross-listed with UPA 621.
Evaluation of social programs through experimental and quasi-experimental design, multi-variate models, instrumentation, and impact analysis.

SOC 618 Qualitative Field Research Methods (3.0)
Prerequisite: SOC 615 or Ed.D. student, or consent of instructor.
Note: Cross-listed with EDFD 704.
Provides opportunities to design and critique field studies in educational and social settings and to practice techniques used to collect and analyze qualitative. Additional time required outside class for observations and interviews.

SOC 619 Fundamental Assumptions of Sociology (3.0)
Implicit and explicit assumptions including the character of science, paradigms, evolution, humans, and groups that are common to all areas of sociology.

SOC 620 Seminar in Sociological Theory (3.0)
Note: Crosslisted with EDFD 704.
Analysis and integration of the important writings of the major theorists in contemporary sociology.

SOC 630 Seminar in the Sociology of Education (3.0)
Prerequisite: Consent of instructor.
Nature and function of mass education in modern society. Issues of politics of skill, dissemination of knowledge and values, and socialization. Focus on the school in urban society and as an instrument of social control, policy, and change.

SOC 631 Sociology of Work and Occupations (3.0)
The use of sociological theory in the study of industrial society. The social organization of work, alienation, labor relations, personnel policy, the impact of industrialization on social life and culture.

SOC 635 Seminar in Social Movements (3.0)
Advanced study of the major theoretical perspectives and debates in the examination of groups working to effect social change.

SOC 636 Seminar in the Sociology of Human Sexuality (3.0)
Advanced study of the historical, cultural, structural, and social-psychological factors affecting human sexual expression.

SOC 640 Seminar in Urban Sociology (3.0)
Systematic critical examination of the history and application of social theory to the urban place. Specific attention is given to the utility of classical and contemporary theory in predicting and explaining human behavior in the urban environment.

SOC 642 Seminar in the Sociology of Disabilities (3.0)
Note Crosslited with: WMST 615.
Intensive examination of sociological perspectives on medicine, culture, and science to examine the meanings, experiences, demographics, and impacts of disability in historical and contemporary social contexts. Credit may not be earned for this course and SOC 442 or WMST 415.

SOC 650 Seminar in Sociology of the Family (3.0)
Study of the institution of the family, including intensive analysis of selected aspects of family group processes. Students are expected to carry out a small scale research study of family behavior.

SOC 660 Seminar in Crime and Correction (3.0)
An intensive theoretical analysis and/or field investigation of selected aspects of criminal behavior, juvenile delinquency, penal philosophy, correctional institutions, and/or probation and parole.

SOC 661 Comparative Criminology (3.0)
A cross-cultural study of criminal behavior with special emphasis on crime causation.

SOC 670 Seminar in Advanced Demography (3.0)
Prerequisite: Population Studies (SOC 462) or SOC 502.
Advanced study in topics related to population structure, composition, distribution, size, change, and growth.

SOC 680 Seminar in Social Stratification (3.0)
Critical analysis of sociological theories of and research in social inequality and social stratification. Discussion of classical and modern works. Focus on the concept and reality of social class.

SOC 685 Seminar in Race and Ethnicity (3.0)
Current and historical issues in race, racism, and ethnicity. Focus on U.S. with reference to other societies.

Sport Administration

SPAD 505 Sport Facility Management (3.0)
Prerequisite: Admission to the College of Education and Human Development or the School of Business or officially accepted as a sport administration minor.
Investigates the design and development of various athletic facilities in diverse settings. Examines corporate, community, and commercial facilities for strengths and weaknesses in design and management procedures.

SPAD 509 History of American Sport (3.0)
Prerequisite: American History I and II (HIST 211 or 212) or consent of instructor.
Sport in American culture and society, with a view toward understanding sport and American society during particular historical periods.

SPAD 521 Independent Study in Sport Administration (1.0-3.0)
Prerequisite: Consent of instructor.

SPAD 525 Sport Event Planning and Management (3.0)
This course is designed to introduce students to principles and practices of planning, funding, operating, and evaluating events within the sport industry. This course includes actual hands on involvement with event planning and management.

SPAD 529 The American Woman in Sport (3.0)
An effort to understand the role of the American woman in sport. Studies concepts about women, sport, and society in contemporary and historical perspectives.

SPAD 561 Special Topics in Sport Administration (1.0-3.0)
Prerequisite: Consent of instructor.
Selected projects of interest to sport administration faculty.

SPAD 604 Financial Principles of Sport (3.0)
Examines basic financial and managerial accounting concepts necessary to be financially literate in the business of sport. Special emphasis will be placed on understanding annual reports using financial analysis ratios and examining methods for increasing revenue and controlling costs in the sport industry.

SPAD 618 Rise of the Sport System in America (3.0)
Analysis of the changing form of American sport, emphasizing the influence of urbanization upon the transformation from folk and elite sport to mass sport. The growth of sport as a social institution, the increasing involvement of various social institutions in the promotion and use of sport. Factors in influencing the institutionalization of sport.

SPAD 622 Seminar in Computer Applications in Sport Administration (3.0)
Prerequisite: Consent of instructor.

SPAD 624 The Administration of Professional Team Sports (3.0)
A theoretical analysis of the American team sports industry, with particular emphasis upon management decisions and business objectives.

SPAD 625 Sport Administration (3.0)
An analysis and overview of nature and scope of various sport and fitness organizations, key managerial concerns, and administrative and management skills fundamental to area.

SPAD 635 Research in Sport Administration (3.0)
A critical analysis of current research and literature in Sport Administration and the sport business industry for practical application. Students will identify a research question; develop a review of literature; develop a research design; and identify possible implications and applications.

SPAD 661 Special Topics in Sport Administration (3.0)
Prerequisite: Consent of instructor.
Selected projects of interest to sport administration faculty.

SPAD 680 Athletics and Higher Education (3.0)
Examination of the historical development of athletics within American institutions of higher learning with an emphasis upon concept and ideas that underlie the developments and the major problems affecting contemporary intercollegiate athletics.

SPAD 683 Sport Marketing (3.0)
Basic principles of promotion, marketing, sponsorship, public relations, television/radio rights, licensing and logos, fund-raising, and more as applied to the sport business industry.

SPAD 684 Current Trends and Issues in Sport Administration (3.0)
Trends and issues of importance to the practitioner in sport administration.

SPAD 685 Case Studies in Sport Administration (3.0)
Prerequisite: SPAD 618, SPAD 625, and SPAD 683.
Applications of critical analysis and decision making models to sport industry settings; focus on management and social issues.

SPAD 689 Legal Aspects in the Sport Industry (3.0)
Prerequisite: SPAD 625 and SPAD 618.
Examines legal issues involving athletes, administrators, athletic trainers, coaches, equipment manufacturers, officials, operators of sport facilities, physicians, and the spectator.

SPAD 692 Internship in Sport Administration (1.0-3.0)
Prerequisite: Twenty-one hours completed toward a degree, six hours in SPAD and consent of instructor.
Note: Cross-listed with SPAD 592.
Supervised practical work experience in an organization or business related to student's academic field, area of specialization, or career interest. Students enrolled in class must work a minimum of 135 hours at their internship site.

SPAD 699 Directed Readings in Sport Administration (1.0-3.0)
Prerequisite: Fifteen graduate hours and consent of sport administration instructor.
Supervised readings and written project relating to a specific research topic in physical education.

Spanish

At least two courses at the 500 or 600 level will be offered for graduate students every semester. Course offerings are contingent upon sufficient enrollments. Regularly scheduled 500-level courses may be replaced by seminars, or studies of particular authors or specific topics.

SPAN 500 Spanish Study Abroad (1.0-15.0)
Prerequisite: Membership in a University of Louisville Language Study Abroad Program or a program approved by the department.
Credit awarded upon demonstration of successful completion of program undertaken with prior approval of the department, including a paper or project and an oral or written examination in the language and culture, administered under the supervision of a faculty member.

SPAN 511 Studies in Spanish Medieval Literature (3.0)
Prerequisite: SPAN 355 or Consent of instructor.
Special studies in the original language of selected works from the medieval period.

SPAN 513 Studies in Spanish Golden Age Literature (3.0)
Prerequisite: SPAN 355 or Consent of instructor.
Intensive study of significant works of the Spanish Golden Age.

SPAN 516 Literary Influences in Nineteenth-Century Spanish (3.0)
Prerequisite: SPAN 355 or Consent of instructor.
Study of significant writers of the Spanish Romantic, Realistic, and Naturalistic periods.

SPAN 518 Studies in Twentieth-Century Literature of Spain (3.0)
Prerequisite: SPAN 355 or Consent of instructor.
Study in depth of significant works of the Post-Civil War period.

SPAN 522 Spanish Phonetics and Diction (3.0)
Prerequisite: 6 hours of Spanish at 300+ level or consent of instructor.
Pronunciation, diction, and intonation in theory and practice. Corrective exercises, recordings for the analysis of individual pronunciation problems. Poetry and prose studied in phonetic transcription, using the International Phonetic Alphabet, extemporaneous speaking and prepared readings.

SPAN 523 Advanced Communication Skills (3.0)
Prerequisites: SPAN 321 & SPAN 322.
Oral and written expression in Spanish, with emphasis on formal and informal contexts, style and vocabulary.

SPAN 524 Introduction to Hispanic Linguistics (3.0)
Prerequisites: SPAN 321 & SPAN 322.
Introduction to basic linguistic concepts, exploration of communicative strategies, and investigation of Hispanic culture and dialectology.

SPAN 525 Spanish for the Classroom Teacher (3.0)
Prerequisites: SPAN 524 or consent of instructor.
Elements of Spanish language and culture for prospective and in-service elementary and secondary teachers for the purpose of enrichment in the regular classroom.

SPAN 527 Latin American Literature: Colonial Period through 19th Century (3.0)
Prerequisites: SPAN 355 or consent of instructor.
Study of significant literary works from the Colonial Period through 19th Century.

SPAN 528 Contemporary Spanish-American Theatre (3.0)
Prerequisite: SPAN 355 or consent of instructor.
Major trends and authors in Spanish-American theatre since c. 1950. Critical methodology for theatre.

SPAN 529 Spanish-American Poetry (3.0)
Prerequisite: SPAN 355 or Consent of instructor.
Selected Spanish-American poets, movements and national traditions. Critical methodological theory.

SPAN 530 Spanish-American Narrative (3.0)
Pre-requisite: SPAN 355 or Consent of instructor.
Selected Spanish-American novelists and short story writers, movements and national traditions. Critical methodological theory.

SPAN 561 Independent Study (1.0-3.0)
Prerequisite: Consent of department.
Independent study in areas not covered in the regular curriculum.

SPAN 599 Special Topics (3.0)
Prerequisite: Consent of instructor.
Topics of a unique or specialized nature in Spanish language, literature or culture.

SPAN 621 History of the Spanish Language (3.0)
Prerequisite: Consent of instructor.
Evolution of the Spanish language from earliest times to present. Linguistic analysis of representative literary and non-literary texts.

SPAN 624 Studies in Hispanic Linguistics (3.0)
Prerequisite: Consent of instructor.
Intensive study of a particular topic relating to language use and/or interaction (e.g., Semiotics, sociopragmatics, discourse analysis, classroom interaction, language pedagory.)

SPAN 634 Spanish for the Workplace and the Community (3.0)
Prerequisites: Consent of instructor.
Development of skills and vocabulary necessary for the workplace. Emphasis on Spanish for special purposes/ professions.

SPAN 638 Theory and Practice of Translation (3.0)
Prerequisites: Consent of instructor.
Study of specific issues related to translation. Intensive practice translating texts (legal, medical, business, literacy, media, etc.) from Spanish to English and vice versa.

SPAN 644 Origins and Development of Hispanic Culture (3.0)
Prerequisites: Consent of instructor.
Study of particular topics examining the development of Hispanic culture and identity, from Medieval Spain and Pre-Columbian Spanish America to the beginning of the modern period.

SPAN 648 Contemporary Issues in the Hispanic World (3.0)
Prerequisites: Consent of instructor.
Study of particular topics focusing on the multicultural manifestations of the Hispanic world, from the eighteenth century into the twenty first.

SPAN 654 Hispanic Culture through Film and Media (3.0)
Prerequisite: Consent of instructor.
Study of specific/selected issues focusing on the Hispanic cultural mileau; its multiracial values and means of communication as manifested inn the visual and print media (film, television, newspapers, documentaries, etc.)

SPAN 670 Special Topics (3.0)
Prerequisite: Consent of instructor.
Selected topics in Spanish language, literature, or culture. Topics chosen will reflect the needs of the students and the background of the instructor. May be repeated under different subtitles.

SPAN 690 Thesis (3.0-6.0)

Social Work

SW 601 Human Behavior and the Social Environment I (3.0)
Provides information related to theories and concepts of human behavior that are necessary for skill development in a contextually appropriate way. Client populations are examined and analyzed in their unique contexts with an emphasis on diverse developmental experiences.

SW 602 Social Welfare Institutions, Policies and Institutions (3.0)
Overall purpose is to help students and to develop an ability to: 1) analyze social problem conceptualizations; 2) evaluate social program design options designed to address social problems; and 3) access the interelationships between problem conceptualization and policy options and their impact on social work practice and clients.
Explores the history of social welfare in light of dominant values and contextual factors that shape the definition of social problems and their solutions. Relationships between disenfranchised populations and social welfare policies will be stressed and particular attention will be paid to institutional racism, sexism, classism, heterosexism, anti-Semitism, and ageism.

SW 603 Human Diversity (3.0)
Foundation course designed to provide students with the knowledge and skills for social work practice with people who are subject to various forms of oppression such as racism, sexism, heterosexism, classism, ageism, and ableism operating at the individual, community and institutional levels of society. Cultural diversity and strengths are emphasized. Developing greater professional and personal awareness about the impacts of various forms of oppression are addressed.

SW 604 Social Work Practice I (3.0)
Prerequisites: Concurrent registration in SW 670.
Foundation generalist practice course that provides an introduction to the knowledge, principles, values, and skills necessary for social work practice. The approach is that of structural social work that focuses on client strengths.

SW 605 Social Work Practice II (3.0)
Prerequisites: Successful completion of SW 604 and concurrent registration in SW 671.
Enables the student to know and understand social work intervention with individuals, families, groups, and organizations from a community perspective. Various models of community organization will be studied along with the different skills and roles that the social worker will need to internalize and then impart.

SW 619 Human Behavior and the Social Environment II (3.0)
Prerequisites: Successful completion of SW 601.
Provides students with the knowledge and conceptual frameworks needed to analyze the social, institutional, and cultural environments in which human behavior occurs. Central content deals with communities, organizations, groups, and families as social entities and the role relationships that characterize them as being dynamic and able to interact and create change.

SW 622 Issues in Policy and Service Delivery (3.0)
Prerequisite: Successful completion of SW 602.
Emphasizes the interrelationship between problem conceptualization, policy options, and their impact on social work practice and clients. Students will analyze these interrelationships in various policy areas (e.g. child welfare, health, mental health, aging, criminal justice) and will analyze from a systems perspective, a policy and delivery system of their choice. Current social services programs will also be reviewed.

SW 625 Children and Families (3.0)
Focuses on practice with children and families within an ecological framework. The complexity of practice with children and families within various human service delivery systems is examined.

SW 626 Research Methodology and Design (3.0)
Prerequisites: Successful completion of SW 601-604 and SW 670.
Provides students with an understanding and appreciation of a scientific, analytic approach to building knowledge for social work practice and for evaluating service delivery in all areas of practice. Content on ethical standards of scientific inquiry, qualitative and quanitative research methodologies, data analysis and statistical procedures, and the evaluation of practice.

SW 630 School Social Work: Policy and Practice (3.0)
Designed to prepare students for social work practice in the public schools. It assumes that you have a foundation of knowledge in social work policy, practice, research, and human behavior in the social environment. It also assumes that you had some field practice or work experience in a human service setting, preferably a school. Examines a range of practices and policy issues related to the delivery of social work services in school settings. Addresses current federal and Kentucky laws as they relate to practice with school age children and their families. School social work professional standards, program development and licensure receive attention as well. An ecological and risk and resiliency framework for practice will be emphasized throughout the course. Additionally, the practice section is based on best practices and narrative social work. Finally, special attention is given to children living in poverty.

SW 633 Human Sexuality and Treatment of Sexual Dysfunction (3.0)
Prerequisite: Successful completion of all foundations content.
Provides knowledge about human sexuality. It explores the cultural context of sexuality, normal and abnormal sexual functioning, and the treatment of sexual dysfunction.

SW 636 Death & Grief (3.0)
Prerequisite: Successful completion of all the foundation content.
Taught from the perspective that death is a natural part of the life process. Explores death, dying, and grief from a biopsychosocial approach. The physical part of dying death is explored from a biological perspective as well as from a social and psychological perspective. The views of the dying person are juxtaposed against societal beliefs about death and the views of those who are left are analyzed in terms of grieving as a process. Implications for social work practice and intervention provide the basis of this course.

SW 639 Crisis Intervention (3.0)
Prerequisite: Successful completion of all the foundation content.
The major constructs and principles of crisis theory are analyzed in light of their pragmatic application with clients in crisis. Students use complex case analysis in their application of theory to practice. Taught from a strengths perspective and using a narrative approach, this class emphasizes a client-centered perspective.

SW 640 Advanced Direct Practice I (3.0)
Prerequisites: Successful completion of SW 605 and concurrent registration in SW 672.
Provides students with a framework for practicing narrative collaboration and using it simultaneously with structural social work. Students learn to help people resolve problems by separating their lives and relationships from oppression by helping them re-author their lives with alternative, emanicpatory narratives. There is an emphasis placed on engaging persons in transformational conversations by formulating and using generative questions.

SW 641 Advanced Direct Practice II (3.0)
Prerequisite: Successful completion of SW 640 and concurrent registration in SW 673.
Students learn to think about and approach metawork-the work about work-from the narrative collaboration perspective. Using a framework of analytical dimensions, students learn to analyze and deconstruct current practices (including their own) and how to supervise and teach other practitioners to develop basic understanding and skills in helping people. Students learn to practice narrative collaboration with families and groups, and to modify application of principles derived from narrative practices for work with diverse populations.

SW 642 Psychopathology (3.0)
Focuses on the clinical use of diagnostic classification of psychopathology while preparing students for clinical work. This course is taught with a social work perspective that incorporates associated concepts of labeling theory and strengths perspective. Restricted to Kent School Students.

SW 651 Foundations of Family Therapy (3.0)
Prerequisites: Successful completion of SW 601, SW 602, SW 619, SW 622.
This course is required of those in the Marriage and Family Therapy program. This course may be taken as an elective by MSSW students. Course content includes critical elements of family systems basic theoretical concepts and an integrative approach to marriage and family therapy. Systems theory, communication theory, developmental theory, and critical theory are emphasized because of their historical influence upon the field. Case-based discussions highlight clinical concerns through relational observations and analysis.

SW 657 Group Methods (3.0)
Prerequisite: Successful completion of all the foundation content.
All major aspects of group life are explored and there is an emphasis on the purposes, content, and forms of various group experiences. The social worker's role in facilitating the group process is detailed and there is a special emphasis placed on the beginning processes associated with group methods.

SW 659 Introduction to Family Therapy Practice (3.0)
Prerequisites: Successful completion of SW 601, SW 602, SW 619, SW 622.
This course is required of those in the Marriage and Family Therapy program.
The course content of this introductory course in marriage and family therapy examines knowledge, skills, and values associated with the beginning phases of the therapeutic process. A review of the theoretical influences on the practice of marriage and family therapy is included as well as observing and practicing basic skills. By the conclusion of the course, students are expected to demonstrate competence in these basic processes.

SW 662 Substance Abuse (3.0)
Prerequisite: Successful completion of SW 601, SW 602, SW 619, SW 622.
Examines current issues associated with substance abuse. Prevailing paradigms related to substance abuse are explored and pragmatic intervention strategies for dealing with those abusing substances are presented and applied.

SW 664 Social Work and the Law (3.0)
Prerequisites: Successful completion of SW 601, SW 602, SW 619, SW 622.
Legal principles and issues of particular relevance to social workers. An overview of the fundamental principles of Anglo-American law is presented, the structure and function of the legal system is detailed, and distinctions between common law and civil law are presented. Constitutional law, civil rights, legal rights, and other related legal concepts are presented and there is an emphasis on families and children. Administrative law and malpractice are also explored.

SW 665 Supervision, Training, and Consultation (3.0)
Prerequisite: Successful completion of all the foundation content.
This course focuses on concepts of learning, competence, motivation and growth. How each of these is applied in supervision, training, consultation in both one to one and group settings is emphasized.

SW 667 Negotiation and Bargaining (3.0)
Prerequisite: Successful completion of SW 601, SW 602, SW 619, SW 622.
Principles associated with successful negotiating and bargaining are analyzed and applied through the use of meditation techniques. Through personal experience, students learn specific skills associated with mediating successful negotiations.

SW 668 Advanced Research Practice I (3.0)
Prerequisites: Completion of SW 626. Restricted to Kent School students.
Prepares students to examine and evaluate their practice using multiple methodologies. A critical examination of the methods and tools for evaluation of practice with individuals, families, groups, and communities is undertaken. Strategies for developing and implementing proposals for evaluating practice are considered.

SW 669 Advanced Research Practice II (3.0)
Prerequisite: Successful completion of SW 688
Prepares students to conduct and implement their own research projects focused on evaluating practice. Students will analyze, interpret, and present research findings. The implications of findings in informing and shaping practice are considered.

SW 670 Foundation/Generalist Social Work Practicum I (3.0)
Prerequisite: Concurrent registration in SW 604.
Designed to provide an educationally supervised practicum within a human service agency. This generalist fieldwork experience is based on the structural/strengths model of social work practice and integrates class assignments in SW 604 with the field experience. Provides the student an opportunity to begin to apply theory from all foundation level courses to practice in a structured setting.

SW 671 Foundation/Generalist Social Work Practicum II (3.0)
Prerequisite: Successful completion of SW 604, 670, and concurrent registration in SW 605.
Building on the knowledge, skills and values developed in SW 670, this foundation field experience further develops opportunities for students to gain more experience in applying generalist roles, continuing in the same field based setting.

SW 672 Advanced Social Work Practicum I (3.0)
Prerequisites: Satisfactory completion of all foundation level courses or admission to Advanced Standing and concurrent registration in SW 640 or SW 691.
Builds on the foundation generalist practicum and all the foundation courses. It continues to develop the students' skills, knowledge, and values associated with the structural/strengths model of social work. As the first semester of the advanced practicum, it focuses on the application of advanced theory, knowledge and skills as covered across the advanced curriculum. .

SW 673 Advanced Social Work Practicum II (3.0)
Prerequisite: Successful completion of SW 672 and either SW 640 or SW 691 and concurrent registration in SW 641 or SW 692.
Building on the previous semesters of learning, this course provides a final opportunity for students to integrate the specialized competencies developed across the MSSW curriculum. Students use advanced level research techniques and knowledge to access and evaluate interventions, and SW 673 is the summative specialized practice experience.

SW 681 Social Gerontology (3.0)
Prerequisites: Successful completion of SW 601, SW 602, SW 619, SW 622.
Explores societal, cultural, and individual issues associated with aging and the field of aging itself. The field of social gerontology is discussed; the biological, physiological, psychological, and social contexts of aging are examined; and the students explore what it means to age.

SW 682 Social Work Practice with Older Persons (3.0)
Prerequisites: Successful completion of SW 601, SW 602, SW 619, SW 622.
Specific knowledge, skills and values associated with social work intervention with older persons are the emphasis of this course. There is an emphasis on the heterogeneity of the population of older Americans and issues associated with diversity. Taught from a strengths perspective using a narrative approach, this course will provide the learner with pragmatic skills needed to work with diverse populations of older adults.

SW 684 Spirituality and Social Work (3.0)
Provides an in-depth examination of the meaning of spirituality for social work practice. Students will broaden their knowledge of basic spiritual and religious doctrines and principles and analyze their application to social work by applying this knowledge within various social work settings. This course is restricted to students in the Kent School.

SW 685 Planning and Community Development (3.0)
Prerequisites: Successful completion of SW 601, SW 602, SW 619, SW 622.
Integrates theories of social science and social work as it develops student skills, knowledge, values in social planning and community development. There is a special emphasis placed on conceptual and practice skills necessary for successful social planning and community development.

SW 691 Advanced Macro Practice I: Supervision, Training and Program Design/Evaluation (3.0)
Prerequisites: Successful completion of SW 605 and concurrent registration in SW 672
Oriented to concepts of learning, competence, motivation and growth. Examines verbal and experiential methods through which persons develop on the job and professionally. Aspects of supervising and instructing one-on-one or through groups are examined and learned through a transactional emphasis that will apply to either career role: supervise/trainee or supervisor/trainer. Aspects of program/project design, implementation and evaluation also will be covered. Equips the student to carry a training, supervising, and programming role effectively whether the context is work with clients, staff and/or volunteers in various organizational community situations.

SW 692 Advanced Macro Practice II (3.0)
Prerequisite: Successful completion of SW 691 and concurrent registration in SW 673 or current employment in the social work field.
Examines theoretical and empirical literature on complex organizations and administrative practices in order to increase participants' understanding of contemporary problems, issues, and practices in the administration of human service delivery systems. Emphasis is placed on developing managerial competence in leading and managing an organization; policy development , and understanding the importance of differential assessments in relation to the diverse needs people within the organization and the community.

SW 701 Family Therapy Applications (3.0)
Prerequisites: Successful completion of SW 651, SW 659, admission to Marriage and Family Therapy Program and the consent of Program Director.
Applications of marriage and family therapy to difficult health and mental health problems are explored. Integrative, research-based and narrative approaches are studied. There is an emphasis on theories of relationships and theories of change. Psychopathology and the DSM-IV are studied in light of current research, theory and practice.

SW 702 Professional Issues and Ethics (3.0)
Prerequisites: Admission to the Family Therapy Program.
Correct professional issues in the field of marital and family therapy will be studied with an emphasis on family law, ethics, professional standards, and national trends.

SW 703 Systemic Diversity : Theory and Practice (3.0)
Prerequisites: SW 702 (for MSW-MFT); SW 701 (for Post Master's Certificate in MFT).
Family therapy's position within larger social and political contexts will be examined with an emphasis on the implications for frontline practitioners and their clients. Attention will be given to strategies and skills required for interdisciplinary work at the local community and larger societal levels.

SW 704 Integrating Family Therapy: Theory and Practice (3.0)
Prerequisites: Admission to the Family Therapy Program.
Examines integrative models of family systems therapy. Personal models of integration will be encouraged.

SW 707 Special Topics in Family Therapy (1.0-3.0)
Prerequisites: Admission to the Family Therapy Program.
Special topics in marital and family therapy. Topic will be indicated in the term schedule.

SW 708 Independent Study (1.0-4.0)
Prerequisite: Admission to Marriage and Family Therapy Program, consent of Program director, and permission of the instructor.
The student will be required to submit a proposal for investigating some area or problem in social work not ordinarily offered in the social work program or the marital and family therapy program. The report of the student's study will be presented in a written report.

SW 721 Family Therapy Supervision I (1.0)
Prerequisite: Admission to the Family Therapy Program.
Co-requisite: SW 670.
Supervision of student work with a variety of families and family problems in community agency settings.

SW 722 Family Therapy Supervision II (1.0)
Prerequisites: Family Therapy Supervision I.
Co-requisite: SW 671.
Supervision of student work with a variety of families and family problems in community agency settings.

SW 723 Family Therapy Supervision III (4.0)
Prerequisites: Family Therapy Supervision II.
Supervision of student work with a variety of families and family problems in community agency settings.

SW 724 Family Therapy Supervision IV (1.0)
Prerequisites: Family Therapy Supervision III.
Co-Requisite: SW 673.
Supervision of student work with a variety of families and family problems in community agency settings.

SW 725 Family Therapy Supervision V (1.0)
Prerequisites: Family Therapy Supervision IV.
Co-Requisite: SW 674.
Supervision of student work with a variety of families and family problems in community agency settings.

SW 751 Social Work Research I: An Overview (3.0)
Helps students understand the basics of research and statistical procedures so they are prepared to move through the additional research and statistical procedures in the doctoral program. Course will be approached from a dual perspective of client outcomes and program evaluation.

SW 752 Statistics and Analysis Methods for Social Work I (3.0)
Helps students understand and apply basic statistical techniques and analysis methods to the types of data generated in social work research. Focuses on both introductory quantitative and qualitative analyses of social work research data. Examines basic methods for quantitative and qualitative analysis including parametric and nonparametric techniques. Qualitative analyses, including methods for analyzing documents, unstructured interviews, written texts, and laws and court opinions are addressed, drawing upon a broad range of social work applications.

SW 753 Social Work Research II: Advanced Research (3.0)
Prerequisite: Social Work Research I
Focuses on the critical issues and value judgments involved in evaluating social service interventions and programs. Examines qualitative and quantitative methodologies as ways of conducting formative and summative evaluations.

SW 754 Statistics for Social Work II (3.0)
Prerequisite: Statistics for Social Work
Introduction to advanced multivariate analytic techniques. Topics include regression analysis, factor analysis, multiple comparisons, canonical correlation, event history analysis and meta analysis as applied to social work research data.

SW 755 Theory Development in the Social Work Profession (3.0)
Explores the nature of knowledge and how it is generated and acquired. Examines explanatory and practice theory, current models related to practice, and the relationship of theory and data to social work. Strategies for building knowledge will be discussed. Students will analyze theories into their components, construct minitheories, and propose how they can be tested in social work practice.

SW 756 Professional Seminar I (1.0)
Introduces doctoral students to social welfare policy and research interests of the faculty, particularly research in its early stages of conceptual development. Explores practical issues in the conceptual development and conduct of research providing students with a possible research agenda.

SW 757 Advanced Analysis of Social Welfare Problems (3.0)
Provides students with a theoretical and conceptual framework for understanding social problems and their implications for macro social work practice. Critical perspectives related to social science theory will be identified, assumptions assessed, values examined, and empirical evidence analyzed. Covers theories from sociological, socio-cultural, political, economic, historical, and other perspectives. Helps students to develop their abilities to analyze and critique social problems and macro social work practice.

SW 758 Professional Seminar II (1.0)
Prerequisite: Professional Seminar I.
Continuation of Professional Seminar I.

SW 759 Human Behavior and Change Theories in Social Work Practice (3.0)
Provides a critical analysis of theories which seeks to explain human behavior and serves as a foundation for current clinical change interventions. Examines empirical support for and efficacy of major treatment modalities.

SW 760 Ethics, Social Work and Society (3.0)
Identifies and articulates the philosophical formulations of relevant ethical traditions and their implications for social work. Examines approaches to ethical analysis and major ethical problems facing contemporary social work. Emphasizes the development of advanced ethical reasoning and decision-making skills.

SW 762 Research Practicum (3.0)
Prerequisite: Consent of instructor.
Hands-on experience in the conception and implementation of a project, and/or data collection and analysis by working directly with faculty who are engaged in research.

SW 763 Teaching Practicum (3.0)
Prerequisite: Consent of instructor.
Experience in planning and teaching a social work course including classroom teaching and evaluation of students' work.

SW 764 Teaching in Social Work (3.0)
Engages students in the philosophy of education with emphasis on professional education, curriculum theory and social work curriculum standards, and instructional theory, methods and technology. Each student will create a social work course from initial surveying of a body of relevant literature, choosing content and conceptualizing it, developing lectures, and inventing educational tasks and assignments.

SW 765 Qualitative Inquiry SW (3.0)
Interpretive approaches to systematic inquiry that contrast with the natural science model of social research will be critically examined, focusing on classic and contemporary theories to understand and interpret the social world and the role of qualitative methods in the study and improvement of people's lives. The first part of the courses focuses on qualitative inquiry from the multiple disciplines' views, and the second part examines qualitative inquiry from the social work perspective.

SW 766 Doctoral Preparation (3.0)
Students will be prepared for doctoral studies in Social Work. They will recall the basics of sampling and research designs, power analysis, levels of data, composite indicators, reliability and validity, units of analysis, constructing instruments, codebooks, and using the Statistical Package for the Social Sciences (SPSS).

SW 767 Non-Parametric Statistics for Social Work (3.0)
The goal of the course is to understand and be able to apply non-parametric statistical techniques and tests to data generated in social work research. The student will be expected to develop/analyze research designs and to execute statistical tests in which non-parametric procedures are appropriate. The course will cover designs and statistical methods in the following areas: 1 Single-sample cases 2 One sample, two measures or paired replicates 3 Two independent samples 4 k related samples 5 measures of association.

SW 768 Scale Development (3.0)
Standardized instruments are used to systematically assess client problems and evaluate client progress in social work practice, and social work researchers are often called upon to develop new scales to access and evaluate client systems, their environments and the interaction between them. Doctoral level social workers must be able to develop new standardized measures or to improve existing ones in order to respond effectively to the needs of assessment and evaluation posed by social work practice and research.

SW 797 Independent Study (3.0-12.0)
Independent studies for doctoral students.

SW 798 Special Topics in Social Work (3.0-12.0)
Special or emerging topics that may not be appropriate for a permanent course, i.e., implications of changes in curricula required by the Council on Social Work Education (CSWE).

SW 799 Dissertation (1.0-18.0)
Prerequisite: Satisfactory completion of the qualifying examination and permission of dissertation director.
Research on dissertation project.

Theatre Arts

TA 520 Acting Workshop (3.0)
Prerequisite: Departmental consent.
Practical problems in the art of acting approached in a laboratory setting. Meets with 530. May be repeated.

TA 521 Stage Movement I (3.0)
Prerequisite: Consent of instructor.
Development of physical expressiveness and agility for the stage. One section each semester.

TA 522 Stage Movement II (3.0)
Refer to: TA 521

TA 523 Stage Speech I (3.0)
Prerequisite: Consent of instructor.
Development of voice production and articulation for the stage. One section each semester.

TA 524 Stage Speech II (3.0)
Refer to: TA 523

TA 525 Advanced Studies in Acting (1.0-3.0)
Prerequisite: Consent of instructor.
Group studies in specialized areas of actor training. 2-6 hours of laboratory work, as announced in Schedule of Courses.

TA 529 Actors Theatre of Louisville Workshop (3.0)
Prerequisite: Senior standing or faculty consent.
Organization of professional theatre, auditioning techniques, and employment possibilities.

TA 530 Directing Workshop (3.0)
Prerequisite: TA 330 or TA 323 and permission of instructor.
3 lecture, 1 lab.
Practical problems in the art of directing approached in a laboratory setting. Meets with 520.

TA 531 Advanced Directing (3.0)
Prerequisite: Consent of instructor.
The techniques of directing the major play, including artistic, organizational, and budgetary problems.

TA 533 Stage Management (3.0)
Prerequisite: Consent of instructor.
Techniques of production management during audition, rehearsal, and performance. Practical project required. Spring.

TA 540 A-E Problems in Technical Theatre (3.0)
Prerequisite: TA 241.
A. Welding
B. Sound Design
C. Technical Direction
D. Special Topics

TA 541 Topics-Scene Design (3.0)
Prerequisite: TA 340.
A. Scene Design
B. Advanced Scene Design
C. Design for the Camera
D. Design for Lyric Theatre
E. Special Topics

TA 543 Scenographic Techniques (3.0)
Prerequisite: TA 340.
A. CAD for Stage Design
B. Sketching and Rendering - Scenery
C. Scene Painting
D. Special Topics

TA 545 Topics - Costume Design (3.0)
Prerequisites: TA 345.
A. Costume Design
B. Costume History
C. Costume Construction
D. Sewing Techniques
E. Sketching and Rendering Costumes
F. Special Topics

TA 546 Advanced Stage Makeup (3.0)
Prerequisite: Permission of instructor.
Advanced techniques of design and execution of makeup for the stage. Fall.

TA 549 Topics - Lighting Design (3.0)
Prerequisites: TA 349.
A. Lighting Design
B. Advanced Lighting Design
C. Special Topics

TA 550 Theatre Practicum (1.0-3.0)
Prerequisite: 3 credits in TA 350 or graduate standing.
Practical work in theatre performance and production. Pass-Fail. A maximum of 6 credits in 350 and 550 may be counted toward the B.S. degree.

TA 555 Special Topics in Theatre (1.0-3.0)
Prerequisite: Consent of instructor.
Advanced study of specific areas of theatre arts. May be repeated.

TA 560 Directed Study in Theatre History (3.0)
Prerequisite: Consent of instructor.
Survey of theatre history and literature, supplemented with directed reading of secondary sources. Meets with TA 360-361.

TA 567 Asian Theatre (3.0)
Prerequisites: Graduate standing or permission of instructor.
Note: Alternate spring semesters.
The theatre and drama of Japan, China, and other Asian nations.

TA 571 Playscript Interpretation - WR (3.0)
Prerequisite: Consent of instructor.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Advanced techniques of play analysis, emphasizing the theatre artist's response to text. Fall.

TA 581 Drama Techniques for High School Teachers (3.0)
Opportunity to study theatre as an art form and as an instrument of education through the use of drama activities. All activities will be related to their use in relationship with the National Standards for the Arts and the Kentucky Education Reform Act. Emphasis is placed on production skills, scene study, historical periods and improvisation, scene study, historical theatre periods and production skills.

TA 600 Thesis Guidance (1.0-6.0)

TA 620 Performance Theory (3.0)
Prerequisite: Consent of instructor.
Historical study of major approaches to the aesthetics of acting and directing. Alternate springs.

TA 622 Graduate Movement I-IV (3.0)
Prerequisite: Consent of instructor.
Specialized movement studies, covering such areas as character movement, stage combat, circus techniques, and mime. One section each semester.

TA 623 Graduate Voice I-IV (3.0)
Prerequisite: Consent of instructor.
Specialized vocal studies, covering such areas as character voice, dialects, expansion of vocal range, and integration of voice and body. One section each semester.

TA 624 Graduate Acting I-IV (3.0)
Prerequisite: Consent of instructor.
Intensive studio training focusing, each semester, on developing specific abilities through exercises and scene work. One section each semester.

TA 625 MFA Performance Project (1.0-3.0)
Prerequisite: Consent of instructor.
Practical projects in theatre performance (acting, directing, stage management).

TA 640 Design Theory (3.0)
Prerequisite: Consent of instructor.
Historical study of major approaches to the aesthetics of theatrical design. Alternate springs.

TA 641 Color Theory (3.0)
Study of the physical and psychological properties and effects of color. Alternate springs.

TA 645 MFA Production Project (1.0-3.0)
Prerequisite: Consent of instructor.
Practical projects in theatre production (design, technical theatre, theatre management).

TA 650 Theatre Internship (1.0-12.0)
Prerequisite: Approval of department and host organization.
An internship with professional arts organizations.

TA 655 Independent Study (1.0-3.0)
Independent study in areas not covered by the regular graduate curriculum.

TA 656 Directed Readings in Theatre (3.0)
Prerequisite: 24 graduate hours in theatre arts.
Readings in preparation for the M.A. comprehensive examination. Pass/Fail grading.

TA 661 Approaching Period Drama (3.0)
Prerequisites: Consent of instructor.
Combines theoretical approaches and practical methods of performing, designing, staging and teaching period drama.

TA 662 Approaching Realistic Drama (3.0)
Prerequisites: Consent of instructor.
Combines theoretical approaches and practical methods of performing, designing, staging, and teaching realistic drama.

TA 663 Approaching Antirealistic Drama (3.0)
Prerequisites: Consent of instructor.
Combines theoretical approaches and practical methods of performing, designing, staging, and teaching antirealistic drama.

TA 664 Approaching African American Theatre (3.0)
Theoretical approaches and practical methods of performing, designing, staging and teaching theatre, literature, and art that springs from an afrocentric perspective. Designed to prepare students to integrate African-American topics into their teaching and to collaborate successfully as artists.

TA 670 Dramatic Theory and Criticism (3.0)
Prerequisite: Consent of instructor.
Historical study of major approaches to the aesthetics of theatre and drama. Alternate springs.

Urban and Public Affairs

UPA 602 Urban Policy and Goverance (3.0)
A study of urban policy and its impacts upon cities and particular segments of the population. Emphases the content, evolution, and consequences of national urban policy. Examines centralization and decentralization of metropolitan government, intergovernmental systems, and their relationship to policy implementation.

UPA 603 Urban Economics (3.0)
Prerequisites: PLAN 500, ECON 500, or consent of instructor.
Note: Crosslisted with PADM 640, ECON 605, and PLAN 603.
Application of economic theory to urban policy issues including metropolitan development and job creation, poverty, crime, transportation, environment, spatial structure, and other issues.

UPA 606 Research Methods (3.0)
Teaches students how to create, use and manage information systems central to policy research in urban and public affairs, and how to reach or recommend policy decisions drawn from these data bases.

UPA 610 Urban Theory and Public Affairs (3.0)
How theory and interpretive history illuminate the contemporary nature of the city. Introduces epistemological concerns and the nature of knowledge in describing the city and its urban form.

UPA 621 Policy Analysis and Program Evaluation (3.0)
Note: Crosslisted with PADM 603.
The course describes techniques of practical program evaluation as well as the institutional context of policy formulation, adoption, implementation, and evaluation. Process evaluation, qualitative approaches, outcome monitoring, natural experiments, quasi-experiments, ratings, use of expert judgment, surveys, role-playing, and focus group topics are covered. The course also describes theories of policy making, the policy environment, agenda setting and decision making.

UPA 623 Comparative Urban Development (3.0)
Note: Crosslisted with PADM 623.
Examines urban development in a cross national perspective. Traces the formulation, strategy and implementation or management of urban development policy in a number of nations. While the emphasis is on North America and West Europe, the lessons have broader relevence for other parts of the world, and will be applied to developing areas.

UPA 624 Economic Conditions and Forecasting (3.0)
Prerequisites: ECON 600 or ECON 605/ UPA 603/ PLAN 603/ PADM 640.
Note: Crosslisted with PLAN 628 & ECON 620.
Develops quantitative tools for the analysis & forecasting of economic phenomena. Both structural & time models are presented. Basic Econometric methods are used to fit models & evaluate their forecasting properties.

UPA 625 Macroeconomic Theory (3.0)
Prerequisite: ECON 500 and elementary calculus.
Note: Cross-listed with ECON 650.
Aggregate income and employment theory. Classical and Keynesian models; monetary and fiscal policy; the theory of growth and cycles.

UPA 627 Decision Models (3.0)
Cost-benefit analysis and the design and use of probability models for dealing with complex decision-making in situations involving uncertainty.

UPA 628 Microeconomic Theory (3.0)
Prerequisites: ECON 500/ PLAN 500.
Note: Crosslisted with ECON 660.
A thorough examination of the theory of household and firm. Determination of price under different market structures.

UPA 629 Geographic Information Systems (3.0)
Prerequisites: Consent of instructor.
Note: Crosslisted with GEOG 657 & PLAN 608.
Application of GIS to real world projects. An emphasis will be placed on the development of a digital spatial database.

UPA 630 Politics of Urban Policy (3.0)
A study of how urban policy is formed at national, state, and local levels. The role of power is explored as an instrument in policy making. Examines how interest groups interact with government as well as the parts played by pro-growth and anti-growth coalitions.

UPA 632 Independent Study (1.0-6.0)

UPA 640 Economic Development (3.0)
Crosslisted with: PADM 645.
The use and application of static and dynamic models for urban and community development. Includes economic base, industry and firm location models, and community growth. Topics include transportation, energy, pollution, income distribution, and employment.

UPA 646 Urban and Public Finance (3.0)
Taxing and spending activities carried out by cities and other localities. Concepts of allocation of public goods, public choice, “externalities,” income distribution, transfer payments, benefit-cost analysis, and taxation are applied to a variety of urban services such as mass transit, police and fire protection, zoning and planning and environmental policies.

UPA 647 Public Budgeting and Finance (3.0)
Note: Crosslisted with PADM 604 & PLAN 609.
Examines public budgeting and finance from economic, political, and institutional perspectives. Topics include: budget process, approaches and techniques of budgeting, ethics, intergovernmental fiscal relations, revenue raising, capital budgeting, debt administration and risk management.

UPA 648 Housing and Community Development (3.0)
Note: Crosslisted with PADM 625, PLAN 617.
Examines issues in housing and community development.

UPA 651 The Politics of Urban Development (3.0)
Crosslisted with PADM 621.
The role of political processes in the formulation and implementation of urban development policy; federal regulations and development; community competition and conflict.

UPA 660 Advanced Organizational Behavior (3.0)
Crosslisted with PADM 625.
Concepts and theories from the behavioral sciences that explain human behavior within organizations. Individual behavior and group dynamics with special emphasis on techniques and methods to improve individual functioning and interpersonal processes.

UPA 661 Public Administration and Organizational Theory (3.0)
Note: Crosslisted with PADM 600, PLAN 613, and POLS 625.
Basic principles of public administration, with analysis of problems of bureaucracy, organization, financial management and public policy.

UPA 662 Administrative Law and Processes (3.0)
Note: Cross-listed with PADM 610/POLS 615.
Study of processes of law-making and application by governmental executive departments. Encompasses substantive issues facing agencies in designing and implementing effective regulation and court efforts to interpret and control agencies’ activities.

UPA 667 Human Resources Management (3.0)
Note: Crosslisted with PADM 642 & PLAN 611.
Basic theories, public policies, laws, regulations, problems, and prospects of human resource development and management within the context of the public sector.

UPA 672 Strategic Management and Planning (3.0)
Note: Crosslisted with PADM 605 & PLAN 610.
Administration of the organization from the point of view of top level management. Formulation and administration of policies and practices. Development of long-range strategic plans as well as the diagnosis, analysis, and evaluation of specific organizational problems.

UPA 678 Land Use and Planning Law (3.0)
Note: Crosslisted with PADM 688, PLAN 605.
Examination of pertinent legal issues, including ordinances, state and federal legislation, and court rulings, impinging on planning and land use activities.

UPA 679 Environmental Policy (3.0)
Note: Crosslisted with PADM 627, PLAN 620.
Survey of environmental issues and policies designed to address those issues.

UPA 680 Special Topics in Urban and Public Affairs (1.0-6.0)
An advanced study of one or more selected topics or issues related to the study of Urban and Public Affairs.

UPA 682 Urban Design (3.0)
2 lecture, 1 field work.
Note: Crosslisted with PLAN 622.
Covers theories, principles, and processes of urban design, including applications to actual design problems.

UPA 683 Land Use Planning (3.0)
Note: Crosslisted with PLAN 607.
This course provides an understanding of the history and current characteristics of land use planning and policy. Topics include the comprehensive plan, regulatory controls such as zoning, fiscal mechanisms of control, land use and environmental disputes, regional planning and growth management.

UPA 684 Planning Theory (3.0)
Note: Crosslisted with PADM 607 and PLAN 601.
In-depth examination of urban and regional planning theory, with a special focus on the rational comprehensive model.

UPA 687 Environmental Policy and Natural Hazards (3.0)
Note: Crosslisted with PADM 630 & PLAN 623.
Explores the relationship of environmental policy and planning with natural hazards and disasters, with an emphasis
on preparation for and mitigation of impacts.

UPA 690 Urban Transportation Planning (3.0)
Prerequisites: ECON 605, PADM 640, PLAN 603 or UPA 603.
Note: Crosslisted PLAN 624.
Analysis of characteristics and costs of existing and innovative urban transportation systems. Role of planning methods in estimating transportation usage and choosing optimal plans.

UPA 696 Urban Infrastructure (3.0)
Note: Crosslisted with PLAN 621.
Planning, financing, implementation and operation of urban infrastructure systems.

UPA 700 Dissertation Research (1.0-12.0)
Prerequisite: Permission of program advisor.

Women's Studies

WMST 500 Senior Seminar in Women's Studies- Social Sciences WR (3.0)
Prerequisites: Junior standing.
Note: Approved for the General Education requirement in written communication (WR).
Investigates a Women's Studies topic from an interdisciplinary, social sciences perspective and requires students to practice interdisciplinary, social sciences methodology.

WMST 501 Senior Seminar in Women's Studies - Humanities WR (3.0)
Prerequisites: Junior standing.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR)
Investigates a Women's Studies topic from an interdisciplinary humanities perspective and requires students to practice interdisciplinary, humanities methodology.

WMST 512 Gender, Race, Work, and Welfare (3.0)
Note: Crosslisted with PAS 512 and SOC 512.
Introduction to theory and research on labor market and welfare state with focus on gender and race/ethnicity as they influence women's experiences of and ideas about work and welfare.
Note: Credit may not be earned for both WMST 512/PAS 512/SOC 512and WMST 612/ PAS 612/ SOC 612.

WMST 520 Women's Personal Narratives (3.0)
Note: Crosslisted with ENGL 554.
Course examines issues such as race, class, religion, geography, and sexual orientation surrounding the writing/reading of women's personal narratives (e.g., diaries, letters, autobiographies, oral histories, biographies, and films) from the 19th and 20th centuries. (Humanities).

WMST 530 Feminism in Western Civilization, 1790-1920 - WR (3.0)
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Note: Junior standing recommended.
Comparative analysis of feminist movements in the United States, Britain, and Europe, stressing intellectual background, social composition, goals and political strategies. Credit may not be received for WMST 530 or HIST 588 and WMST 630. (Social Sciences).

WMST 531 Women in the Twentieth Century in Europe and the U.S. - WR (3.0)
Prerequisites: Junior Standing recommended.
Note: Crosslisted with HIST 583.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
The history of women in Western society, including Europe and the U.S. in the twentieth century. Includes political, economic, social, and cultural developments. (Social Sciences).
Credit may not be earned for WMST 531/HIST 583 and WMST 631.

WMST 532 History of American Sexualities -WR (3.0)
Prerequisites: Junior Standing.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
The course focuses on sexual behaviors and meanings in America from the colonial period to the late twentieth century and how sexual meanings impact people's identities, choices, and social positions. The course also concerns the interaction of gender, race, and class.
HIST 211-212 is recommended.
Credit may not be earned for this course and HIST 589. (Social Sciences)

WMST 533 Women in 19th -Century America - WR (3.0)
Prerequisites: Completion of Gen Ed writing requirement.
Note: Crosslisted with HIST 506.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Course focuses on material conditions, ideologies, and knowledge-systems that shaped American women's lives in the 19th century, with attention to race, class, and regional differences. Credit may not be earned for both HIST 506/WMST 533 and WMST 633.

WMST 535 Women's Health Issues - CD2 (3.0)
Note: Cross-listed with HPES 564.
A study of the sociological, psychological and physiological factors that influence women's health. (Social Sciences)

WMST 540 Women's Health in Africa - WR (3.0)
Prerequisites: Senior Standing.
Note: Crosslisted with PAS 562.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Examination of population growth, early marriage, family size and cultural and religious beliefs on reproductive health of contemporary African women. (Social Sciences) Credit may not be earned for both WMST 540/PAS 562 and WMST 640/ PAS 662.

WMST 543 Black Women Voices - WR (3.0)
Prerequisites: At least 6 credit hours in SS or HU or consent of faculty.
Note: Crosslisted with PAS 542.
Note: Approved for the Arts & Sciences upper-level requirement in written communication (WR).
Global synopsis of black women's studies and social thoughts. Highlights roadblocks and bridges experienced. Captures race, gender, class and spatial dimensions. (Social Sciences)
Note: Credit may not be earned for both WMST 543/PAS 542 and WMST 643/PAS 643.

WMST 556 Feminist Theory - WR (3.0)
Note: Cross-listed with POLS 568.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Survey of the history and scope of the feminist tradition with emphasis upon liberal, radical, Marxist, socialist, psychoanalytic, and postmodern approaches to feminist theory. (Social Sciences) Credit may not be earned for both WMST 556/POLS 568 and WMST 656/POLS 668.

WMST 558 Women in Developing Countries -WR (3.0)
Note: Cross-listed with POLS 563.
Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).
Follows the progress of the international women's movement by focusing on the emergence of women leaders and their work in developing countries since the First World Conference on Women 1975 to the present. (Social Sciences)

WMST 560 Feminist Philosophical Literature (3.0)
Prerequisites: Junior Standing.
Note: Crosslisted with PHIL 518.
Examination of central works by feminist philosophers in such subdisciplines as ethics, political philosophy, and epistemology. (Humanities).

WMST 571 Francophone Women Writers-WR (3.0)
Prerequisite: Faculty consent.
Note: Crosslisted with ML 506.
Note: Approved for the General Education requirement in written communication (WR).
Readings of literary and non-literary texts by women of the French-speaking world. (Humanities)

WMST 589 Independent Study: Women's Studies - Humanities (1.0-3.0)
Provides opportunity for a student to do advanced interdisciplinary, humanities work on a Women's Studies topic.

WMST 590 Independent Study: Women's Studies-Social Sciences (1.0-3.0)
Prerequisite: Consent of instructor.
Provides opportunity for a student to do advanced interdisciplinary, social sciences work on a Women's Studies topic.

WMST 591 Topics in Women's Studies- Social Sciences (3.0)
Provides advanced study of a special topic related to women or gender from an interdisciplinary, social sciences perspective.

WMST 592 Topics in Women's Studies- Social Sciences-WR (3.0)
Note: Approved for the General Education requirement in written communication (WR).
Provides advanced study of a special topic related to women or gender from an interdisciplinary, social sciences perspective.

WMST 593 Topics in Women's Studies - Humanities (3.0)
Provides advanced study of a special topic related to women or gender from an interdisciplinary, humanities perspective.

WMST 594 Topics in Women's Studies - Humanities WR (3.0)
Note: Approved for the General Education requirement in written communication (WR).
Provides advanced study of a special topic related to women or gender from an interdisciplinary, humanities perspective.

WMST 601 Feminist Research in the Humanities (3.0)
Course examines ways feminist concerns have influenced research questions in the humanities (history; philosophy; religious, cultural, and literary studies). Readings focus on gender issues as the relate to power, representation, race, ethnicity, class, sexuality.

WMST 602 Feminist Research and Methods in the Social Sciences (3.0)
Through readings across social sciences disciplines (i.e.; in sociology, anthropology, psychology, economics, political science),course will analyze many ways feminist theory and methodology have influenced research in the social sciences.

WMST 612 Gender, Race, Work, and Welfare (3.0)
Note Crosslisted with: PAS 612 and SOC 612.
Introduction to theory and research on labor market and welfare state with focus on gender and race/ethnicity as they influence women's experiences of and ideas about work and welfare.
Note: Credit may not be earned for both WMST 612 /PAS612/ SOC612 and WMST 512/ PAS 512/ SOC 512.

WMST 615 Seminar in the Sociology of Disabilities (3.0)
Note Crosslisted with: SOC 642.
Intensive examination of sociological perspectives on medicine, culture, and science to examine the meanings, experiences, demographics, and impact of disability in historical and contemporary contexts. Credit may not be earned for this course and WMST 415 or SOC 442.

WMST 633 Women in 19th- Century America (3.0)
Note: Approved for the Arts & Sciences upper-level requirement in written communication (WR).
Course focuses on material conditions, ideologies, and knowledge-systems that shaped American women's lives in the 19th century, with attention to race, class, and regional differences. Credit may not be received for this course and for HIST 506 or WMST 533.

WMST 689 Independent Study: Women's Studies (1.0-3.0)
Provides opportunity for a student to do advanced interdisciplinary, humanities work on a Women's Studies topic.

WMST 690 Independent Study: Women's Studies - Social Sciences (1.0-3.0)
Prerequisites: Consent of instructor.
Provides opportunity for a graduate student to do advanced interdisciplinary, social sciences work on a Women's Studies topic.

WMST 691 Advanced Topics in Women's Studies-Social Sciences (3.0)
Prerequisites: Graduate standing.
Provides advanced study of a special topic related to women or gender from an interdisciplinary, social sciences approach.

WMST 692 Advanced Topics in Women's Studies-Humanities (3.0)
Prerequisite: Graduate standing.
Provides advanced study of a special topic related to women or gender from an interdisciplinary, humanities perspective.

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There are two levels of Graduate Faculty Membership. A Member of the Graduate Faculty is authorized to teach graduate courses, serve on graduate student advisory committees, and co-chair Master's Theses.

A Senior Member of the Graduate Faculty is authorized to teach graduate courses, serve on graduate advisory committees, and serve as thesis and dissertation advisors and chairs (mentors).

Both levels of membership have the authority to serve on thesis and dissertation committees.

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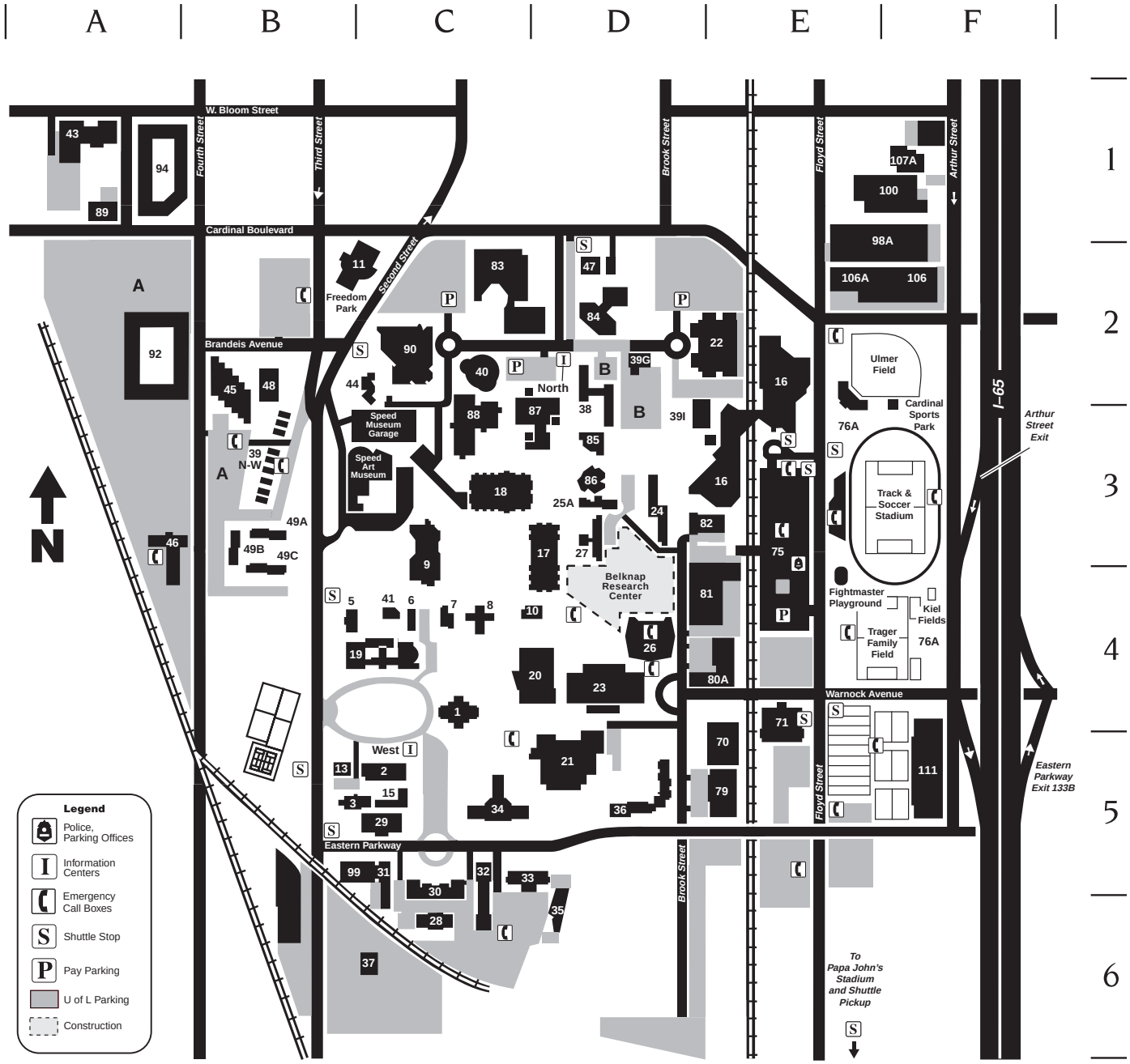
U of L Campuses

Louisville and Jefferson County

U of L Campuses

Belknap Campus



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B5 McCandless Hall (13)
D2 Miller Hall (38)
D5 Miller Information Technology Center (21)
D2 Minority Services Building (39G)
C2 Music, School of (83)
C5 Natural Sciences Building (34)
B4 Oppenheimer Hall (5)
D3 Overseers Honors House (25A)
** Papa John's Stadium (2800 S. Floyd St.) (108)
D6 Parkway Field House (35)
B5 Patterson Hall (3)
F2 Personnel Services Building (106)
B2 Playhouse, The (11)
** Printing Services (154)
D3 Red Barn (39I)
C2 Robbins Hall (44)
C5 Sackett Hall (31)
D4 Schneider Hall (20)
E4 Service Complex (80A)
B3 Sorority/Fraternity Houses (39N-W)
C5 Speed, J.B. (Main) Building (30)
C3 Speed Art Museum, 2035 S. Third St.
C5 Speed, W.S., Hall (32)
E5 Steam and Chilled Water Plant (70)
D3 Stevenson Hall (27)
** Stoddard Johnston Building, 2301 E. Bradley (77)
C3 Strickler Hall (88)
E2 Swain Student Activities Center (16)
D3 Student Health and Counseling Center (82)
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F5 Tennis Center, Bass-Rudd (111)
D3 Threlkeld Hall (24)
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D2 Unitas Tower (47)
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A1 University Planning, Design and Construction (89)
B2 University Tower Apartments (48)
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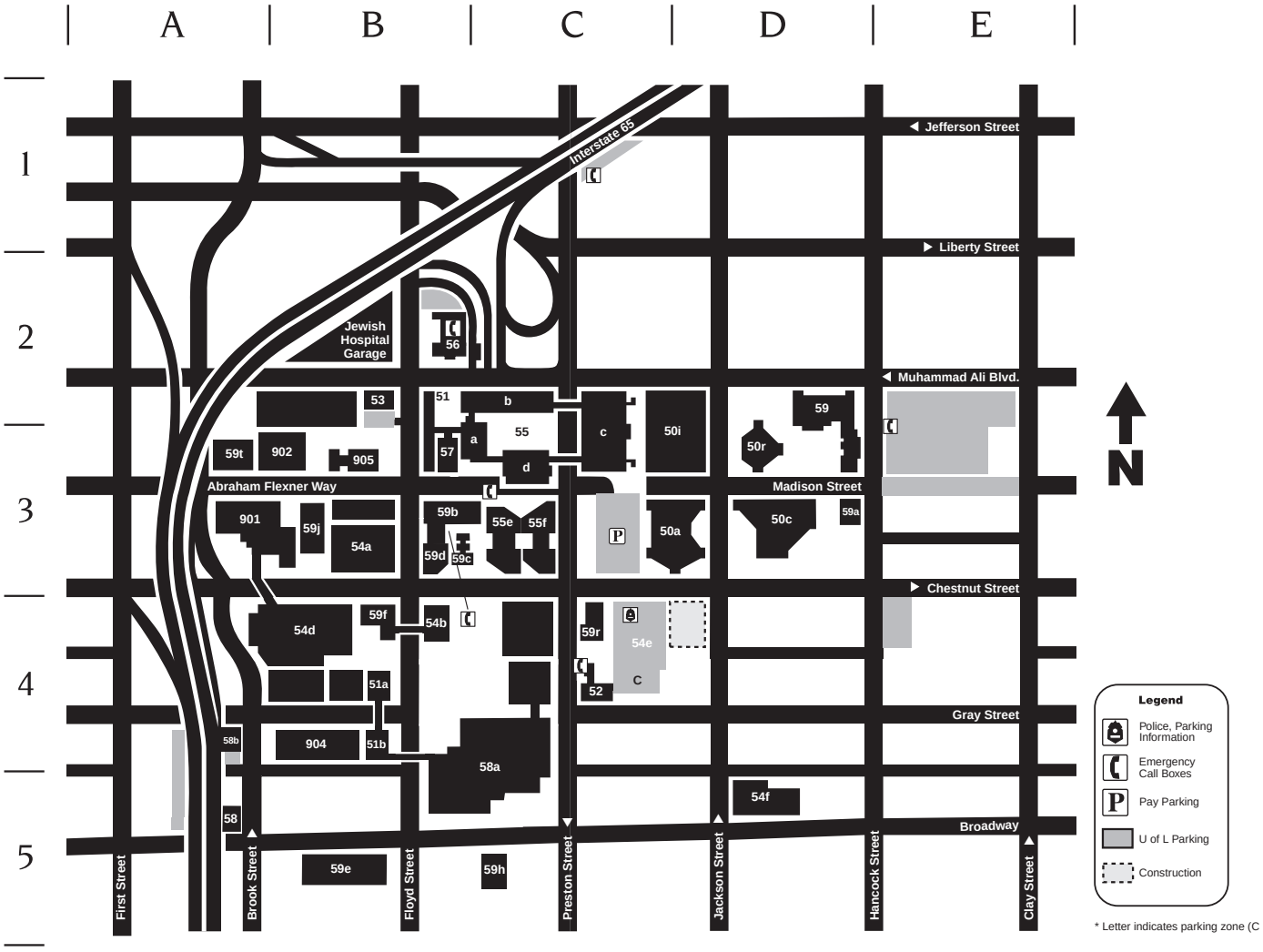
B4 Wellness House (49C)
C4 Wilson Wyatt Hall (Brandeis School of Law) (19)

** Not indicated on map

Health Sciences Center



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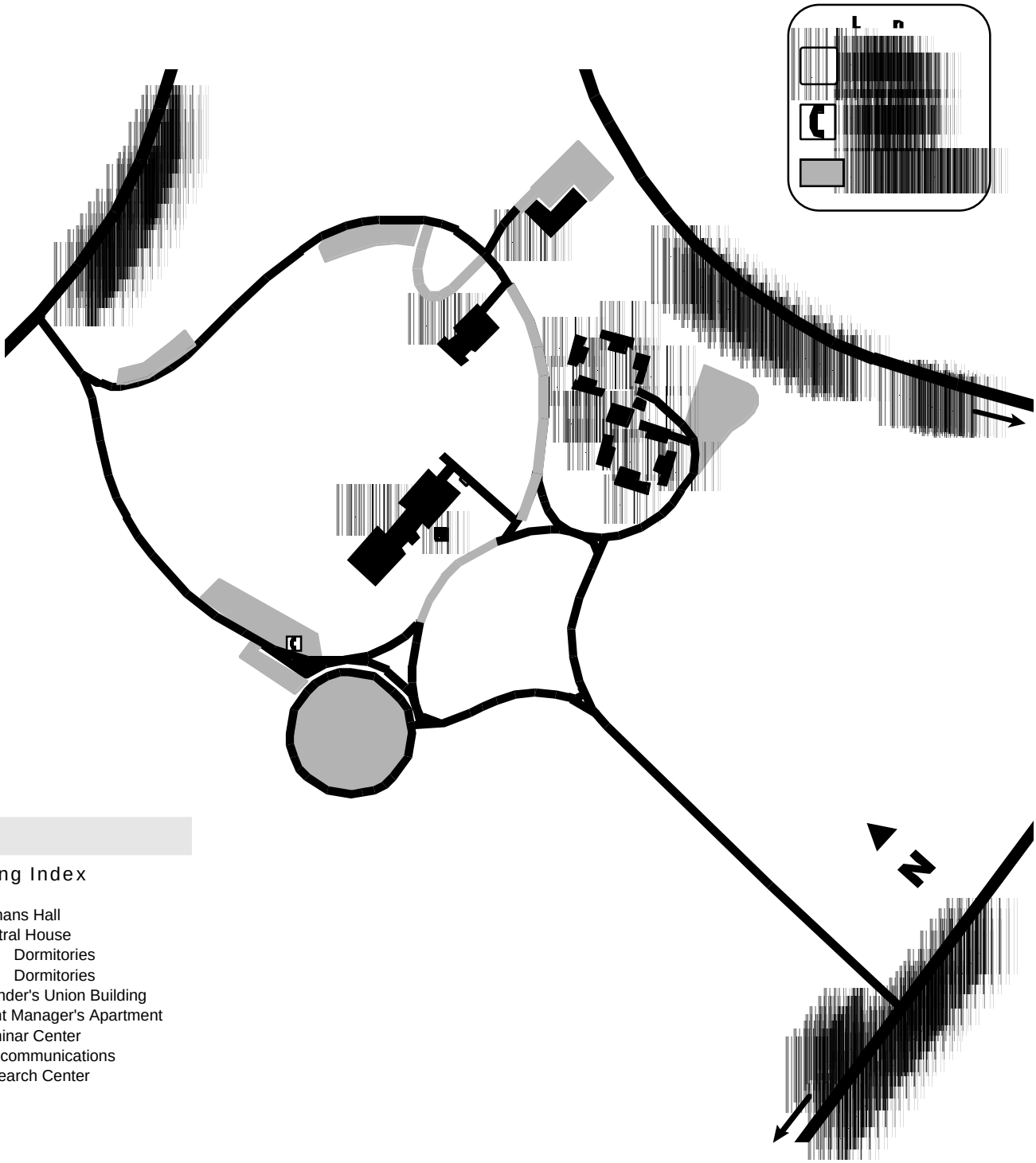
Note: Letters/numbers represent grid location. Numbers in parentheses represent official building numbers.

3B Abell Administration Center (59c)
3C Ambulatory Care Building/ University Physicians Group (50a)
4A Arthur H. Keeney House (58b)
3C Baxter (Donald) Biomedical Research Building (55e)
3C Baxter (Delia) Biomedical Research Building II (55f)
2D Carmichael Building (59)
4C Chestnut Street Parking Structure (54e)
4B Children's Hospital Foundation Building (54b)
3C Dentistry, School of (55c)
3B Deterrence of Biowarfare and Bioterrorism, Center for (59b)
3B Frazier Rehab Institute (59j)
2C HSC Instructional Building (55b)
3D James Graham Brown Cancer Center (50r)
3A Jewish Hospital Rudd Heart and Lung Center (59t)
3A Jewish Hospital (901)
3B Jewish Hospital Outpatient Care Center (902)
2B Jewish Hospital Parking Garage (903)
2B Jewish Hospital Cardiovascular Research Center (53)
2B Kentucky Lions Eye Center (56)
4C Kidney Disease Program (59r)
3C Kornhauser Library and Commons Building (55d)
3B Kosair Children's Hospital (54a)
3B Kosair Charities Pediatric Center (59d)
3D Lampton Building (59a)
4C Medical-Dental Apartments (52)
2B Medical-Dental Research Building (51)
4B Medical Towers, North (51a) and South (51b)
3C Medicine, School of (Research Tower) (55a)
5A Myers Hall (58)
3C Norton Healthcare 224 E. Broadway Building (59e)
4B Norton Healthcare Gray Street Professional Building (904)
4C Norton Healthcare Pavilion (58a)
4B Norton Healthcare Services Building (59f)
4B Norton Hospital (54d)
3B Nursing, School of (59b)
5C Old Turners Building (59h)
3C Parking Deck and Institutional Services Building University of Louisville Hospital (50i)
3B Public Health and Information Sciences, School of (59b)
3B Research Resources Center (57)
5D Medcenter One (54f)
3B Steam and Chilled Water Plant (905)
3D University of Louisville Hospital (50c)

Shelby Campus



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61x Night Manager's Apartment
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