Rubrics
The following is a list of rubrics used for graduate courses. Please note that not all course rubrics currently list courses in the catalog.

Accounting ........................................................ (ACTG)
Administrative Studies in Nursing .................................. (NUAS)
African-American Studies .......................................... (AAST)
Anatomy and Cell Biology ......................................... (ANAT)
Ancient Greek ......................................................... (GKA)
Anthropology ............................................................ (ANTH)
Architecture ............................................................. (ARCH)
Art and Design ........................................................ (AD)
Art History ............................................................... (AH)
Asian American Studies .......................................... (ASAM)
Asian Studies .......................................................... (ASST)
Associated Health Sciences ........................................ (AHS)
Biochemistry and Molecular Genetics .......................... (BCM)
Bioengineering ....................................................... (BIOE)
Biological Sciences .................................................. (BIOS)
Biomedical and Health Information Sciences ............. (BHIS)
Biomedical Visualization ........................................... (BVIS)
Biopharmaceutical Sciences ....................................... (BPS)
Biostatistics ............................................................. (BSTT)
Business Administration ........................................... (BA)
Campus Courses ..................................................... (CC)
Chemical Engineering .............................................. (CHE)
Chemistry ............................................................... (CHEM)
Civil and Materials Engineering ................................. (CME)
Classics ................................................................. (CL)
Committee on Institutional Cooperation ........................ (CIC)
Communication ...................................................... (COMM)
Community Health Sciences ...................................... (CHSC)
Computer Science .................................................... (CS)
Criminal Justice ........................................................ (CRJ)
Curriculum, Instruction, and Evaluation ........................ (CIE)
Disability and Human Development ............................ (DHD)
Disability Studies ..................................................... (DIS)
Earth and Environmental Sciences ............................. (EAES)
Economics .............................................................. (ECON)
Education ............................................................... (ED)
Educational Psychology .......................................... (EPSY)

Electrical and Computer Engineering ........................ (ECE)
Engineering .......................................................... (ENGR)
English ................................................................. (ENGL)
English as a Second Language ................................ (ESL)
Entrepreneurship .................................................... (ENTR)
Environmental and Occupational Health Sciences .... (EOHS)
Epidemiology ......................................................... (EPID)
Finance ................................................................. (FIN)
French ................................................................. (FR)
Gender and Women’s Studies .................................. (GWS)
Geography ............................................................ (GEOG)
Germanic Studies ................................................... (GER)
Graduate College .................................................... (GC)
Graduate College—Life Sciences ............................... (GCLS)
Health Information Management ............................... (HIM)
Health Policy and Administration ............................. (HPA)
Histology ............................................................... (HSTL)
History ................................................................. (HST)
Honors College Courses .......................................... (HON)
Human Nutrition ..................................................... (HN)
Industrial Engineering .............................................. (IE)
Information and Decision Sciences ............................ (IDS)
Information Technology ............................................ (IT)
Interdisciplinary Public Health Sciences ..................... (IPHS)
Interdisciplinary Studies in the Arts ........................... (ISA)
Italian ................................................................. (ITAL)
Italian Studies ....................................................... (JST)
Latin ................................................................. (LAT)
Latin American and Latino Studies ............................ (LALS)
Liberal Arts and Sciences ........................................ (LAS)
Linguistics ............................................................ (LING)
Lithuanian ............................................................ (LITH)
Management ......................................................... (MGMT)
Marketing ........................................................... (MKTG)
Master of Business Administration ............................ (MBA)
Maternal-Child Nursing ......................................... (NUMC)
Mathematical Computer Science .............................. (MCS)
<table>
<thead>
<tr>
<th>Course Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics .......................................... (MATH)</td>
</tr>
<tr>
<td>Mathematics Teaching .................................. (MTHT)</td>
</tr>
<tr>
<td>Mechanical Engineering ................................ (ME)</td>
</tr>
<tr>
<td>Medical Biotechnology .................................. (MBT)</td>
</tr>
<tr>
<td>Medical Education ....................................... (MHPE)</td>
</tr>
<tr>
<td>Medical Humanities ..................................... (MHUM)</td>
</tr>
<tr>
<td>Medical Laboratory Sciences ............................ (MLS)</td>
</tr>
<tr>
<td>Medical-Surgical Nursing ................................ (NUMS)</td>
</tr>
<tr>
<td>Medicinal Chemistry .................................... (MDCH)</td>
</tr>
<tr>
<td>Medicinal Chemistry and Pharmacognosy ............... (PMPMP)</td>
</tr>
<tr>
<td>Microbiology and Immunology ............................ (MIM)</td>
</tr>
<tr>
<td>Movement Sciences ....................................... (MVSC)</td>
</tr>
<tr>
<td>Music ..................................................... (MUS)</td>
</tr>
<tr>
<td>Native American Studies ................................ (NAST)</td>
</tr>
<tr>
<td>Natural Sciences ........................................ (NATS)</td>
</tr>
<tr>
<td>Neuroscience ............................................ (NEUS)</td>
</tr>
<tr>
<td>Nursing Sciences ........................................ (NUSC)</td>
</tr>
<tr>
<td>Occupational Therapy .................................... (OT)</td>
</tr>
<tr>
<td>Oral and Maxillofacial Surgery ........................ (OSUR)</td>
</tr>
<tr>
<td>Oral Medicine and Diagnostic Sciences ................ (OMDS)</td>
</tr>
<tr>
<td>Oral Sciences ............................................ (OSCI)</td>
</tr>
<tr>
<td>Orthodontics ............................................. (ORTD)</td>
</tr>
<tr>
<td>Pathology ................................................ (PATH)</td>
</tr>
<tr>
<td>Pediatric Dentistry ..................................... (PEDD)</td>
</tr>
<tr>
<td>Pharmacognosy .......................................... (PMPG)</td>
</tr>
<tr>
<td>Pharmacology ............................................. (PCOL)</td>
</tr>
<tr>
<td>Pharmacy .................................................. (PHAR)</td>
</tr>
<tr>
<td>Pharmacy Administration ................................ (PMAD)</td>
</tr>
<tr>
<td>Pharmacy Practice ....................................... (PMPR)</td>
</tr>
<tr>
<td>Philosophy ............................................... (PHIL)</td>
</tr>
<tr>
<td>Physical Therapy ......................................... (PT)</td>
</tr>
<tr>
<td>Physics ................................................... (PHYS)</td>
</tr>
<tr>
<td>Physiology and Biophysics .............................. (PHYB)</td>
</tr>
<tr>
<td>Policy Studies ........................................... (PS)</td>
</tr>
<tr>
<td>Polish ..................................................... (POL)</td>
</tr>
<tr>
<td>Political Science ........................................ (POLS)</td>
</tr>
<tr>
<td>Prosthodontics ............................................ (PROS)</td>
</tr>
<tr>
<td>Psychiatric Nursing ..................................... (NUPS)</td>
</tr>
<tr>
<td>Psychology ............................................... (PSCH)</td>
</tr>
<tr>
<td>Public Administration .................................... (PA)</td>
</tr>
<tr>
<td>Public Health Nursing .................................... (NUPH)</td>
</tr>
<tr>
<td>Public Policy Analysis ................................... (PPA)</td>
</tr>
<tr>
<td>Religious Studies ........................................ (RELS)</td>
</tr>
<tr>
<td>Russian .................................................... (RUSS)</td>
</tr>
<tr>
<td>Slavic and Baltic Languages and Literatures .......... (SLAV)</td>
</tr>
<tr>
<td>Social Work .............................................. (SOCW)</td>
</tr>
<tr>
<td>Sociology ............................................... (SOC)</td>
</tr>
<tr>
<td>Spanish ................................................... (SPAN)</td>
</tr>
<tr>
<td>Special Education ....................................... (SPED)</td>
</tr>
<tr>
<td>Statistics ............................................... (STAT)</td>
</tr>
<tr>
<td>Surgery ................................................... (SURG)</td>
</tr>
<tr>
<td>Theatre ................................................... (THTR)</td>
</tr>
<tr>
<td>Urban Planning and Policy .............................. (UPP)</td>
</tr>
<tr>
<td>Women's Health Nursing ................................ (NUWH)</td>
</tr>
</tbody>
</table>
Accounting (ACTG)

417 Advanced Financial Accounting 3 OR 4 hours.
Financial accounting theory for business combinations, consolidated financial statements, international transactions and investments, and partnership accounting. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ACTG 316.

439 Auditing 4 hours.
Introduction to the audit function; ethical and legal environment; audit standards; objectives and procedures; materiality and audit risk; sampling; auditing in a computer environment; reporting. Extensive computer use required.
Prerequisite(s): ACTG 316.

445 Federal Income Tax I 3 OR 4 hours.
Concepts and provisions of federal income taxation applicable to individual taxpayers, partnerships, individuals and trusts. 3 undergraduate hours. 4 graduate hours. Credit is not given for ACTG 445 if the student has credit for ACTG 508. Extensive computer use required.
Prerequisite(s): ACTG 315.

446 Federal Income Tax II 3 OR 4 hours.
Concepts and provisions of federal income taxation on corporations and partnerships; special problems in reorganization, liquidations, and personal holding companies. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): ACTG 445 or the equivalent.

456 Business Law II 3 OR 4 hours.
Commercial law of partnerships, corporations, secured transactions, bankruptcy, real and personal property, wills and trusts, SEC regulations, unfair trade activities. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ACTG 355 or the equivalent.

465 Governmental and Nonprofit Accounting 3 OR 4 hours.
Financial transaction analysis and recording system; budget preparation and control; concepts and principles underlying the financial reports of governmental and nonprofit organizations. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ACTG 316.

474 Accounting Information Systems 3 OR 4 hours.
Skills and concepts that enable the documentation, design, and use of accounting information systems; understanding transaction cycles, sound internal controls, accounting software and the electronic business environment. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): Grade of C or better in ACTG 110 and Grade of C or better in ACTG 111; and IDS 100.

475 Database Accounting Systems 3 OR 4 hours.
Concepts and principles of designing database systems to perform accounting functions, applications of microcomputer accounting software packages systems design tools, and computerized transaction cycles. Same as IDS 475. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): ACTG 111 and IDS 100.

484 International Accounting 3 OR 4 hours.
Financial accounting for international operations, multinational managerial accounting and control, comparative international accounting, international reporting issues, and international taxation. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ACTG 316.

485 Valuation and Analysis 3 OR 4 hours.
Financial analysis and valuation of firms. Corporate strategies, financial reporting issues, and market perceptions. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): ACTG 315 and FIN 300 for undergraduate students. One accounting and one finance class or consent of the instructor for graduate students.

494 Special Topics in Accounting 1 TO 4 hours.
Topics rotate in various areas of accounting, including but not restricted to financial, managerial, governmental and nonprofit accounting, law and business ethics. Explores current issues and proposed alternatives.
Prerequisite(s): Two courses in accounting or finance beyond ACTG 111 and FIN 300 or the equivalent.

495 Competitive Accounting Strategy 4 hours.
Multidisciplinary analysis of organization strategic policy, and decision making, and/or business simulation. Assignments involve extensive library research and oral and written reports.
Prerequisite(s): Senior standing in the College of Business Administration and completion of all other CBA core courses, or consent of the instructor.

500 Introduction to Financial Accounting 4 hours.
Concepts and principles of financial accounting for preparation and evaluation of external reports and financial statements. Credit is not given for ACTG 500 if the student has credit for MBA 501. Extensive computer use required. Prerequisite(s): Admission to the MBA or MS in Accounting or Master of Healthcare Administration program.

502 Financial Accounting I 4 hours.
Accounting theory and practice related to asset valuation, revenue recognition, and the determination of short-term liabilities; aspects of financial statement analysis related to these issues.
Prerequisite(s): ACTG 500.

503 Financial Accounting II 4 hours.
Contemporary financial accounting issues, including liabilities, pensions, tax allocation, leases, price level reporting, investments, capital transactions, and financial statement analysis.
Prerequisite(s): ACTG 500 and ACTG 502 or the equivalents.

506 Management Accounting 4 hours.
Design of cost accounting systems; alternative costing methods; costing for decision making; and budget planning and performance evaluation.
Prerequisite(s): ACTG 500.

508 Federal Income Tax—Graduate 4 hours.
Concepts and provisions of federal income taxation generally applicable to individual taxpayers, corporations, and partnerships. Credit is not given for ACTG 508 if the student has credit for ACTG 445.
Prerequisite(s): ACTG 500.

509 Business Taxation 4 hours.
Commercial law of contracts, sales, commercial paper, agency, suretyship, insurance law, and liability of management.
Prerequisite(s): ACTG 500 or the equivalent.

515 Accounting Theory and Paradigms 4 hours.
Conventional and regulatory approaches to standard setting and theory construction, conceptual framework, and paradigmatic avenues in accounting.
Prerequisite(s): ACTG 503 or the equivalent.

516 Financial Statement Analysis 4 hours.
Use of financial information by decision makers external to the firm; profitability and risk analysis; financial forecasting, and equity valuation. Extensive computer use required. Prerequisite(s): ACTG 502; or approval of the department.

525 Management Control of Strategic Performance 4 hours.
Contemporary overview of the management control systems measuring technological activities, measuring value added, outsourcing noncore compensation plan and performance measurement. Extensive computer use required. Prerequisite(s): ACTG 506; or approval of the department.

535 Advanced Auditing 4 hours.
Review and evaluation of academic research in auditing behavioral and capital market research. Overview of audit research methodology, examination of Sarbanes-Oxley and its effect on Internal Controls, auditing standards, and the accounting profession. Extensive computer use required. Prerequisite(s): ACTG 435.

537 Fraud Examination 4 hours.
Concepts and skills necessary for examining financial fraud. Content will include fraud schemes, prevention and detection of fraud, ethics, forensic software tools, auditing techniques, and the law and regulations governing fraud cases. Extensive computer use required. Prerequisite(s): ACTG 474 and ACTG 502 or equivalents.

545 Taxes and Business Policy 4 hours.
The role of taxes in business decisions. Emphasizes integrating taxes with other variables—behavioral, financial, environmen-
tal, and others. Also discusses the relationship between taxation and financial and managerial accounting.

596 Independent Study in Accounting—
Master’s 1 TO 4 hours. Independent study on an accounting topic chosen with faculty approval; requires a study plan and a paper of length and specification required by a faculty member. Prerequisite(s): ACTG 515 and ACTG 525.

599 PhD Thesis Research 0 TO 16 hours. Research on a topic of the doctoral dissertation. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Faculty approval and attainment of thesis proposal.

Administrative Studies in Nursing (NUAS)

501 Administrative Nursing Models 2 hours. Appraisal and synthesis of theory, research, and practice in the organization and management of the delivery of nursing and healthcare services, including currently used models of nurse care delivery. Prerequisite(s): Consent of the instructor.

502 Strategic Management in Healthcare 3 hours. Examines the essentials of strategic management. An analysis of current and future trends and issues affecting healthcare are reviewed in the context of visioning, strategic planning, and tactical planning. Prerequisite(s): Consent of the instructor.

505 Nursing Systems Operations Management 3 hours. Nursing systems operations management of health services. Examines the managerial role at individual, program, work unit, department, and organizational levels. Includes focus on interaction of the organization and environment. Same as NUH 505. Prerequisite(s): Consent of the instructor.

510 Seminar in Black Child Development 3 OR 4 hours. Race, class, and cultural theories of black child development. Examination of socialization processes and developmental outcomes, with particular attention to social attitudes and behaviors. 3 undergraduate hours, 4 graduate hours. Prerequisite(s): AAST 201 or PSCH 100 or consent of instructor.

441 Topics in African History 3 OR 4 hours. Specific topics are announced each term. Same as HIST 441. 3 undergraduate hours, 4 graduate hours. May be repeated. Prerequisite(s): 3 hours of African history, African-American studies, or consent of the instructor.

445 History of Islam in the African World 3 OR 4 hours. A comprehensive study of the history of Islam and its role among the people of African descent in sub-Saharan Africa and the United States. Same as HIST 445. 3 undergraduate hours, 4 graduate hours. Prerequisite(s): Consent of the instructor.

470 Reading Black Women Writing 3 OR 4 hours. Examines inscriptions of race, gender, class, and sexuality as they shape the literary and critical practices of nineteenth- and twentieth-century black women writers. Same as ENGL 470 and WGS 470. 3 undergraduate hours, 4 graduate hours. Prerequisite(s): AAST 350 or AAST 351 or AAST 355 or AAST 357 or AAST 360; or ENGL 350 or ENGL 351 or ENGL 355 or ENGL 361 or ENGL 363; or consent of the instructor.

481 Topics in African-American History 3 OR 4 hours. African-American history for students with significant background in the field. Topics vary. Same as HIST 481. 3 undergraduate hours. May be repeated if topics vary. Students may register in more than one section per term. Prerequisite(s): AAST 247 or AAST 248 or HIST 104 or HIST 247 or HIST 248 or consent of the instructor.

490 Topics in African-American Literature 3 OR 4 hours. African-American literature and culture for students with significant background in the field. Topics vary. Same as ENGL 473. 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): AAST 357 or
AST 360 or ENGL 357, and senior standing or above; or consent of the instructor.

492 Topics in Social Science Research 3 OR 4 hours.
Inclusive examination of a selected specialized topic based on instructor's field. Topics are drawn from research in political science, psychology, sociology, and history. Undergraduate hours. 4 graduate hours. May be repeated if topics vary. Students may register in more than one section per term. Prerequisite(s): AAST 100 or consent of the instructor.

496 Topics in Race, Ethnic and Minority History 3 OR 4 hours.
Specific topics are announced each term. Same as HST 496. 3 undergraduate hours. 4 graduate hours. May be repeated. Prerequisite(s): 3 hours of history or consent of the instructor.

Anatomy and Cell Biology (ANAT)

403 Human Neuroanatomy 3 hours.
Morphological organization of the nervous system. Functional correlations of neural structures. Same as NEUS 403. Meets eight weeks of the semester. Prerequisite(s): Graduate standing and consent of the instructor. Must be in a degree program.

414 Neuroanatomy for Allied Health Program 3 hours.
Basic development and gross features of the central nervous system and systems neuroanatomy; motor, sensory, and integrative functional areas.

439 Gross Human Anatomy I 5 hours.
Functional and structural anatomy and embryology of the body. Prerequisite(s): Graduate standing and consent of the instructor.

440 Gross Human Anatomy II 2 hours.
Gross morphology and function of the human body. Prerequisite(s): Graduate standing and ANAT 439; or consent of the instructor.

441 Gross Human Anatomy 5 hours.
Functional and structural anatomy of the body. For allied health students. Prerequisite(s): Graduate standing and consent of the instructor; or enrollment in the Doctor of Physical Therapy program or MS in Biomedical Visualization program.

442 Cell Structure and Human Histology 5 hours.
Structure and function of cells and fundamental tissues. Function and microscopic anatomy of organs. Prerequisite(s): Graduate standing and consent of the instructor.

520 Concepts of Synaptic Function and Morphology 2 hours.
Overview of current and classical methods employed in the study of synapses. A review of some of the most interesting aspects of synaptic function, such as sources of synaptic vesicles, synaptic patterns, synaptic plasticity, and synaptic specificity. Prerequisite(s): Consent of the instructor.

521 Plasticity in the Nervous System 2 hours.
Neural plasticity is the ability to adaptively modify neural structure or function. Topics range from developmental plasticity to aging, including response to injury and neurodegenerative diseases, trophic factors, learning and memory, and neural transplantation. Prerequisite(s): ANAT 403 or consent of instructor.

523 Biology of MicroRNAs and other Small RNAs 2 hours.
History overview, and biology of small RNA pathways, including miRNAs, siRNAs, RNA interference, roles in various biological processes, implication in disease pathophysiology and potential therapies. Satisfactory/Unsatisfactory grading only.

527 Cellular and Systems Neurobiology 3 hours.
Molecular and cellular properties of neurons in nerves and sensory cells and their relationship to brain and sensory systems. Same as BIOS 527. Prerequisite(s): Credit in one neuroscience course or consent of the instructor.

544 Advanced Craniofacial Anatomy 3 hours.
Functional and clinical aspects of head and neck anatomy based on detailed laboratory sections, original readings, and project work. Prerequisite(s): Any human gross anatomy course or the equivalent.

554 Neuroendocrinology 2 hours.
Survey of neuroendocrine integration including neuroendocrine regulation of development, homeostasis, reproduction, and behavior. The hypothalamohypophyseal axis receives special attention from both morphologic and functional viewpoints. Prerequisite(s): ANAT 403 or the equivalent.

560 Practicum in the Teaching of Anatomy 1 hour.
Provides an opportunity for supervised discussion and evaluation of materials and methods in teaching the basic anatomical sciences. Satisfactory/Unsatisfactory grading only. May be repeated. No graduation credit. For anatomy and cell biology teaching assistants. Prerequisite(s): Consent of the instructor.

585 Cell Biology 4 hours.
Functional and structural organization of the cell with emphasis on the cellular basis of physiological activity. Same as MIM 585 and PHNB 585.

586 Cell and Molecular Neurobiology 3 hours.
Structure and function of voltage-dependent and neurotransmitter-gated ion channels; the role of these ion channels in synaptic transmission, synaptic modification, and neurotransmission. Same as BIOS 586. Prerequisite(s): BIOS 442 or consent of the instructor.

595 Department Seminar 1 hour.
Oral presentations are made by students each session on timely journal articles, followed by in-depth discussions of the reported research. Presentation of research by invited lecturers. Satisfactory/Unsatisfactory grading only.

596 Independent Study 1 TO 4 hours.
Independent study under the direction of a faculty member. Prerequisite(s): Consent of instructor.

598 Master's Thesis Research 0 TO 16 hours.
Thesis research under the direction of a faculty member. Satisfactory/Unsatisfactory grading only.

599 Research in Anatomy 0 TO 16 hours.
Independent research, directed by a faculty member. Satisfactory/Unsatisfactory grading only.

Ancient Greek (GKA)

498 Advanced Topics in Ancient Greek Literature 3 OR 4 hours.
Intensive reading of ancient Greek literature. Topics vary. 3 undergraduate hours. 4 graduate hours. May be repeated to a maximum of 9 hours. Students may register in more than one section per term. Prerequisite(s): 4 hours of ancient Greek at the 200-level or the equivalent.

499 Independent Reading 3 OR 4 hours.
Individual study under faculty direction. For students qualified by preparation and interest. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 4 hours of ancient Greek at the 200-level or the equivalent.

Anthropology (ANTH)

401 Linguistic Anthropology 3 OR 4 hours.
Exploration of the relationship between language and culture in a cross-cultural perspective. Attention to methods of field research as well as theory and substantive issues. Course information: 3 undergraduate hours. 4 graduate hours.

405 Human Growth and Nutrition 3 hours.
Worldwide variation in human growth and the factors that contribute to differences between populations and individuals in the timing and pattern of growth and development. Same as EPID 405.

409 Ancient Maya Writing, Language, and Culture 3 OR 4 hours.
Recent trends in Maya epigraphy, information gained from Maya hieroglyphs, linguistics, and historical ethnographies are applied to anthropological analyses of past lifeways. Same as LALS 409. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Junior standing or above; and consent of the instructor.

411 Urban Cultural Problems 3 OR 4 hours.
A study of the processes of urbanization and of cultural and social adjustments to the city; illustrated by case studies. 3 undergraduate hours. 4 graduate hours.
413 Social Organization 3 OR 4 hours. Theory and method in the study of kinship and social organization, for advanced undergraduate and graduate students. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ANTH 213 or graduate standing or consent of the instructor.

414 Symbolic Anthropology 3 OR 4 hours. The interpretation of cultures through their ritual, religions, culture, and other types of symbolism, for advanced undergraduate and graduate students. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ANTH 101 or consent of the instructor.

415 Medical Anthropology 3 OR 4 hours. Survey of the history of non-Western medicine: analysis of ecological relationships behind folk medicine; principles and methods of studying ethnomedicine. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ANTH 200 or consent of the instructor.

417 Marxist Approaches to Anthropology 3 OR 4 hours. Issues concerning Marx's theories on primitive societies, the development of his evolutionary model from Morgan's work, and current use of Marxist concepts in anthropology. 3 undergraduate hours. 4 graduate hours.

418 Ethnographic and Qualitative Research Methods 3 OR 4 hours. Practical introduction to the techniques of social scientists for research in natural social settings: participant observation/non-participant observation, interviewing, use of documentary sources, etc. Same as GEOG 418. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Junor standing or above.

420 Seminar in Archaeology and Ethnography 3 OR 4 hours. Case studies of investigations in archeology using research monographs and other primary sources. Substantive data and related theoretical problems are examined simultaneously. 3 undergraduate hours. 4 graduate hours. May be repeated to a maximum of 15 hours. Prerequisite(s): Junior standing or consent of the instructor.

421 Geomorphology and Archaeology 3 OR 4 hours. Relevance of geomorphic processes and landscape development to archaeology; role of geomorphology in archaeological surveys, paleoecological reconstruction, and archaeological interpretation. Elements of geochronology. Same as GEOG 432. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): GEOG 131 or EAES 101 or consent of the instructor.

422 Prehistory of the Levant and the Nile Valley 3 OR 4 hours. Detailed analysis of Levantine and Nile Valley prehistory during the Paleolithic and Holocene. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ANTH 221 or ANTH 222 or consent of the instructor.

423 Andean Prehistory 3 OR 4 hours. An overview of the cultural evolution of the Andean region from the arrival of the first inhabitants to the development of the Inca empire. Same as LALS 423. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ANTH 223 or ANTH 269 or consent of the instructor.

424 Violence 3 OR 4 hours. Explores how men and women have experienced violence historically and in modern times. Students examine how violence is perpetrated through words, pictures, physical harm, and silences. Same as CRJ 424. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CRJ 101 and CRJ 200.

425 Field Techniques in Archaeology 4 hours. Exposure to field methods in archaeology through participation in an actual research project. Students are instructed in field excavation techniques. Usually offered in summer session. Same as GEOG 425. May be repeated to a maximum of 8 hours. Prerequisite(s): ANTH 102 or consent of the instructor. Recommended: Concurrent registration in ANTH 426 or GEOG 426.

426 Laboratory Techniques in Archaeology 4 hours. Exposes students to laboratory methods in archaeology through the analysis of excavated materials. Students are instructed in laboratory techniques. Same as GEOG 426.

440 The Experience of Culture Difference: Culture Shock 3 OR 4 hours. Explores experience of different cultures, the process of learning a different culture, and issues arising from the nature of the encounter in fieldwork. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): One course in social or cultural anthropology or experience in another culture.

441 Psychoanalytic Anthropology I: Cross-Cultural Theory 3 OR 4 hours. Introduction for social scientists to psychoanalytic theory and methods including Freud's theories and more recent developments. Cross-cultural tests and applications of psychoanalytic theories. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): One course in anthropology or psychology, or consent of the instructor.

442 Psychoanalytic Anthropology II: Cross-Cultural Applications 3 OR 4 hours. Explores ways in which anthropologists and analysts have used psychoanalysis to understand individuals, practices, and institutions of other cultures. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ANTH 441 or consent of the instructor.

443 Leadership: Psychology, Strategy, Culture 3 OR 4 hours. Psychological and anthropological theories of leadership developed on our culture will be tested against descriptions of leadership in diverse non-Western societies. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): One course in anthropology.

444 Dreams, Dreaming, and Dream Beliefs 3 OR 4 hours. The dreaming experience examined from the point of view of psychological interpretation, laboratory experiments, and anthropological study of dreams in other cultures. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): One course in anthropology or psychology and junior or senior standing, or consent of the instructor.
453 Seminar in Cultural Ecology 3 OR 4 hours. Cultural ecology and cultural evolution, emphasizing peasant farming and other subsistence systems. Soil management under shifting and sedentary agriculture. Same as GEOG 453. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ANTH 101 or GEOG 151 or consent of the instructor.

455 Quantitative Methods 3 OR 4 hours. Introductory statistics course in statistical methods for anthropological problem-solving. Primary emphasis is on univariate and bivariate statistics, such as means, standard deviations, correlation, chi square, t-tests, and simple regressions. Same as GEOG 455. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): Sophomore standing or above.

477 Remote Sensing of the Environment 4 hours. Principles and practices of processing and interpretation of remotely sensed imagery, including aerial photography, radar, and multispectral satellite images. Hand-on use of image-processing software. Same as GEOG 477. Extensive computer use required.

479 Culture and Colonialism in South Asia 3 OR 4 hours. Examines the emergence of colonial cultures of domination and resistance on the Indian subcontinent from the eighteenth century to 1947. Same as ASST 479 and HST 479. 3 undergraduate hours. 4 graduate hours.

480 Sodiclinguistics 3 OR 4 hours. Variations in language that correlate with variation in societies and smaller social groups; interactions of languages and societies. Same as LNG 480. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): LNG 405 or junior standing and consent of the instructor.

481 Geographic Information Systems I 4 hours. Components and performance of geographic information systems. Geographic hierarchies and data structures. Problems and solutions in handling large geographic files. Geocoding. Same as GEOG 481. Prerequisite(s): GEOG 100 and one from GEOG 278, GEOG 386, IDS 100; or consent of the instructor.

482 Geographic Information Systems II 4 hours. Application of raster- (or grid-) based geographic information systems to the spatial analysis of landscapes. Same as GEOG 482. Prerequisite(s): GEOG 481. Geographic Information Systems III 4 hours. Problems encountered in the analysis and portrayal of geographic data. Topics include taxonomy, regionalization, trend surface analysis, time series, markov probabilities, and computer cartographic procedures for displaying output from analytic procedures. Same as GEOG 483. Prerequisite(s): GEOG 482 or ANTH 482 or consent of the instructor.

484 Mapping with Microcomputers 4 hours. Micocomputer applications, including computer principles for mapping, alternative design for coordinate files, kinds of devices for mapping, direct control of devices for mapping, and characteristics and limitations of mapping programs. Same as GEOG 485. Prerequisite(s): GEOG 475 or consent of the instructor.

485 Computer Cartography 4 hours. The fundamentals of cartography and cartographic design. The use of state-of-the-art, Windows-based computer mapping software for querying and displaying cartographic data contained in GIS databases. Same as GEOG 485.

490 Independent Study 1 TO 6 hours. Independent reading under the supervision of a faculty member. May be repeated to a maximum of 8 hours with approval. Students may register in more than one section per term. Prerequisite(s): Junior standing and consent of the instructor.

494 Special Topics in Anthropology 3 TO 4 hours. Reading, study, and discussion of selected problems for graduate students and majors in anthropology. 3 undergraduate hours. 4 graduate hours. May be repeated to a maximum of 12 hours. Students may register in more than one section per term. Prerequisite(s): Junior standing or approval of the department.

496 Internship 1 TO 4 hours. Professional field experience with an agency or organization in the private or public sector on projects related to the student’s area of specialization. Same as GEOG 490. May be repeated to a maximum of 8 hours. Only 4 hours of credit may be applied toward the minor in Geography. Prerequisite(s): Declared major in Anthropology, minor in Geography, or full graduate standing in Anthropology or Geography and consent of the faculty adviser, head of the department, or the director of internship programs.

500 Social and Cultural Theory I 4 hours. Historical survey of approaches to field and library research in anthropology.

501 Social and Cultural Theory II 4 hours. Continuation of ANTH 500. Prerequisite(s): ANTH 500.

502 Theory and Method in Archaeology 4 hours. Middle-range and general theory in prehistoric archaeology: the reconstruction of prehistoric economic, social, and political systems; cultural materialism and its critiques; cultural ecology and systems theory; social evolution.

503 Hominid, Phylogeny, and Adaptations 5 hours. Data, methods, and approaches for reconstruction of genealogical relationships of species; interpretation of adaptations of extinct species in an evolutionary context.

510 Seminar in Social Organization 4 hours. Theoretical and substantive issues about how societies are organized. Same as GEOG 510. May be repeated to a maximum of 12 hours.

514 Gender Issues in Cross-Cultural Perspectives 4 hours. Selected substantive and theoretical issues in the cross-cultural study of gender roles, conceptions, and relations. Same as GWS 514. Prerequisite(s): ANTH 500 or consent of the instructor.

520 Seminar in Archaeological Theory and Method 4 hours. Theoretical and substantive issues in the study of prehistory and the recovery and interpretation of the archaeological record. May be repeated. Prerequisite(s): ANTH 502 or consent of the instructor.

521 Analysis of Stone Artifacts 4 hours. Analyzing stone objects.
UIC

Anthropology (ANTH)

530 Seminar in Physical Anthropology 5 hours.
A critical examination of current literature on methods and theories dealing with the evolution of primate biology and behavior. May be repeated. Students may register in more than one section per term.

531 Anthrologic Genetics 4 hours.
Basic overview of genetic theory and techniques, followed by a survey of the contributions of human genetics to human adaptation and evolution. Prerequisite(s): Grade of B or better in ANTH 508 or grade of B or better in BOS 220; or consent of the instructor.

532 Advances in Ancient DNA 4 hours.
Basic techniques and special concerns in the application of molecular biology techniques to the study of ancient DNA, followed by a discussion of recent advances and contributions to the field. Prerequisite(s): Grade of B or better in ANTH 531 or grade of B or better in BOS 220.

533 Lab Methods for Ancient DNA 2 hours.
Provides students with laboratory training in molecular biology techniques commonly used in studies of ancient DNA. Prerequisite(s): Consent of the instructor.

534 Dental and Medical Anthropology Within Human Evolution 1 TO 3 hours.
Studies the biological and physical anthropology of hominid teeth and the craniofacial complex with relevant medical anthropology, ethno-pharmacoology, forensic sciences, and paleopathology topics. Same as SQS 534 and PMPG 534. Field work required. A lab experience, independent study, and a research paper is required for 3 hours of credit. Prerequisite(s): Graduate standing and consent of the instructor.

570 Regional Application of Anthropology 4 hours.
Application of a specific theory or the testing of competing theoretical frameworks to data provided by one of the major geographical or cultural areas of the world. Emphasis on deductive reasoning and the derivation and testing of hypotheses with data from several cultures of a single culture area. May be repeated.

594 Special Topics in Anthropology 4 hours.
Study of a selected topic in anthropology. May be repeated to a maximum of 12 hours. Students may register in more than one section per term.

595 Graduate Seminar in Anthropology 1 hour.
Presentations of current research by faculty followed by student discussion. Course is to be taken during student's first year in the graduate program as one of the core courses. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Admission to the graduate program in Anthropology.

596 Independent Study 2 TO 6 hours.
Independent research is done under the supervision of a faculty member. May be repeated to a maximum of 12 hours with approval. Students may register in more than one section per term. Approval to repeat course granted by the department. Prerequisite(s): Consent of the instructor.

597 Project Research 2 TO 6 hours.
The student will do an independent research project with the aid of a faculty advisor. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

599 PhD Thesis Research 0 TO 16 hours.
Research on doctoral dissertation topic. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Admission to candidacy for the PhD in Anthropology.

411 Theory and Critical Analysis in Architecture 4 hours.
Architectural theory and criticism from historical and contemporary examples; development of architectural theory and relationship between architecture and architectural criticism. Prerequisite(s): ARCH 410 and graduate standing in the Master of Architecture program.

412 Women and the Environment 3 OR 4 hours.
Women’s place in the built environment; the role of gender in environmental experience, including women as users, designers, planners, policy makers, and critics. Same as GWS 412. Undergraduate hours. Prerequisite(s): Advanced undergraduate or graduate standing, or consent of the instructor.

414 Professional Practices 3 hours.
Relationship of the discipline of architecture to the professions. Exposure to interdisciplinary studies that may lead to alternative careers in allied businesses and professions. Prerequisite(s): ARCH 252 and approval of the department.

415 Architectural Design Lecture III 2 hours.
Examination of the relationship of architecture to society, technological change, and structural and environmental innovation. Prerequisite(s): ARCH 307 and ARCH 308; and approval of the school. Must enroll concurrently in ARCH 416.

416 Architectural Design Laboratory III 4 hours.
Laboratory component of ARCH 415. Prerequisite(s): ARCH 307 and ARCH 308; and approval of the school. Must enroll concurrently in ARCH 416.

417 Architectural Design Lecture IV 2 hours.
Diverse topics in architecture and interdisciplinary practices; design problems representing areas of specialized interest within and allied to the practice of architecture. Prerequisite(s): ARCH 415. Must enroll concurrently in ARCH 418.

441 Theory of Architecture and Building Analysis 4 hours.
Introduction to discipline of architecture, considering symbolic and use patterns, compositional, spatial, and typological patterns. Prerequisite(s): Graduate standing in the Master of Architecture program.

443 Professional Practice I 2 hours.
Legal and ethical considerations in architectural practice; operation and management guidelines. Overview of the history of the professional architectural practice. Prerequisite(s): Completion of the second plateau or approval of the school.

444 Professional Practice II 2 hours.
Business and financial considerations in architectural practice, scope of services, and communications and marketing guidelines. Internship with clients, consultants, collaborators, and the manufacturing and construction industry. Prerequisite(s): ARCH 443 and approval of the school.

465 Capstone Studio 6 hours.
Capstone senior design studio that culminates in a comprehensive project that explores the relationship of architecture to society, technological change, and structural and environmental innovation. Extensive computer use required. Field trip required at a nominal fee. Fieldwork required. Students will use city as a research laboratory with fieldwork on project sites. Additional scheduled field trips will be made to significant or historical architectural buildings as part of preliminary design research and analysis. Prerequisite(s): ARCH 366 and ARCH 372 and junior standing or above and approval of the department.

466 Option Studio 6 hours.
Topic options studio that culminates B. Arts studio sequel exploring topics at the scale of room, building, city, and region dependent on interests of faculty. Extensive computer use required.
510 Advanced Architectural Design I: 8 hours. Design of multiple or complex building types with emphasis on varying topics related to architectural design. Prerequisite(s): ARCH 554 and ARCH 564 and ARCH 574 or approval of the school. Restricted to students in the final year of study in the Master of Architecture program.

511 Advanced Architectural Design II: 8 hours. Design of a comprehensive, single case study with emphasis on varying topics related to architectural design. Prerequisite(s): ARCH 510 or ARCH 512 or ARCH 514 or ARCH 516 or ARCH 518 or ARCH 551 or ARCH 554 or ARCH 591 or ARCH 596. Restricted to students in the final year of study in the Master of Architecture program.

512 Advanced Architectural Design III: Activist Practice: 8 hours. Design of multiple or complex building types, with an emphasis on the theoretical, technical, political, and economic considerations relating to community activism and identity politics. Prerequisite(s): ARCH 554 and ARCH 564 and ARCH 574 or approval of the school. Restricted to students in the final year of study in the Master of Architecture program.

513 Advanced Architectural Design II: Activist Practice: 8 hours. Design of a comprehensive, single case study, with emphasis on theory and site planning, interior space, building systems, and materials relating to community activism and identity politics. Prerequisite(s): ARCH 510 or ARCH 512 or ARCH 514 or ARCH 516 or ARCH 518 or ARCH 551 or ARCH 554 or ARCH 591 or ARCH 596. Restricted to students in the final year of study in the Master of Architecture program.

514 Advanced Architectural Design I: Architectural Technologies: 8 hours. Design of multiple, public buildings, with an emphasis on the relationships of aesthetics and construction methods in the making of comprehensive architecture. Prerequisite(s): ARCH 554 and ARCH 564 and ARCH 574 or approval of the school. Restricted to students in the final year of study in the Master of Architecture program.

515 Advanced Architectural Design II: Architectural Technologies: 8 hours. Design of a single, public building, with an emphasis on the relationships of aesthetics and construction methods in the making of comprehensive architecture. Prerequisite(s): ARCH 510 or ARCH 512 or ARCH 514 or ARCH 516 or ARCH 518 or ARCH 551 or ARCH 554 or ARCH 591 or ARCH 596. Restricted to students in the final year of study in the Master of Architecture program.

516 Advanced Architectural Design I: Digital Media: 8 hours. Design of multiple or complex building types, with an emphasis on the theoretical, technical, political, and economic considerations relating to digital media. Extensive computer use required. Prerequisite(s): ARCH 530 and ARCH 554 and ARCH 564 and ARCH 574 or approval of the school. Restricted to students in the final year of study in the Master of Architecture program.

517 Advanced Architectural Design II: Digital Media: 8 hours. Design of a comprehensive, single case study, with emphasis on theory and site planning, interior space, building systems, and materials relating to digital media. Extensive computer use required. Prerequisite(s): ARCH 510 or ARCH 512 or ARCH 514 or ARCH 516 or ARCH 518 or ARCH 551 or ARCH 554 or ARCH 591 or ARCH 596. Restricted to students in the final year of study in the Master of Architecture program.

518 Advanced Architectural Design I: Landscape Urbanism: 8 hours. Design of urban landscapes and public spaces as informed by large scale infrastructures, natural environments, and urban systems. Prerequisite(s): ARCH 554 and ARCH 564 and ARCH 574 or approval of the school. Restricted to students in the final year of study in the Master of Architecture program.

519 Advanced Architectural Design II: Landscape Urbanism: 8 hours. Design of public building and/or space, including surrounding urban landscape with emphasis on perceptual, phenotypical, and temporal aspects of design. Prerequisite(s): ARCH 510 or ARCH 512 or ARCH 514 or ARCH 516 or ARCH 518 or ARCH 551 or ARCH 554 or ARCH 591 or ARCH 596. Restricted to students in the final year of study in the Master of Architecture program.
Design Tool, Production, and Presentation medium of two-dimensional and three-dimensional architectural design and building science. Previously listed as ARCH 430.

544 Contemporary Issues in Professional Practice 2 hours.
An introduction to the law and business of architecture, with an emphasis on alternative models for contemporary professional practice. Prerequisite(s): Approval of the department.

551 Introduction to Architectural Design I 6 hours.
Visual communication of architectural concepts through two- and three-dimensional methods; orthographic and paraline drawings, perspective and models. Development of architectural concepts and solution of simple architectural problems. Previously listed as ARCH 451.

552 Introduction to Architectural Design II 6 hours.
Architectural design, with emphasis on the structural and technical determinants of buildings. Functional analysis of buildings and communication of designs through two and three-dimensional techniques. Previously listed as ARCH 452. Prerequisite(s): ARCH 551 and ARCH 561.

553 Architectural Design I 6 hours.
Design of housing in an urban context; analysis and theory of urban fabric and infrastructure; emphasis on architectural form and its relationship to societal factors and user needs. Previously listed as ARCH 453. Prerequisite(s): ARCH 471 and ARCH 552, and ARCH 562; or approval of the department or graduate standing in the Master of Architecture two-year program.

554 Architectural Design II 6 hours.
Design of a public building as a comprehensive design; emphasis on site, context, zoning, codes, structural/mechanical systems, and materials in relation to aesthetics. Integration with ARCH 564 course material. Previously listed as ARCH 454. Prerequisite(s): ARCH 553 and ARCH 563 and ARCH 572 and ARCH 585 or graduate standing in the Master of Architecture two-year program.

561 Building Science I 4 hours.
Examines the architect's role in protecting the health, safety, and welfare of the public through responsible and ethical building practices. Previously listed as ARCH 461. Prerequisite(s): Approval of the school.

562 Building Science II 4 hours.
Introduction to building construction processes, terminology, principles, conventions, standards, applications, restrictions, and communications pertaining to construction materials and assemblies. Previously listed as ARCH 462. Prerequisite(s): ARCH 561.

553 Building Science III 4 hours.
Analysis and integration of architectural building systems. Building envelope, mechanical, electrical, plumbing, vertical transportation, life safety, and structural systems are examined. Previously listed as ARCH 463. Prerequisite(s): ARCH 562.

564 Building Science IV 4 hours.
Exploration into the concept of Total Building Performance. Exploration of conceptual and philosophical issues related to the application of advanced technology in the design, construction, and use of buildings. Previously listed as ARCH 464. Prerequisite(s): ARCH 563.

565 Topics Studio in Interior Intervention 8 hours.
Design of a complex project, with emphasis on small-scale intervention (e.g., rooms, equipment, and media) supported by the theoretical, technical, social, and economic considerations relating to the culture and production of architecture. Extensive computer use required. Fieldwork; field trips required at a nominal fee. Prerequisite(s): Approval of the department. Corequisite(s): Requires concurrent registration in ARCH 595.

566 Topics Studio in Building Intervention 8 hours.
Design of a complex project, with emphasis on medium-scale intervention (e.g., institutional or civic buildings) supported by the theoretical, technical, social, and economic considerations relating to the culture and production of architecture. Extensive computer use required. Fieldwork; field trips required at a nominal fee. Prerequisite(s): Approval of the department.

Corequisite(s): Requires concurrent registration in ARCH 595.

567 Topics Studio in Urban Intervention 8 hours.
Design of a complex project, with emphasis on large-scale intervention (e.g., housing or urban mixed-use developments) supported by the theoretical, technical, social, and economic considerations relating to the culture and production of architecture. Extensive computer use required. Fieldwork; field trips required at a nominal fee. Prerequisite(s): Approval of the department. Corequisite(s): Requires concurrent registration in ARCH 595.

568 Topics Studio in Regional Intervention 8 hours.
Design of a complex project, with emphasis on extra-large-scale intervention (e.g., transportation infrastructure) supported by the theoretical, technical, social, and economic considerations relating to the culture and production of architecture. Extensive computer use required. Fieldwork; field trips required at a nominal fee. Prerequisite(s): Approval of the department. Corequisite(s): Requires concurrent registration in ARCH 595.

569 Thesis Seminar 2 hours.
Thesis seminar is an intensive, advanced program of readings, discussion that structures and represents the intellectual and creative processes of the architect. Required for the Master of Architecture degree. Fieldwork required. Prerequisite(s): Completion of at least one year of architectural graduate course work; 3.00 cumulative grade point average in architecture; and approval of the school.

570 Thesis Research 0 TO 17 hours.
Thesis research as faculty direction. Satisfactory/unsatisfactory grading only. Prerequisite(s): Approval of the department.

571 Architectural Theory 4 hours.
Advanced analysis of structural elements, including fundamental structural planning criteria, stability and rigid body equilibrium, material properties/strong characteristics, historical and contemporary structural precedents. Previously listed as ARCH 472.

572 Architectural Theory 4 hours.
Advanced analysis of structural elements, including fundamental structural planning criteria, stability and rigid body equilibrium, material properties/strong characteristics, historical and contemporary structural precedents. Previously listed as ARCH 472.

573 Architectural Theory 4 hours.
Advanced analysis of structural elements, including fundamental structural planning criteria, stability and rigid body equilibrium, material properties/strong characteristics, historical and contemporary structural precedents. Previously listed as ARCH 472.

574 Architectural Theory 4 hours.
Advanced analysis of structural elements, including fundamental structural planning criteria, stability and rigid body equilibrium, material properties/strong characteristics, historical and contemporary structural precedents. Previously listed as ARCH 472.

575 Architectural Theory and Critical Analysis 4 hours.
Introduction to the intellectual tradition of modern architectural theory, with emphasis on methods and procedures of analysis, explored through the critical interpretation and discussion of exemplary theoretical and historical texts. Previously listed as ARCH 485.

576 Readings in Contemporary Architectural Theory 4 hours.
Students engage advanced theoretical texts in architecture and adjacent disciplines, exploring alternative critical perspectives on a variety of topics, including time, form, space, technology, perception, and representation. Prerequisite(s): Approval of the department.

579 Architectural Study Abroad 0 TO 17 hours.
Lectures, seminars, studio, and independent travel/study abroad. Architectural design, planning, structures, history, and technology. May be repeated to a maximum of 34 hours. Previously listed as ARCH 461. Fieldwork required. Prerequisite(s): Completion of at least one year of architectural graduate course work; 3.00 cumulative grade point average in architecture; and approval of the school.

580 Thesis Seminar 2 hours.
Thesis seminar is an intensive, advanced program of readings, documentation, presentations, and discussion that structures and supports research activity related to individual thesis projects. Satisfactory/unsatisfactory grading only. Prerequisite(s): Fieldwork required. Prerequisite(s): Approval of the department.

581 Independent Study for Graduate Students 1 TO 8 hours.
Individual study. May be repeated to a maximum of 16 hours. Prerequisite(s): ARCH 510 or ARCH 512 or ARCH 514 or ARCH 516 or ARCH 518 or ARCH 551 or ARCH 554 or ARCH 591; and approval of the school. Restricted to students in the final year of study in the Master of Architecture program.

582 Thesis Research 0 TO 16 hours.
Individual research under faculty direction. Satisfactory/unsatisfactory grading only. May be repeated to a maximum of 8 hours. Prerequisite(s): Approval of the school.
Art and Design (AD)

400 Foreign Studies in Art and Design 1 TO 16 hours. Study abroad within approved programs of foreign exchange and/or education. Satisfactory/Unsatisfactory grading only. May be repeated with approval.

408 Virtual Reality 0 TO 5 hours. Advanced concepts and methods in interactive media and virtual reality production for art and design. Programming for customized software tool development. 4 undergraduate hours; 5 graduate hours. Extensive computer use required. Prerequisite(s): AD 405 and AD 407 and credit or concurrent registration in AD 409; and credit or concurrent registration in AD 415; and senior standing or above; or consent of the instructor.

413 Interactive Design 0 TO 5 hours. Advanced examination of graphic design in the new media technologies. 4 undergraduate hours. 5 graduate hours. Extensive computer use required. Prerequisite(s): AD 315 and credit or concurrent registration in AD 412, and senior standing or above.

414 Interactivity in Graphic Design 0 TO 5 hours. Advanced examination of graphic design in the new media technologies. 4 undergraduate hours. 5 graduate hours. Extensive computer use required. Prerequisite(s): AD 315 and AD 317 and credit or concurrent registration in AD 412.

415 Design Colloquium 4 OR 5 hours. Presentations, lectures, and discussions conducted by faculty, design professionals, and individuals from design-related disciplines. Overview and contextual understanding of design theory, practice, process, and research. 4 undergraduate hours. 5 graduate hours. Prerequisite(s): Senior standing or above, and consent of the instructor. Senior students must be in their final semester preparing to graduate at the end of that semester.

418 Independent Study in Graphic Design 1 TO 5 hours. Supervised independent study in graphic design. 1 to 4 undergraduate hours; 2 to 5 graduate hours. May be repeated. Prerequisite(s): Junior or graduate standing, and consent of the instructor. Senior standing or above and consent of the instructor. Taken by faculty invitation only.

420 Interdisciplinary Product Development I 0 TO 5 hours. "Real world" simulation collaborating in teams with other disciplines to assimilate and synthesize information into action plan, design development, and implementation within structured stage-gated product development process. 4 undergraduate hours. 5 graduate hours. Extensive computer use required. Prerequisite(s): AD 320 and AD 321 and credit or concurrent registration in AD 421; and credit or concurrent registration in AD 415; and senior standing or above; or consent of the instructor.

421 Interdisciplinary Product Development II 0 TO 5 hours. Advanced 2-D and 3-D methods in the design of interactive products and art works. Includes human factors, 3-D modeling, and design of 3-D virtual products. 4 undergraduate hours. 5 graduate hours. Extensive computer use required. Prerequisite(s): AD 321 and AD 326 and credit or concurrent registration in AD 420; and senior standing or above; or consent of the instructor.

422 Interactive Product Design 0 TO 5 hours. Capstone course that enables students to select and explore an area of industrial design research. 4 undergraduate hours. 5 graduate hours. Extensive computer use required. Prerequisite(s): AD 420 and AD 422 and credit or concurrent registration in AD 421; and credit or concurrent registration in AD 415; and senior standing or above; and consent of the instructor.

423 Industrial Design Thesis 0 TO 5 hours. Capstone course that enables students to select and explore an area of industrial design research. 4 undergraduate hours. 5 graduate hours. Extensive computer use required. Prerequisite(s): AD 320 and AD 321 and credit or concurrent registration in AD 421; and credit or concurrent registration in AD 415; and senior standing or above; and consent of the instructor.

424 Industrial Design Independent Study 4 OR 5 hours. Supervised independent study in any area of industrial design activity not covered in the regular curriculum. 4 undergraduate hours. 5 graduate hours. May be repeated up to 1 time. Prerequisite(s): AD 320 and AD 321 and senior standing or above; and consent of the instructor.

425 Design Visualization 0 TO 5 hours. Advanced principles, methodologies, and tools for designing both mechanical and electronic interactive products using digital tools as well as analysis utilizing prototyping and user-testing methods.
Applications include interactive Web site design, 4 undergraduate hours. 5 graduate hours. May be repeated up to 1 time. Extensive computer use required.

Prerequisite(s): AD 322 and senior standing or above, and consent of the instructor.

462 Advanced Art/ Studio Critique 6 hours. Critique/discussion for advanced art majors. Prerequisite(s): AD 391 and senior standing or above, and consent of the instructor. Open only to Studio Arts, Photography, and Moving Image majors who have completed their major art requirements.

463 Art/Studio Thesis 6 hours. Exhibition/thesis production and seminar culminating in an exhibition/final thesis show for graduating seniors. Prerequisite(s): AD 462 and senior standing or above, and consent of the instructor. Open only to Studio Arts, Photography, and Moving Image majors who have completed all requirements and are prepared to graduate.

471 Advanced Film/Video/ Animation 0 TO 5 hours. Investigation of contemporary concerns in various areas of film and/or video activity under the direction of an instructor. 4 undergraduate hours. 5 graduate hours. May be repeated up to 2 times. Prerequisite(s): AD 272 or AD 474, and consent of the instructor.

472 Independent Study in Film/Video/ Electronic Visualization 4 TO 12 hours. Supervised independent study in any areas of film, video production, or electronic visualization. May be repeated to a maximum of 12 hours. Students may register for more than one four-hour section per term, or repeat the course in four-hour sections in subsequent terms. Prerequisite(s): 12 hours in any film, video, and/or electronic visualization courses and consent of the instructor.

482 Visual and Verbal Literacy in Art Education 4 hours. Explores relevance of critical theory, text-based contemporary art, cultural studies, and aesthetics to the art school curriculum. Strategies for incorporating reading and writing into arts education. May be repeated once if grade is lower than B. Fieldwork required.

Prerequisite(s): Grade of B or better in AD 261, and credit or concurrent registration in AD 382; and junior standing or above, and approval of the school.

484 Educational Practice with Seminar I 6 hours. The first half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Field experience plus lecture, demonstration, and discussion. May be repeated once if grade lower than B. Graduate credit only with approval of the school.

Prerequisite(s): Grade of B or better in AD 261 and grade of B or better in AD 382; and junior standing or above, and approval of the school.

485 Educational Practice with Seminar II 6 hours. The second half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Field experience, plus lecture, demonstration, and discussion. May be repeated once if grade lower than B. Graduate credit only with approval of the school.

Prerequisite(s): Grade of B or better in AD 261 and grade of B or better in AD 382; and senior standing or above, and approval of the school.

494 Special Topics in Art Therapy 1 TO 5 hours. Specializations, new developments in the field, in-depth study of theory, process, application, or independent study. 1 to 4 undergraduate hours. 2 to 5 graduate hours. May be repeated. Students may register in more than one section per term. A maximum of 8 hours of credit is allowed for undergraduates; 10 hours for graduate students.

Prerequisite(s): Consent of the instructor.

499 Cooperative Education 0 TO 4 hours. Introduction to professional practice offering students the opportunity to couple academic learning with professional experience in an off-campus placement. Satisfactory/Unsatisfactory grading only. May be repeated. Only 6 hours of credit may be counted toward satisfying requirements for any art and design major. Prerequisite(s): Junior standing, a minimum cumulative grade point average of 3.00, and approval of the school.

500 Art and Design Teaching Internship 6 hours. Practical and theoretical aspects of teaching lecture/lab studio, and/or seminar courses in art and design. Satisfactory/Unsatisfactory grading only. May be repeated. No graduate credit.

Prerequisite(s): Consent of the instructor and consent of director of graduate studies.

502 Seminar in Contemporary Theory 4 hours. Developments and current issues in contemporary design, studio, and media arts; major philosophies, debates, and social/environmental aspects (may include visiting lecturers, critics, and discussants). May be repeated. Must be repeated for a minimum of 16 hours of credit.

Prerequisite(s): Consent of the school, graduate faculty committee, and the student's adviser.

507 Special Projects in Art and Design 0 TO 16 hours. Student initiated projects not covered in available curriculum. May be repeated. Students may register in more than one section per term.

Prerequisite(s): Consent of the sponsoring instructor and the graduate faculty committee in the student's area of specialization.

508 Advanced Electronic Visualization and Critique 4 hours. Individualized graduate study; creative projects and research in electronic visualization through a consensutive agreement with graduate adviser. May be repeated. Prerequisite(s): Approval of the school graduate faculty committee.

509 Advanced Electronic Visualization 5 hours. Individualized graduate study; creative projects and research in electronic visualization through a consensutive agreement with graduate adviser. May be repeated. Prerequisite(s): Consent of the school graduate faculty committee and the student's adviser.

510 Advanced Graphic Design and Critique 4 hours. Individualized graduate study; creative projects and research in graphic design by each student through consensutive agreement with graduate faculty committee. May be repeated. Prerequisite(s): Approval of the school graduate faculty committee.

511 Advanced Graphic Design 5 hours. Individualized graduate study; creative projects and research in graphic design by each student through consensutive agreement with graduate adviser. May be repeated. Prerequisite(s): Consent of the school graduate faculty committee and the student's adviser.

520 Advanced Industrial Design and Critique 4 hours. Individualized graduate study; creative projects and research in industrial design by each student through consensutive agreement with graduate faculty committee. May be repeated. Prerequisite(s): Approval of the school graduate faculty committee.

521 Advanced Industrial Design 5 hours. Individualized graduate study; creative projects and research in industrial design by each student through consensutive agreement with graduate adviser. May be repeated. Prerequisite(s): Consent of the school graduate faculty committee and the student's adviser.
530 Advanced Studio Art and Critique 4 hours. Individualized graduate study; creative projects and research in studio arts by each student through consultive agreement with graduate faculty committee. May be repeated. Prerequisite(s): Approval of the school graduate faculty committee.

531 Advanced Studio Arts 5 hours. Individualized graduate study; creative projects and research in studio arts by each student through consultive agreement with graduate adviser. May be repeated. Prerequisite(s): Consent of the School graduate faculty committee and the student’s adviser.

560 Advanced Photography and Critique 4 hours. A forum for presenting and discussing individual work with all photography graduates and faculty participating. May be repeated. Prerequisite(s): Approval of the school graduate faculty committee.

570 Advanced Film/Animation/Video and Critique 4 hours. Individualized graduate study; projects for creative research in film, video, and animation by each student through conference and consultive agreement with graduate faculty committee. May involve supportive consultation in other areas. May be repeated. Prerequisite(s): Approval of the school graduate faculty committee.

588 Computer Graphics II 4 hours. State of the art in computer graphics and interactive techniques: Three-dimensional surface and volume modeling. A laboratory is required. Same as CS 526. Prerequisite(s): CS 488.

594 Special Topics in Art and Design 1 to 4 hours. Specialized research topics in art and design directed and announced by the instructor. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor and the student’s advisor.

597 Master’s Project 0 to 16 hours. Independent research under faculty supervision in a specific area of interest. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 16 graduate hours. Prerequisite(s): 20 hours of 500-level courses and consent of the instructor.

404 Topics in Architecture, Art, and Design 3 or 4 hours. Selected topics in the history of European and North American architecture, art, and design. 3 undergraduate hours. 4 graduate hours. May be repeated if topics vary. Prerequisite(s): Graduate standing or 3 hours in the history of architecture or consent of the instructor.

423 Topics in Modern and Contemporary Architecture 4 hours. Selected topics in modern and contemporary architecture. May be repeated if topics vary. Prerequisite(s): Graduate standing and 4 hours in the history of architecture or consent of the instructor.

424 Topics in Architecture and Urban Form in Chicago 2 to 4 hours. Topics on the development of the built environment of the Chicago metropolitan area, and the effect on its architecture of social, political, and economic forces.

430 Contemporary Photography 3 or 4 hours. Developments in the history of photography since 1950. 3 undergraduate hours. 4 graduate hours. May be repeated if topics vary. Prerequisite(s): 3 hours in the history of photography or consent of the instructor.

432 Topics in Film and Video 3 or 4 hours. Selected studies in genres, schools, individual artists, critics, and theorists of film and video. 3 undergraduate hours. 4 graduate hours. May be repeated if topics vary. Prerequisite(s): Graduate standing or 3 hours in the history of film or consent of the instructor.

434 Women and Film 3 or 4 hours. Roles and representations of women in classical Hollywood, European art, and independent feminist cinemas. Same as ENGL 472 and GWS 472. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ENGL 302 or ENGL 342 or ENGL 361 or ENGL 362 or ENGL 363; and senior standing or above, or consent of instructor.

436 Topics in Modern and Contemporary Design 3 or 4 hours. Topics in modern and contemporary design. 3 undergraduate hours. 4 graduate hours. May be repeated if topics vary. Prerequisite(s): 3 hours in the history of design or consent of the instructor.

441 Topics in Medieval Art and Architecture 3 or 4 hours. Selected topics in European art and architecture of the Middle Ages. 3 undergraduate hours. 4 graduate hours. May be repeated if topics vary. Prerequisite(s): 3 hours of medieval art and architecture or consent of the instructor.

450 Topics in Renaissance Art 3 or 4 hours. Selected topics in Early Renaissance, High Renaissance, or Mannerist Art and Architecture. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): 3 hours in art history at the 200-level or above, or consent of the instructor.

460 Topics in Modern and Contemporary Art 3 or 4 hours. Selected topics in nineteenth- and twentieth-century modern and contemporary art. 3 undergraduate hours. 4 graduate hours. May be repeated if topics vary. Prerequisite(s): 3 hours of modern art and architecture or consent of the instructor.

463 Topics in North American Art and Architecture 3 or 4 hours. Selected topics in North American art and architecture from colonial times to 1945. 3 undergraduate hours. 4 graduate hours. May be repeated if topics vary. Prerequisite(s): 3 hours of North American art and architecture or consent of the instructor.

464 Topics on Art in Chicago 2 to 4 hours. Topics on the survey of art in Chicago, from the nineteenth century to the present, with an emphasis on contemporary Chicago art expressions.

465 Arts of the Black Atlantic 3 or 4 hours. Interdisciplinary and discursive explorations of the visual and artistic expressions of artists of African descent in the New World. 3 undergraduate hours. 4 graduate hours.

470 Topics in Non-Western Art and Architecture 3 or 4 hours. Selected topics in the art and architecture of Africa, Asia, Oceania, and the indigenous peoples of the Americas. 3 undergraduate hours. 4 graduate hours. May be repeated if topics vary.
471 Topics in Asian Art and Architecture 3 OR 4 hours. Selected topics in the art and architecture of Asia. Same as ASST 474. 3 undergraduate hours. 4 graduate hours. May be repeated if topics vary. Prerequisite(s): 3 hours of Asian art and/or architecture or consent of the instructor.

480 History of Collecting and Museology 3 OR 4 hours. The history of collecting and patronage: public and private collections, museums, and commercial art galleries, government funding and the arts. Exhibition planning, research, selection, and catalog preparation. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): AH 110 and AH 111 or consent of the instructor.

481 Museum Practices 3 OR 4 hours. Administration of visual arts organizations, their budgets, staffing, structures, accreditation, and long-range planning. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): AH 480 or consent of the instructor.

482 Museology Internship 6 OR 8 hours. Practical supervised experience in institutions serving the visual arts. Placements in museums, community art centers, college, commercial, or nontraditional galleries, and public agencies. Prerequisite(s): AH 481 or consent of the instructor.

485 Introduction to Historic Preservation 3 OR 4 hours. Preservation planning, historic building restoration, and the political and economic factors affecting the conservation of historic resources. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 3 hours of art history at the 200-level or consent of the instructor.

490 Honors Thesis 3 hours. Individual study on a project selected with the approval of the adviser. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Open only to seniors.

491 Study Abroad in Art History 0 TO 12 hours. Study abroad within an approved foreign exchange program or department-sponsored program. May be repeated with approval. Approval to repeat course granted by the department. Prerequisite(s): Approval of the department.

492 Readings in Art and Architecture History 3 OR 4 hours. Individually planned readings on selected topics under the supervision of a faculty member. 3 undergraduate hours. 4 graduate hours. May be repeated up to 2 times. Students may register in more than one section per term. Prerequisite(s): Junior standing and 3 hours of Art History above the 100-level and consent of the instructor. Enrollment priority will be given to majors and graduate students in Art History.

510 Historiography of the Visual Arts, 1750 to 1960 4 hours. Examines some of the intellectual underpinnings of art history, theory, and criticism and explores ways of doing research and making arguments in art history. Prerequisite(s): Graduate standing in Art History or consent of the instructor.

511 Toward New Histories of the Visual Arts, 1960 to the Present 4 hours. Examines the transformation of Art History theory and criticism since 1960, with regard to issues of gender, class, ethnicity, popular culture, postcolonialism, and contemporary aesthetics. Prerequisite(s): Graduate standing in Art History or consent of the instructor.

522 Issues in Architecture, Design and Urbanism 4 hours. Theories and contemporary critical issues relating to the history of the environment created and modified by people. Readings and presentations on historic and regional variations. Prerequisite(s): Open only to PhD degree students. Only by consent of the director of graduate studies and after all other coursework has been completed.

530 Seminar in the History of Photography 4 hours. Selected topics in the history of photography, with emphasis on primary source materials for research purposes. May be repeated if topics vary.

550 Seminar in Renaissance and Baroque Art and Architecture 4 hours. European art and architecture of the Renaissance. May be repeated if topics vary.

560 Seminar in Modern Architecture, Art, and Design 4 hours. North American and European art architecture, and design between 1780 and 1945. May be repeated if topics vary. Students may register in more than one section per term.

561 Seminar in Contemporary Architecture and Art 4 hours. Selected topics in recent North American or European art architecture, and design. Prerequisite(s): Consent of the instructor.

562 Issues in the Art of the Americas 4 hours. Historical, theoretical, and critical issues in the art of the Americas and the Caribbean; indigenous, imported, and diasporan cultures and the interaction between them.

563 Seminar in North American Architecture and Art 4 hours. North American art and architecture from the colonial period to 1945. May be repeated if topics vary. Prerequisite(s): Consent of the instructor.

570 Seminar in Non-Western Art and Architecture 4 hours. Selected topics in Pre-Columbian, North American Indian, African, and Oceanic art.

590 MA Paper Research 0 TO 16 hours. Student will work with advisers on two qualifying papers. Satisfactory/ Unsatisfactory grading only. Prerequisite(s): Open only to PhD degree students. Only by consent of the director of graduate studies and after all other coursework has been completed.

592 Preliminary Examination Research 0 TO 16 hours. Supervised research and reading in preparation for the preliminary examinations. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 12 hours. Prerequisite(s): Open only to PhD degree students. Only by consent of the director of graduate studies and after all other coursework has been completed.

596 Readings in Art and Architecture 1 TO 4 hours. Individualized readings on selected topics under the supervision of a faculty member. Prerequisite(s): Consent of the instructor.

598 Master’s Thesis Research 0 TO 8 hours. Individual research under faculty direction. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 8 hours. Prerequisite(s): Consent of the instructor.

599 PhD Dissertation Research 0 TO 16 hours. Supervised research on the part of the student. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 24 hours. Prerequisite(s): Consent of the instructor and satisfactory completion of the preliminary examination.

Asian Studies (ASST)

471 Topics in Asian Art and Architecture 3 OR 4 hours. Selected topics in the art and architecture of Asia. Same as AH 471. 3 undergraduate hours. 4 graduate hours. May be repeated if topics vary. Prerequisite(s): 3 hours of Asian art and/or architecture or consent of the instructor.

472 Issues and Events in Twentieth-Century China 3 OR 4 hours. Covers the events, places, people, political movements, ideologies, and issues that shaped twentieth-century China, and considers different approaches to the writing of that history. Same as HIST 472. 3 undergraduate hours. 4 graduate hours. Recommended background: Previous course work in Chinese history at the 100- or 200-level.

473 Topics in East Asian History 3 OR 4 hours. Specific topics are announced each term. Same as HIST 473. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>478</td>
<td>Women in Chinese History</td>
<td>3 OR 4 hours</td>
<td>Focuses on scholarship on women in Chinese society throughout history, dealing with topics such as marriage and family, literacy, career options, women in revolution, and the historiography of the field. Same as GWS 478, and HST 478. 3 undergraduate hours. 4 graduate hours. Recommended background: Previous course work in Chinese history or women's studies.</td>
</tr>
<tr>
<td>479</td>
<td>Culture and Colonialism in South Asia</td>
<td>3 OR 4 hours</td>
<td>Examines the emergence of colonial cultures of domination and resistance on the Indian subcontinent from the 18th century to 1947. Same as ANTH 479 and HST 479. 3 undergraduate hours. 4 graduate hours.</td>
</tr>
<tr>
<td>495</td>
<td>Urban Health Multicultural Seminar</td>
<td>1 hour</td>
<td>Students attend multicultural and urban health-related seminars, participate in faculty-student discussion, academic presentations, and directed reading groups to integrate issues of cultural difference into students' professional development. Satisfactory/ Unsatisfactory grading only. May be repeated. All Academy seminars are pre-approved; other approved events will be announced to students. Any off-campus events must have prior approval. One academic year is required for completion of seminar. Students should register the semester they begin attending lectures; grades will be deferred until course is completed. Prerequisite(s): Sophomore standing or above.</td>
</tr>
<tr>
<td>501</td>
<td>Faculty Research Seminars</td>
<td>1 hour</td>
<td>Faculty presentation of research areas within molecular genetics. Satisfactory/Unsatisfactory grading only. Should be taken in the first year in the PhD in Biochemistry and Molecular Genetics program. Prerequisite(s): Graduate standing in the PhD in Biochemistry and Molecular Genetics program or consent of the instructor.</td>
</tr>
<tr>
<td>502</td>
<td>Somatic Cell and Human Genetics</td>
<td>4 hours</td>
<td>The genetics of somatic cells and advanced human genetics. Gene transfer, mutagenesis, drosophila genetics, genetic linkage and human disease, cancer genetics, and gene therapy. Prerequisite(s): GCLS 501 or consent of the instructor.</td>
</tr>
<tr>
<td>503</td>
<td>Research Methods in Biochemistry and Molecular Genetics</td>
<td>5 hours</td>
<td>Includes topics in current interest in a discipline of associated health sciences. Includes discussions of current journal articles and important new developments in the specific disciplines. Satisfactory/ Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.</td>
</tr>
<tr>
<td>504</td>
<td>Introduction to Biological Chemistry</td>
<td>4 hours</td>
<td>Includes chemistry of cellular constituents: enzymology; metabolism of sugars, proteins, lipids, and nucleic acids; and regulation of metabolism. Prerequisite(s): Organic chemistry. Lecture course designed primarily for students in the College of Dentistry.</td>
</tr>
<tr>
<td>510</td>
<td>Research Methods in Allied Health</td>
<td>3 hours</td>
<td>Application of basic concepts of research methodology to allied health, including problem formulation, research design, sampling, measurement, and data analysis. Emphasis on critique of research studies and preliminary proposal writing. Prerequisite(s): Consent of the instructor.</td>
</tr>
<tr>
<td>513</td>
<td>Structure of Biopolymers</td>
<td>3 hours</td>
<td>Explores the relationship between structural stability, kinetic properties, and function of biopolymers, with particular emphasis on proteins and nucleic acids. Same as MIM 513 and PMPG 513. Prerequisite(s): GCLS 501 or consent of the instructor.</td>
</tr>
<tr>
<td>514</td>
<td>Structure and Function of Nucleic Acids</td>
<td>4 hours</td>
<td>Describes the structure and function of nucleic acids. Unravels the basic molecular mechanisms underlying heredity, including replication, transcription, and recombination. Prerequisite(s): GCLS 501 or consent of the instructor.</td>
</tr>
<tr>
<td>515</td>
<td>Journal Club</td>
<td>1 hour</td>
<td>Student presentation and critical analysis of recent journal articles and current topics in biochemistry and molecular genetics. May be repeated. Prerequisite(s): Consent of the instructor.</td>
</tr>
<tr>
<td>522</td>
<td>Strategies for Effective Scientific Communication</td>
<td>1 hour</td>
<td>Development of critical skills for evaluation, development, and execution of forms of scientific communication, including research and grant proposals, manuscripts describing original research, and review summaries. Satisfactory/ Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.</td>
</tr>
<tr>
<td>526</td>
<td>Molecular and Genetic Analysis</td>
<td>3 hours</td>
<td>Examines developmental mechanisms used in animal model systems. Same as BIOS 526. Prerequisite(s): Graduate standing or consent of the instructor.</td>
</tr>
<tr>
<td>531</td>
<td>Medical Biochemistry I</td>
<td>3 hours</td>
<td>Chemist of biopolymers: enzymology, metabolism of carbohydrates, lipids, amino acids and proteins; molecular biology. Prerequisite(s): Membership in the medical school class or consent of the instructor. Intended primarily for first-year medical students.</td>
</tr>
<tr>
<td>532</td>
<td>Introduction to Molecular Medicine and Genetics</td>
<td>3 hours</td>
<td>Introduction to the principles of molecular medicine and genetics, including molecular biology, hemostasis, gene therapy, mechanisms of mutation, pharmacogenomics, cancer genetics, and immunogenetics. Intended primarily for medical students. Prerequisite(s): BCMS 551 and membership in the medical school or consent of the instructor.</td>
</tr>
<tr>
<td>533</td>
<td>Nutrition for Medical Students</td>
<td>2 hours</td>
<td>Biochemical and nutritional basis of disease including heart disease, hypertension, obesity, malnutrition, and cancer. Prerequisite(s): BCMS 551 and BCMS 552 and membership in the medical school or consent of the instructor. Intended primarily for medical students.</td>
</tr>
<tr>
<td>561</td>
<td>Biochemistry of Cellular Regulation</td>
<td>3 hours</td>
<td>Membrane structure and function, transport, receptor and signal transduction mechanisms, and growth factors. Cytoskeleton and motility, cell-cell communication, enzyme cascades, and cellular control mechanisms.</td>
</tr>
<tr>
<td>563</td>
<td>Principles of Molecular Medicine</td>
<td>3 hours</td>
<td>A lecture/discussion/writing course which integrates biochemical and molecular biological concepts into a clinical context. Diseases will be described in terms of molecular mechanisms. Prerequisite(s): Consent of the instructor.</td>
</tr>
</tbody>
</table>
575
Topics in Biochemistry and Molecular Genetics 3 hours. Students will be exposed to, present, and discuss recent scientific literature in biochemistry and molecular genetics. Prerequisite(s): Completion of the first year of the program and consent of the instructor.

594
Special Topics in Biochemistry and Molecular Genetics 1 TO 3 hours. Topics of current interest in the field of biochemistry and molecular genetics. May include protein structure, membrane proteins and trafficking, development and gene regulation, signal transduction, and cancer biology. May be repeated to a maximum of 6 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

595
Student Research Seminars 1 hour. Research presentations by graduate students in the Biochemistry and Molecular Genetics program. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

598
Master’s Thesis Research 0 TO 16 hours. Investigation carried out by MS candidate under the direction of a faculty member leading to the MS in Biochemistry and Molecular Genetics. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

599
PhD Thesis Research 0 TO 16 hours. Independent dissertation research by the student, under the guidance of the adviser. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Advanced standing in the PhD in Biochemistry and Molecular Genetics program.

Bioengineering (BIOE)

402
Medical Technology Assessment 2 OR 3 hours. Biotechnology course. Assessment of medical technology in the context of commercialization. Objectives, competition, market share, funding, pricing, manufacturing, growth, and intellectual property, many issues unique to biomedical products. 2 undergraduate hours. 3 graduate hours. Prerequisite(s): Junior standing or above and consent of the instructor.

406
Regulation and Manufacturing Practices in Medical Technology 2 OR 3 hours. Biotechnology course. Product requirement definition, FDA, quality system regulation, community Europe, medical device directive, role of management, United States pharmacopeia, toxicity testing, hazard analysis, risk assessment, import/export. 2 undergraduate hours. 3 graduate hours. Prerequisite(s): Junior standing or above and consent of the instructor.

407
Pattern Recognition I 3 OR 4 hours. The design of automated systems for detection, recognition, classification, and diagnosis. Parametric and nonparametric decision-making techniques. Applications in computerized medical and industrial image and waveform analysis. Same as ECE 407. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): MATH 220.

408
Medical Product Development 2 OR 3 hours. Biotechnology course. Major stages of medical product development (investigative, feasibility, development, commercialization, maturation, and growth), regulatory issues, product performance, failure mode and effect analysis, hazard analysis. 2 undergraduate hours. 3 graduate hours. Prerequisite(s): Junior standing or above and consent of the instructor.

415
Biomechanics 3 OR 4 hours. Use of rigid and deformable bodies and rigid body dynamics to analyze various aspects of the human musculoskeletal system. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 204 and ME 210, and either BIOS 442 or BIOS 443.

420
Introduction to Field and Waves in Biological Tissues 3 OR 4 hours. Principles of electromagnetic and ultrasonic interaction with biological systems; characterization of biological materials; diagnostic and therapeutic uses; and techniques of dosimetry and measurement. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ECE 310.

421
Biomedical Imaging 3 OR 4 hours. Introduction to engineering and scientific principles associated with X-ray, magnetic resonance, ultrasound, computed tomographic, and nuclear imaging. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): MATH 210 and PHYS 142.

430
Bioinstrumentation and Measurement Laboratory I 3 OR 4 hours. Theory and application of instrumentation used for physiological and medical measurements. Characteristics of physiological variables, signal conditioning devices, and transducers. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ECE 210; and BIOS 100 or higher.

431
Bioinstrumentation and Measurement Laboratory II 2 hours. Practical experience in the use of biomedical instrumentation for physiological measurements. Prerequisite(s): Credit or concurrent registration in BIOE 430.

432
Biostatistics II 4 hours. Statistical treatment of data, model estimation, and inference are treated in a framework of biological experiments and attributes of data generated from such experiments. Credit is not given for BIOE 439 if the student has credit for BSTT 400. Extensive computer use required. Prerequisite(s): MATH 210 and CS 108 and consent of the instructor. Recommended background: Knowledge of MatLab.

440
Biological Signal Analysis 3 OR 4 hours. Analysis of signals of biological origin. Transient signals, Stability analysis. Control. Probabilities, stochastic processes. Medical applications. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): MATH 210 and senior or graduate standing.

450
Molecular Biophysics of the Cell 4 hours. Introduction to molecular length, time, force, energy scales; statistical thermodynamics of solutions; DNA, RNA, and protein structure and function; experimental methods. Same as PHYS 450. Prerequisite(s): PHYS 245 or the equivalent.

452
Biocatalysis 3 OR 4 hours. Considers the unique characteristics of physiological systems using the framework of linear systems and control theory. Static and dynamic operating characteristics, stability, and the relationship of pathology to control function. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ECE 310; and either BIOS 442 or BIOS 443.

455
Introduction to Cell and Tissue Engineering 3 OR 4 hours. Foundation of cell and tissue engineering covering cell technology, construct technology, and cell-substrate interactions. Emphasis on emerging trends and technologies in tissue engineering. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): BIOS 100 and CME 260 or the equivalent.

456
Cell and Tissue Engineering Laboratory 2 hours. Includes polymer scaffold fabrication, microstamping biomolecules, cellular adhesion and proliferation assays, and immuno/protein tagging. Prerequisite(s): BIOE 455 or consent of the instructor.

460
Materials in Bioengineering 3 OR 4 hours. Analysis and design considerations of problems associated with prostheses and other implanted biomedical devices. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 260 and either BIOS 442 or BIOS 443.

470
Bio-Optics 3 OR 4 hours. Physical principles and instrumentation relevant to the use of light in
biomedical research. Several current and developing clinical applications are explored. 3 undergraduate hours; 4 graduate hours.

Prerequisite(s): PHYS 142.

472 Models of the Nervous System 3 OR 4 hours. Mathematical models of neural excitation and nerve conduction, stochastic models and simulation of neuronal activity, models of neuron pools and information processing, models of specific neural networks. 3 undergraduate hours; 4 graduate hours. Prerequisite(s): ECE 310; and either BIOS 442 or BIOS 443.

475 Neural Engineering I: Introduction to Hybrid Neural Systems 3 OR 4 hours. Modeling, design, and analysis of hybrid systems comprised of living neurons and artificial components; examples drawn from neural and neuromuscular prostheses, biosensors, and bioprotective control of robotics. Same as BIOS 475. 3 undergraduate hours; 4 graduate hours. Prerequisite(s): BIOS 442 and credit or concurrent registration in BIOE 472.

476 Neural Engineering I Laboratory 2 hours. Hands-on experience with computational and experimental models of engineered neural systems, with emphasis on neuroprosthetics and biosensors. Animals used in instruction. Prerequisite(s): Consent of the instructor. 

480 Introduction to Bioinformatics 3 OR 4 hours. Computational analysis of genomic sequences and other high throughput data. Sequence alignment, dynamic programming, database search, protein motifs, cDNA expression array, and structural bioinformatics. 3 undergraduate hours; 4 graduate hours. Prerequisite(s): BIOS 100 and CS 201; or consent of the instructor.

482 Introduction to Optimization Methods in Bioinformatics 3 OR 4 hours. The objectives are to provide the students with a basis for understanding principles of the optimization methods and an insight on how these methods are used in bioinformatics. 3 undergraduate hours; 4 graduate hours. Prerequisite(s): Grade of B or better in BIOE 480.

483 Molecular Modeling in Bioinformatics 3 OR 4 hours. Basic structural and dynamics tools in protein structure prediction, structure comparison, function prediction, Monte Carlo, and molecular dynamics simulations. 3 undergraduate hours; 4 graduate hours. Prerequisite(s): Grade of B or better in BIOE 480.

494 Special Topics in Bioengineering 1 TO 4 hours. Special topics to be arranged. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

500 Interfacial Biosystems Engineering 4 hours. Advanced and detailed description of the fundamentals of biological systems using quantitative approaches. Areas of concentration include bioinformatics, cell and tissue engineering, and neuroengineering. Prerequisite(s): BIOS 442.

504 Emerging Medical Technologies 2 hours. Investigates new and emerging medical technologies following the technical and social sciences process, a medical evaluation of strengths, weaknesses, opportunities, and threats of the identified technologies. Prerequisite(s): BIOS 401 or BIOE 402 or BIOE 403 or the equivalent.

514 Biotransport 4 hours. Diffusion and flow in living systems. Blood rheology and flow. Microcircuitation, oxygen transport, diffusive transport across membranes. Membrane structure; water and ion flows, active transport. Same as CHE 514. Prerequisite(s): CHE 410 or consent of the instructor.


518 Controlled Drug Delivery 3 hours. Controlled drug delivery systems utilizing polymers, synthesis of different types of devices, and the delivery expected from these devices, and mathematical modeling of delivery systems. Same as EPS 518. Prerequisite(s): MATH 220 or approval of the department.

521 Imaging Systems for Biological Tissues 4 hours. Examination of major imaging systems using ionizing and nonionizing energy for characterization of biological tissues and physiological lesions. Prerequisite(s): BIOE 420.

522 Principles of Polymeric Science and Engineering 3 hours. Intermediate polymer science, thermodynamics of polymer solutions, phase separations, MW determination, crystallization, elasticity, kinetics, and processing. Same as EPS 522. Prerequisite(s): MATH 220 or consent of the instructor.

525 Physiological and Cellular Effects of Biomechanical Forces 4 hours. Discuss how biomechanical forces are generated, the impact these forces have on cells and tissues, plus methods for studying them. Mechanisms by which cells may sense forces and transduce this information to the nucleus are also covered. Prerequisite(s): Consent of the instructor.

548 Micro and Nanotechnology for Biomedical Applications 4 hours. This course covers selected topics in micro and nanotechnology underlying biomedical applications; topics include: microfabrication and nanofabrication, microfluidic processes; newMEMS; nanoscale structures as functional biointerfaces. Prerequisite(s): PHYS 244.

550 Principles of Cell and Tissue Engineering 4 hours. Introduction to tissue engineering. Presents principles of biomedical, biochemical, and biomaterials science applied to tissue-engineered organ replacements, implantable medical devices, and drug delivery systems. Prerequisite(s): BIOS 442 or BIOS 443; and CME 260. Recommended background: A course in cell biology.

552 Advanced Biocontrol 4 hours. Modeling and analysis of physiological systems, including such topics as adaptive control, statistical analysis, error signal analysis and the characterization of individual neural control elements. Prerequisite(s): BIOE 452.

560 Processing and Properties of Structural Biomaterials 4 hours. Considers the interrelationships between atomic bonding, atomic/molecular structure, and material processing to provide a fundamental understanding of the properties and performance of advanced biomaterials. Prerequisite(s): CME 260. Recommended background: Credit in BIOE 480.

575 Neural Engineering II—Neural Coding 4 hours. Analytical techniques and models used to assess and predict neural activity. Emphasis on information coding in sensory systems. Prerequisite(s): Consent of the instructor. Recommended background: Working knowledge of MATLAB.

576 Sensory Prostheses Engineering 4 hours. Critical review of existing and emerging prosthetic devices for sensory systems damaged by trauma or disease. Technology and information flow in hybrid systems are emphasized. Prerequisite(s): BIOE 475 and BIOS 442; or consent of the instructor.

579 Neural and Neuromuscular Prostheses 4 hours. Neuromuscular electrical stimulation for ambulation by paraplegics, of upper limb in tetraplegics, of vocal cord and breathing functions, stimulation of bladder, rectum, and visual cortex. Prerequisite(s): Consent of the instructor.

580 Principles of Bioinformatics 4 hours. Bioinformatics analysis of sequence, phylogeny and molecular structure. Focus on probabilistic models and algorithms, as well as structural
Course Descriptions

Biosciences (BIOE)

Computational Functional Genomics 4 hours.
Modern statistical and computational methods relevant to functional genomics. Cell function, gene regulation, and protein expression. Microarray technology and use; cluster analysis; prediction of protein function. Prerequisite(s): BOE 480. Recommended background: Basic knowledge of probability, statistics, vector algebra, calculus, and cell biology.

Internship in Bioengineering 1 TO 4 hours.
Current clinical practice experience in a healthcare setting culminating in a written and oral report. Satisfactory/Unsatisfactory grading only. Prerequisite(s): BOE 430 and BOE 431 and BOE 479.

Advanced Special Topics in Bioengineering 1 TO 4 hours.
Systematic review of selected topics in bioengineering theory and practice. Subjects vary from year to year. May be repeated. Students may register for more than one section per term. Prerequisite(s): Consent of the instructor.

Seminar on Bioengineering 0 TO 1 hour.
Recent innovations in bioengineering theory and practice presented by invited speakers, faculty, and graduate students. Satisfactory/Unsatisfactory grading only. May be repeated. Students who are presenting seminars should register for 1 hour, others for 0 hours.

Independent Study 1 TO 5 hours.
Research on special problems not included in thesis research. May be repeated. Students may register for more than one section per term. Prerequisite(s): Consent of the instructor.

Masters Thesis Research 0 TO 16 hours.
Research in MS thesis project. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term.

PhD Thesis Research 0 TO 16 hours.
Research in PhD thesis project. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term.

Biological Sciences (BIOS).

Educational Practice with Seminar I 6 hours.
The first half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, and approval of the department.

Educational Practice with Seminar II 6 hours.
The second half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, credit or concurrent registration in BIOS 402, and approval of the department.

Natural Products 3 OR 4 hours.
Biogeneric approach to secondary products, terpenes, alkaloids, and any other interesting natural products. Same as CHEM 456. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): One year of organic chemistry.

Mammalian Histology 4 hours.
The microscopic anatomy of tissues and organs in relation to their function. Prerequisite(s): BIOS 225 or BIOS 272.

Laboratory in Electron Microscopy 3 hours.
Laboratory instruction in cell preparation and instrument operation in transmission and scanning electron microscopy. Satisfactory/Unsatisfactory grading only.

Animals used in instruction. Prerequisite(s): Consent of the instructor.

Evolution 4 hours.
Mechanisms of genetic and phenotypic stability and change in populations and species; modes of speciation and macroevolution; trends in evolution. Lecture and discussion. Prerequisite(s): BIOS 220.

Plant and Animal Interactions 3 hours.
Ecology of nonsymbiotic relationships of plants and animals, including protection mutualisms, pollination, seed dispersal, animal herbivory, and plant defense. Prerequisite(s): BIOS 100 and BIOS 101 or the equivalent; and any 200- or 300-level course in biological sciences.

Restoration Ecology 3 hours.
Philosophical, historical, and ecological basis for ecological restoration with emphasis on readings in the primary literature and writing. Prerequisite(s): BIOS 330 or the equivalent.

Plant Diversity and Conservation 4 hours.
Focus on seed-plant diversity: morphological features and family identification; major evolutionary process; evolutionary relationships among plant groups; and goals, problems, and progress in the conservation of plant diversity. Prerequisite(s): BIOS 230.

Population Biology 3 hours.
Evolution, ecology, genetics, and geography of populations; role of genetic and phenotypic variation in the regulation of population numbers and evolutionary potential and on the analysis of population data. Prerequisite(s): BIOS 220 and MATH 180.

Nerve and Muscle Physiology 4 hours.
Function of excitable cells in neural, muscular, and cardiovascular tissues will be studied at both cellular and system levels. Prerequisite(s): Two years of biological sciences.

Animal Physiological Systems 4 hours.
Basic function of renal, respiratory, and digestive systems. Integrative role of endocrine systems. Animals used in instruction. Prerequisite(s): Two years of biological sciences.

Recommended background: Credit in BIOS 442.

Toxicology 3 hours.
Sources of environmental pollution and their ecological and health effects. Prerequisite(s): BIOS 100 and BIOS 101; and one physiology course; and credit or concurrent registration in CHEM 232.

Microbiology 3 hours.
Comprehensive analysis of metabolic, ecological, phylogenetic, and cytological diversity among the major groups of eubacteria and archaebacteria. Prerequisite(s): BIOS 350. Recommended background: Credit in BIOS 456 is strongly recommended.

Biochemistry II 4 hours.
Chemistry of proteins, nucleic acids, carbohydrates, and lipids. Same as CHEM 452. Prerequisite(s): Credit or concurrent registration in CHEM 234.

Biochemistry IV 4 hours.
Continues BIOS 452. Carbohydrate and lipid metabolism, electron transport. Metabolism of amino acids, nucleic acids, proteins. Biosynthesis of macromolecules and regulation of macromolecular synthesis. Same as CHEM 454. Prerequisite(s): BIOS 452 or CHEM 452.

General Virology 4 hours.
Nature of viruses, their morphology, chemical composition, assay, host-parasite interactions, and life cycles. Prerequisite(s): BIOS 220; and either BIOS 222 or BIOS 350.

Principles of Paleontology 4 hours.
Theory and methods of evolutionary paleobiology; includes paleocology, functional morphology, and major features of organic evolution. Same as EAES 466. Prerequisite(s): EAES 360 or BIOS 365 or consent of the instructor.

Neural Engineering I: Introduction to Hybrid Neural Systems 3 OR 4 hours.
Modeling, design, and analysis of hybrid systems comprised of living neurons and artificial components; examples drawn from neural and neuromuscular prostheses, biosensors, and biopotential control of...
483 Mammalian Neuroanatomy 5 hours. Structure and function of the mammalian central nervous system. Animals used in instruction. Prerequisite(s): BIOS 225 or BIOS 272.

484 Neuroscience I 3 hours. Neuroscience as an integrative discipline. Neuroanatomy of vertebrates, neural development, cellular neuroscience, action potential mechanisms, synaptic transmission, and neuropharmacology. Same as PHIL 484 and PSCH 484. Prerequisite(s): BIOS 286 or PSCH 282.

485 Neuroscience II 3 hours. Integrative neuroscience, continuation of BIOS/PSCH/PHIL 484. Sensory and motor systems; learning, memory, and language. Pathology of nervous systems. Philosophical perspectives and modeling. Same as PHIL 485 and PSCH 485. Prerequisite(s): BIOS 484.

486 Animal Behavior and Neuroethology 4 hours. Neural and behavioral mechanisms of environmental information processing and interaction throughout the animal kingdom; emphasis on invertebrate and lower vertebrates. Laboratory emphasizing individual research projects with a final report and occasional field trips required. Animals used in instruction. Prerequisite(s): One advanced course in zoology and animal physiology.

488 Developmental Neurogenetics 3 hours. Classical and molecular genetic approaches to the study of the development of the nervous system, concentrating on studies in fruit flies, nematodes, and vertebrates. Prerequisite(s): BIOS 220 and either BIOS 225 or BIOS 420.

489 Cellular Neurobiology Laboratory 3 hours. Recording from and analyzing the activity of nerve cells, neuronal networks, and other electrically excitable tissues. Prerequisite(s): BIOS 286 or the equivalent.

490 Topics in Ecology and Evolution 3 TO 4 hours. In-depth analysis of advanced topics in ecology and evolution, involving reading primary literature, term paper, student presentations, and critical discussion. Credit varies according to topic offered. May be repeated. Students may register in more than one section per term. Prerequisite(s): Graduate standing or consent of the instructor.

520 Topics in Genetics 2 hours. Discussion of selected topics of current interest in genetics. May be repeated. Students may register in more than one section per term. Prerequisite(s): BIOS 220 and BIOS 221 and consent of the instructor.

524 Molecular Biology I 5 hours. Structural properties and analysis of DNA, RNA, and proteins; principles of cloning and recombinant DNA technologies; DNA replication, repair, recombination, and transposition. Prerequisite(s): Consent of instructor.

525 Molecular Biology II 5 hours. Gene organization and function in lambda, prokaryotes and eukaryotes; promoters, enhancers, RNA splicing, developmental regulation, protein secretion and targeting. Prerequisite(s): BIOS 524 or consent of the instructor.

526 Molecular and Genetic Analysis of Development 3 hours. Examines developmental mechanisms used in animal model systems. Same as BCMG 526. Prerequisite(s): Graduate standing or consent of the instructor.

527 Cellular and Systems Neurobiology 3 hours. Molecular and cellular properties of ion channels in neurons and sensory cells and their relationship to brain and sensory systems. Same as ANAT 527. Prerequisite(s): Credit in one neuroscience course or consent of the instructor.

530 Population Ecology 3 hours. Life histories, population processes and interactions, and theories of distribution and abundance. Prerequisite(s): BIOS 220 and BIOS 221 and BIOS 330 and BIOS 331 and consent of the instructor.

531 Introduction to Ecology and Evolution I 3 hours. Concepts, techniques, and skills needed for research in ecology and evolution. Prerequisite(s): Consent of the instructor.

532 Introduction to Ecology and Evolution II 3 hours. Evolutionary and physiological research. Prerequisite(s): Consent of the instructor.

535 Ecosystems 3 hours. Flow of energy and nutrients in aquatic and terrestrial environments. Prerequisite(s): BIOS 330.

539 Seminar in Ecology and Evolution 0 TO 1 hour. Graduate student and faculty seminars on selected topics in ecology and evolution. Credit is given only upon completion of a seminar presentation. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of instructor.

552 Chemical Biology 4 hours. Major trends and recent developments in research at the interface of chemistry and biology. Same as CHEM 552.

559 Special Topics in Biochemistry 3 TO 4 hours. Selected topics of current interest in biochemistry. Same as CHEM 559. May be repeated. Students may register in more than one section per term. Prerequisite(s): BIOS 454 or CHEM 454 or consent of the instructor.

560 Topics in Paleontology 3 TO 4 hours. In-depth analysis of current problems and issues in paleontology, involving reading primary literature, student presentations, and critical discussions. Same as EAEES 560. May be repeated if topics vary. Prerequisite(s): Consent of the instructor.

582 Methods in Modern Neuroscience 2 hours. Underlying principles and applications of techniques used to analyze nervous system organization and function. Behavioral, electrophysiological, anatomical, and biochemical approaches are considered. Same as NEUS 582. Animals used in instruction.

586 Cell and Molecular Neurobiology 3 hours. Structure and function of voltage-dependent and neurotransmitter-gated ion channels; the role of these ion channels in synaptic transmission, synaptic modification, and neuromodulation. Same as ANAT 586. Prerequisite(s): BIOS 442 or consent of the instructor.

587 Topics in Neurobiology 1 TO 2 hours. In-depth analysis of advanced topics in neurobiology, involving reading primary literature, student presentations, and critical discussion. Credit varies according to the topic offered. May be repeated. Students may register in more than one section per term.

592 Research Seminar 1 TO 2 hours. Presentation of student research with an emphasis on problem-solving and theoretical implications. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of instructor.

593 Introduction to Laboratory Research 2 TO 6 hours. A hands-on, in-depth introduction to selected research topics and laboratory techniques designed for the beginning graduate student. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

594 Special Topics in Biological Sciences 1 TO 2 hours. Selected aspects in biological sciences. Credit varies according to the seminar offered. May be repeated. Students may register in more than one section per term.

595 Departmental Seminar 0 hours. Weekly seminar by staff and invited speakers. Required of graduate students every semester. Satisfactory/Unsatisfactory grading only. May be repeated.

596 Independent Study 1 TO 4 hours. Individualized research projects of limited scope. Not to be used for MS/PhD thesis research. Satisfactory/Unsatisfactory grading only. May be repeated. Students
may register in more than one section per term. **Prerequisite(s):** Consent of the instructor.

**977**  
**Project Research**  2 TO 8 hours.  
Guided research projects on selected topics in specific fields of advanced modern biology. Not to be used for thesis research. Satisfactory/Unsatisfactory grading only. May be repeated. PBHIS 420 or consent of the instructor.

**589**  
**Master's Thesis Research**  0 TO 16 hours.  
Independent research in specialized projects under the direction of a faculty member with appropriate graduate standing, leading to completion of master's thesis. Satisfactory/Unsatisfactory grading only. May be repeated. **Prerequisite(s):** Consent of the instructor.

**598**  
**Doctoral Thesis Research**  0 TO 16 hours.  
Independent research on specialized topics under the direction of a faculty member with appropriate graduate standing, leading to completion of PhD thesis. Satisfactory/Unsatisfactory grading only. May be repeated. **Prerequisite(s):** Consent of the instructor.

---

**Biomedical and Health Information Sciences (BHIS)**

**405**  
**Medical Sciences and Human Pathophysiology**  0 TO 4 hours.  
Introduction of fundamental concepts in pathophysiology. Specific disorders of major organ systems including  
physiology,  manifestation,  diagnostic  tests,  treatment modalities,  pharmacotherapy,  and  complications.  Credit is not given for EHS 405 if the student has credit for HHS 420 or HON 315 or HON 314. Students who require a medical terminology component register for 4 hours and participate in both laboratory and lecture-discussion; all others register for 3 hours and attend lecture-discussion only. Restricted to students who require this course for graduation. Students outside these restrictions may be admitted with consent of the instructor.

**410**  
**Health Data Structures and Management**  3 hours.  
Data structures in clinical information systems, including database design and management, networking and security. Emphasis on "entrepreneurial" skills required to solve organizational information management problems. **Prerequisite(s):** HHS 400 and HHS 480.

**433**  
**Principles of Evidence-Based Healthcare**  2 hours.  
Qualitative and quantitative assessment of human subject clinical research: locating, evaluating, and comparing scientific papers as bases for healthcare education and practice. **Same as** MHE 433. **Prerequisite(s):** Graduate or professional standing and approval of the school.

**437**  
**Healthcare Data**  3 hours.  
Review of data types in a healthcare information system. How data is transformed into information and then again transformed into knowledge through integrated computer systems. **Same as** HPA 437. **Prerequisite(s):** Consent of the instructor.

**499**  
**Information Sources in Biomedical and Health Information Sciences**  1 hour.  
Prepares students to locate, interpret, and evaluate pertinent research information sources. Includes discussion on writing literature reviews. Assignments require the use of a computer with Internet access. **Prerequisite(s):** Junior standing or above required; or consent of the instructor.

**500**  
**Strategic Inquiry in BHIS**  3 hours.  
An overview of research methods appropriate for BHIS, in order to better enable students to make research methods decisions appropriate for their self-selected research project topics. **Prerequisite(s):** Consent of the instructor.

**503**  
**Communication Skills in Health Informatics**  2 hours.  
An application course in which students assess and practice effective written and oral methods of communication skills necessary for health informatics professionals. **Prerequisite(s):** Consent of the instructor.

**504**  
**Methods in Qualitative Inquiry**  3 hours.  
Qualitative research methods to account for systematic description of environments where quantitative methods are not sufficient. **Prerequisite(s):** HHS 500 and HHS 510 or consent of the instructor.
security technology with focus on non-technical security approaches. Taught only online. A UIC net id is required. Prerequisite(s): BHIS 437 and BHIS 510 or consent of the instructor.

520 Health Information Systems Analysis and Design 4 hours. A project course applying systems analysis and design theory to healthcare systems evaluation, modeling, and implementation. Same as HPA 531. Taught online only. A UIC net id is required. Prerequisite(s): BHIS 510 or HPA 510; and graduate standing and consent of the instructor.

525 Social and Organizational Issues in Health Informatics 4 hours. Examines the impact of information systems on the healthcare organization and applies theory through case study analysis. Same as HPA 540. Taught only online. A UIC net id is required. Prerequisite(s): BHIS 510 or HPA 510; and BHIS 515 or BHIS 520 or BHIS 530 or BHIS 520 or HPA 550; and consent of the instructor.

527 Knowledge Management in Healthcare Organizations 3 hours. An examination, through readings, case studies, research publications, and discussion, of the current issues, concepts, and technologies of knowledge management in healthcare organizations. Extensive computer use required. May be offered online, using synchronous and asynchronous discussion, in conjunction with seminar format. Prerequisite(s): Grade of B or better in BHIS 510; and consent of the instructor.

530 Consumer Health Informatics 3 hours. Examines the developing area of consumer health informatics from both theoretical and practical knowledge management perspectives through class discussions. Prerequisite(s): BHIS 510 and HPHS 527 or consent of the instructor. Recommended background: BHIS 505.

538 Healthcare IT Administration 3 hours. Examines organizational and management issues in healthcare IT. Prerequisite(s): BHIS 510 and BHIS 511 and BHIS 537 or consent of the instructor.

546 Leadership Development in Health Informatics 3 hours. Students will analyze, evaluate, and practice the competencies necessary for leadership unique to the health informatics profession. Prerequisite(s): Consent of the instructor.

580 Practicum in Biomedical and Health Information Sciences 3 TO 12 hours. Field experience under supervision of a professional expert in a biomedical and health information sciences setting that is consistent with the student's area of study and career goals. May be repeated. Prerequisite(s): Consent of the instructor.

594 Special Topics in Biomedical and Health Information Sciences 1 TO 3 hours. An in-depth study of a health informatics topic of importance selected by the faculty. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

595 Seminar in Biomedical and Health Information Sciences 1 hour. Provides students with an opportunity to present preliminary research for critique by peers and faculty. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): BHIS 499 and BHIS 500 or consent of the instructor.

596 Independent Study 1 TO 4 hours. For graduate students who wish to pursue independent study not related to their project/thesis research. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

597 Project Research in Biomedical and Health Information Sciences 0 TO 5 hours. Independent investigation that draws upon the professional experience and knowledge synthesis of the student. Students investigate a topic/problem in their field, write an article, and deliver an oral presentation. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): BHIS 499, 500, and 595; and consent of the instructor.

598 Research in Biomedical and Health Information Sciences 0 TO 16 hours. Independent research in one area of biomedical and health information sciences directed by a faculty member. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Foundation courses in research and statistics, or consent of the instructor.

Biomedical Visualization (BVIS)

400 Clinical Sciences for Biomedical Visualization 2 hours. The application of neuroanatomy, genetics, immunology, imaging, and pharmacology to biomedical visualization. An introduction to visual information processing, visual perception, and related technology. Prerequisite(s): Graduate standing.

405 Anatomical Visualization 3 hours. Graphic manipulation and representation of human morphology and gross anatomy. Graphic construction skills, visual standards and conventions, data collection methods, and personal sketch style development. Prerequisite(s): Graduate standing and consent of the instructor.

415 Computer Applications 2 hours. Using the Internet as a communication tool with emphasis on the World Wide Web: FTP, Telnet, HTML authoring, image processing, navigation and interface design. Prerequisite(s): Graduate standing and consent of the instructor.

420 Illustration Techniques 3 hours. Introduction to line, continuous tone, and color rendering techniques. Digital image creation and manipulation, color theory and design, print and electronic publication issues. Prerequisite(s): Graduate standing; and BVIS 405 or consent of the instructor.

430 Surgical Orientation 1 hour. Survey of surgical specialties, including an historical survey and relationship to visual communication. Instruments, aspetic technique, incisions, suturing, principles of wound healing, imaging modalities, and surgical terminology. Prerequisite(s): Graduate standing; and BVIS 405 and consent of the instructor.

440 Instructional Design 2 hours. Instructional design process for print and audiovisual media development in the health sciences. Emphasis on theory in communication, learning, and the instructional design process. Prerequisite(s): Graduate standing and consent of the instructor.

450 Graphic Design 2 hours. Fundamentals of graphic design techniques and imagery production as applied to health science print media. Prerequisite(s): Graduating and one year of basic design courses.

460 3-D Model Design 2 hours. Introduction to the biomimic’s role in 3-D models, anatomical simulators, prosthetics, healthcare exhibits. Exploration of materials and techniques for impression taking, sculpting, mold construction, and casting. Prerequisite(s): Graduate standing.

480 Business Practices 2 hours. Business procedures and organizational structures associated with the role of a biomimic in
institutional, freelance, and small business settings. Topics range from business forms and procedures to legal and ethical issues.

Prerequisite(s): Graduate standing and consent of the instructor.

515 Advanced Graphic Design 3 hours. Application of graphic design techniques to a simulated, multicomponent client project. Exploration of conceptualizing techniques and project management.

Prerequisite(s): BVIS 450.

520 Advanced Imaging Applications 3 hours. Instruction in advanced line imaging and visualization for patient education, editorial and product, and diagnostic image interpretation.

Prerequisite(s): BVIS 420 or consent of the instructor.

525 Animation and Multimedia 4 hours. Production experiences in selected biomedical communications specialties: electronic print media, multimedia, animation, Web site design. Guest instructors with special expertise utilized wherever feasible. Prerequisite(s): BVIS 542 or consent of the instructor.

530 Surgical Illustration 4 hours. Students attend surgery, research surgical procedures, and prepare illustrations for educational and commercial use. Students integrate knowledge of instructional design, anatomy, graphic design, and illustration techniques.

Prerequisite(s): ANAT 441 and BVIS 420 and BVIS 430 and BVIS 440 and BVIS 450.

540 Computer Visualization 4 hours. Construction of 3-D computer models of biological and anatomical structures using software modules, 3-D input devices, and medical scans and data.

Prerequisite(s): BVIS 415. 542

Computer Animation 4 hours. Investigates principles of motion using computer animation techniques to solve contemporary problems in medical education and communication where motion can be used effectively. Involves production from concept to final presentation.

Prerequisite(s): BVIS 415 and BVIS 540 and consent of instructor.

543 Computer Animation II 4 hours. Builds on concepts introduced in BVIS 542—Computer Animation. Further investigation of motion using computer animation techniques to solve contemporary problems in medical education and communication where motion can effectively be used.

Prerequisite(s): BVIS 542 and consent of the instructor.

544 Computer-Based Multimedia 4 hours. An introduction to the use of desktop multimedia development systems. Software options for creating, manipulating, animating and combining graphics, text, video and sound for presentation and electronic publication.

Prerequisite(s): BVIS 415 and BVIS 440.

546 Virtual Reality and Stereography in Biomedical Visualization 2 hours. Introduction to 3-D perception; digital 3-D model creation; 3-D presentation methods; computer configuration for 3-D display; virtual reality in medicine.

Prerequisite(s): Consent of the instructor.

550 Simulators and Models 2 hours. An extension of the principles learned in BVIS 460. Emphasis on materials research and problem solving strategies for complex 3-D projects.

Prerequisite(s): BVIS 460.

554 Anaplastology Materials and Techniques 2 hours. Hands-on experience with prosthetic materials and techniques. Emphasis on health and safety issues related to laboratory equipment and clinical procedures.

Prerequisite(s): AHS 420 and ANAT 441 and BVIS 460.

555 Clinical Anaplastology 4 hours. Concepts of prosthetic rehabilitation. Provision of facial/homato prosthetic services in a multidisciplinary clinical setting requiring direct interaction with patients with disfigurements. Emphasis on prosthetic techniques and materials.

Prerequisite(s): ANAT 441 and AHS 420 and BVIS 460 or consent of the instructor.

580 Practicum in Biomedical Visualization 2 TO 12 hours. Field experience under supervision of a professional expert in a biomedical communication setting that is consistent with student’s area of concentration and career goals. May be repeated. Prerequisite(s): Consent of the instructor.

594 Special Topics in Biomedical Visualization 1 TO 4 hours. Selected topics in specialty areas of biomedical visualization, depending on sufficient student demand and faculty availability, such as pharmaceutical illustration and ocular prosthetic design. May be repeated. Students may register in more than one section per term.

Prerequisite(s): Consent of the instructor.

595 Seminar in Biomedical Visualization 1 hour. Topics of current interest in biomedical visualization. Includes discussion of current journal articles and important new developments in the field. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term.

Prerequisite(s): Consent of the instructor.

596 Independent Study 1 TO 4 hours. For students who wish to pursue independent study not related to their project research. May be repeated. Students may register in more than one section per term.

Prerequisite(s): Consent of the instructor.

597 Project Research 0 TO 5 hours. Independent investigation which engenders the responsibilities of professionals to contribute to their field. Students investigate a topic/problem in their field, write an article, and deliver an oral presentation. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

598 Research in Biomedical Visualization 0 TO 16 hours. Independent research in biomedical visualization directed by a faculty member. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term.

Prerequisite(s): Foundation courses in research and statistics, or consent of instructor.

Biopharmaceutical Sciences (BPS)

423 Adverse Drug Reactions 2 hours. Attention focused on the epidemiology and characterization of adverse reactions. Factors which interplay in adverse reactions to medications are discussed. Reactions characterized in relation to organ systems.

Prerequisite(s): PHAR 403 and PHAR 404, or consent of the instructor.

430 Principles of Toxicology 2 hours. Examines the toxic effects of drugs and chemicals on organ systems. Lectures emphasize basic principles, effects on specific organ systems, major classes of toxic chemicals, and specialized topics such as forensic and industrial toxicology. Same as PCL 430.

Credit is not given for BPS 430 if student has credit for EHIS 457.

470 Clinical Pharmacology I 1 hour. Basic principles of clinical pharmacology/toxicology including clinical trial design, statistical interpretation, pharmacokinetics, drug interactions (side effects) as well as basic mechanisms involved in the above.

Prerequisite(s): Open only to students with third-year professional standing in the Doctor of Pharmacy program or with graduate standing.

471 Clinical Pharmacology II 1 hour. Basic principles of clinical pharmacology applied to critical analysis of patient case histories in major disease states and FDA requirements.

Prerequisite(s): BPS 470.

480 Application of Science to the Law 4 hours. Issues affecting the development, accessibility, and admissibility of forensic science services by the criminal justice system; problems which may compromise the quality, fairness, and effectiveness of scientific inquiries. Same as CRJ 480.

Prerequisite(s): CRJ 210 and CRJ 260, or graduate standing.
494 Special Topics of Current Interest in Biopharmaceutical Sciences 1 TO 3 hours. Courses offered by faculty or a visiting lecturer on a current topic of selected interest. Topics are available on an experimental basis for one offering only. May be repeated to a maximum of 6 hours. Prerequisite(s): Consent of the instructor; good academic standing as defined by UIC policies.

501 Biopharmaceutical Sciences I 4 hours. First part of the fundamental didactic core courses in biopharmaceutical sciences, including fundamental principles of pharmaceutics, pharmacokinetics, scientific ethics, and research design. Prerequisite(s): Graduate standing in the biopharmaceutical sciences program; or approval of the department.

502 Biopharmaceutical Sciences II 4 hours. Second part of fundamental didactic core courses in biopharmaceutical sciences; fundamental principles of cell and molecular biology and pharmacogenomics, pharmacodynamics, and toxicology and research design. Prerequisite(s): BPS 501; and graduate standing in the biopharmaceutical sciences program; or approval of the department.

503 Laboratory Techniques in Biopharmaceutical Sciences 3 hours. Laboratory-based core course in methods and techniques employed in biopharmaceutical sciences research. Credit is not given for BPS 503 if the student has credit for MPMG 502. Prerequisite(s): BPS 502 or consent of the instructor.

506 Industrial Experience 4 TO 10 hours. Recommended to graduate students with no industrial experience. Students spend time working in the pharmaceutical, imaging or cosmetic industry under academic supervision to obtain practical experience. Satisfactory/Unsatisfactory grading only. Prerequisite(s): BPS 501 and BPS 502 and BPS 503 and BPS 510 and BPS 515 and BSTT 400 and GC 401 and GC 470 and GC 471 and BCHE 460.

507 Drug Discovery, Design, and Development 3 hours. Overview of drug development process from target identification and screening through clinical trials and FDA evaluation. Same as MDOC 507 and PMPG 507.

510 Principles of Interfacial Phenomena 3 hours. Quantitative and theoretical principles of physical and chemical sciences as applied to pharmacy, thermodynamics, kinetics, colloid, and surface chemistry in evaluation of pharmaceutical formulations. Prerequisite(s): MATH 480.

515 Dissolution and Bioavailability of Dosage Forms 2 hours. Theory and testing of the release of drug from solid dosage forms, including the effect of dissolution rate on bioavailability. Prerequisite(s): PHAR 323; and approval of the department.

518 Controlled Drug Delivery 3 hours. Controlled drug delivery systems utilizing polymers, synthesis of different types of devices, the delivery expected from these devices, and mathematical modeling of delivery systems. Same as BOC 518. Prerequisite(s): MATH 220 or approval of the department.

519 Percutaneous Drug Delivery 2 hours. Modern methods of drug delivery covering the use of enhancers, prodrugs, lontophoresis and ultrasound are presented. Toxicity testing, regulatory issues for successful marketing, and production issues. Prerequisite(s): Consent of the instructor.

520 Lipid-Based Drug Delivery Systems 2 hours. The preparation, characterization, stability, pharmaceutical cosmetic and diagnostic applications of lipid-based drug delivery systems, including liposomes, micelles, and emulsions prepared with phospholipids. Prerequisite(s): PHAR 323; and approval of the department.

522 Principles of Polymeric Science and Engineering 3 hours. Advanced techniques in polymer science, thermodynamics of polymer solutions, phase separations, MW determination, crystallization, elasticity, kinetics, and processing. Same as BOC 522. Prerequisite(s): MATH 220 or consent of the instructor.

540 Topics in Adverse Drug Reactions 2 hours. Advanced treatment of current adverse drug reaction incidents, involving evaluation of the issues. Prerequisite(s): Consent of the instructor.

542 Pharmacodynamics of Substance Abuse 2 hours. Considers the mechanisms of action, responses, pharmacokinetics, and dependence factors of substance abuse. Emphasis will be placed on research strategies in studying the biological aspects of drug abuse. Prerequisite(s): Consent of the instructor and a course in basic pharmacology.

543 Psychoneuroimmunology 2 hours. The interactions between the immune system, the endocrine system, and the central nervous system specifically as they relate to stress and immunity.

544 Immunotoxicology 2 hours. Basic mechanisms of toxicologic responses to drugs and chemicals due to immediate and delayed hypersensitivity reactions. Emphasis on laboratory methods used in the study of immunotoxicology. Prerequisite(s): Consent of the instructor.

545 Advanced Pharmacokinetics 3 hours. Kinetics of absorption, distribution, metabolism, and excretion of drugs factors affecting these kinetics and their relationship to pharmacodynamics. Prerequisite(s): Consent of the instructor.

551 Pharmacological Basis of Therapeutics I 2 hours. Pharmacological basis of drugs for the treatment of diseases, including cancer, and conditions, such as inflammation of the nervous and gastrointestinal systems. Prerequisite(s): Credit or concurrent registration in BCHE 460 or BPS 502; or approval of the department.

552 Pharmacological Basis of Therapeutics II 2 hours. Pharmacological basis of drugs for treatment of diseases, including cancer, and conditions, such as inflammation of the cardiovascular, renal, and endocrine systems. Prerequisite(s): BPS 551; or approval of the department.

555 Principles of Pharmacogenomics 2 hours. Concept and application of pharmacogenomics in disease diagnosis, prevention, and treatment. Prerequisite(s): BPS 502 or consent of the instructor.

580 Forensic Science: Survey and Foundations 2 hours. Survey course for forensic sciences with emphasis on criminalistics; unique characteristics, underlying philosophies; nature, analytical methods, significance of results with chemical, biological, trace, pattern evidence. Same as CRU 580. Prerequisite(s): Approval of the department.

581 Forensic Analysis of Biological Evidence 4 hours. Forensic blood and physiological fluid identification; DNA typing of biological evidence; report writing; expert testimony. Prerequisite(s): Consent of the instructor.

582 Forensic Chemistry and Trace Evidence Analysis 4 hours. Trace evidence: hairs, fibers, glass, soil, paint and miscellaneous; nature, chemical, instrumental, microscopic methods of analysis; interpretation and significance of trace similarities; expert testimony. Prerequisite(s): Consent of the director of graduate studies.

583 Physical Pattern Evidence Analysis 4 hours. Pattern evidence: individualization, reconstruction; fingerprint classification; questioned documents; handwriting comparison; firearms and toolmark comparisons; scene patterns and reconstruction will be studied in-depth. Prerequisite(s): Consent of the instructor.

584 Forensic Drug Analysis and Toxicology 4 hours. Analysis of commonly abused drugs in their solid-dosage form and in biological media with
emphasis on modern instrumental methods and interpretation of results. **Prerequisite(s):** Consent of the instructor.

586 Topics in Specialty Forensic Examinations 1 TO 4 hours. Topics may vary but will involve around specialty forensic examinations, covering specific evidentiary classes (e.g. drug identification, DNA typing, fingerprints), including forensic laboratory, approaches, and data interpretation. May be repeated if topics vary. Students may register in more than one section per term. **Prerequisite(s):** BPS 581 or BPS 582 or BPS 583 or BPS 584, and consent of the instructor. Students must have credit in the forensic science program core course that covers the specific topic.

588 Expert Witness Testimony and Courtroom Demeanor 3 hours. Trials, hearings, grand jury; expert versus lay witness; personal and behavioral characteristics on the stand; results, and courtroom testimony; simulated trial testimony. **Prerequisite(s):** Approval of the department.

589 Special Topics in Forensic Science 3 hours. Content may vary but will revolve around the philosophic, moral, and managerial problems associated with criminalistics practice. Topics may include evidence collection, analysis, reporting, and testimony to noncriminalistics fields. **Same as CRJ 589.** May be repeated if topics vary. **Prerequisite(s):** Consent of the instructor.

590 Forensic Science Residency 3 hours. In-depth training for casework analysis in a specific forensic discipline (e.g. drug identification, DNA typing, fingerprints) in an approved forensic science laboratory. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 12 hours. **Prerequisite(s):** BPS 581 or BPS 582 or BPS 583 or BPS 584; and consent of the instructor. Students must have credit in the forensic science program core course that covers the specific topic.

591 Topics in Forensic Microscopy 1 TO 4 hours. Topic may vary but will revolve around microscopical characterization of various materials, with emphasis on forensic laboratory methods and approaches, and interpretation of materials comparisons as evidence. May be repeated if topics vary. Students may register in more than one section per term. **Prerequisite(s):** BPS 582 and consent of the instructor.

592 Forensic Science Internship 2 TO 4 hours. Placement in a forensic science or toxicology laboratory or setting, under the supervision of a faculty member, with an accepted research project or paper required. May be repeated to a maximum of 4 hours. Students may register in more than one section per term. **Prerequisite(s):** BPS 580, and consent of the instructor and a minimum of 15 hours of credit earned in the MS in Forensic Science program. **Prerequisite(s):** Approval of the department.

593 Research in Biopharmaceutical Sciences 0 TO 16 hours. Research in biopharmaceutical sciences with the guidance of a faculty mentor. Satisfactory/Unsatisfactory grading only. May be repeated. **Prerequisite(s):** Consent of the instructor.

594 Special Topics in Biopharmaceutical Sciences 1 TO 4 hours. Content varies. Special topics in biopharmaceutical sciences not covered in regular core or elective offerings. May be repeated to a maximum of 4 hours if topics vary. **Prerequisite(s):** Consent of the instructor.

595 Departmental Seminar 1 TO 2 hours. Weekly seminar series on research and experimental techniques in biopharmaceutical sciences. Also consists of journal club at which students will present an article once a year. Satisfactory/Unsatisfactory grading only. May be repeated. Weekly seminar and journal club meet separately from one another. **Prerequisite(s):** Approval of the department.

596 Independent Study in Forensic Science 1 TO 8 hours. Supervised projects may consist of extensive reading or laboratory work, or both, on topics not covered in regular course offerings. Research undertaken for this course may not duplicate that being done for BPS 597 or BPS 598. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** Consent of the instructor.

597 Forensic Science Project Research 3 hours. Supervised research in forensic science; a research project to be designed and completed within one semester. Satisfactory/Unsatisfactory grading only. **Prerequisite(s):** BPS 580, and at least the core course in the MS in Forensic Science program covering the subject area in which the research is to be conducted and consent of the instructor.

598 MS Thesis Research 0 TO 16 hours. For students doing MS thesis research or thesis writing. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 10 hours. A minimum of 6 hours is required. **Prerequisite(s):** Consent of the instructor.

599 Dissertation Research 0 TO 16 hours. PhD thesis research. Satisfactory/Unsatisfactory grading only. May be repeated. **Prerequisite(s):** Consent of the instructor.

Biostatistics (BSTT)

400 Biostatistics I 3 hours. Descriptive statistics, basic probability concepts, one- and two-sample statistical inference, analysis of variance, and simple linear regression. Introduction to a statistical computer package such as MINITAB or SAS. **Prerequisite(s):** BSTT 401 or BSTT 502 or consent of the instructor.

494 Introductory Special Topics in Biostatistics 1 TO 4 hours. Special topics in biostatistics. Content varies. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** Consent of the instructor.

502 Biostatistics Methods I 4 hours. Foundations for and introduction to statistical inference, including one- and two-sample problems; regression analysis, including multiple regression and indicator variables. **Prerequisite(s):** College calculus, including multivariate calculus, concurrent registration in BSTT 503, and consent of the instructor.
503 Biostatistics Laboratory 2 hours. Use of spreadsheets for statistical investigations; use of statistical software; matrix theory, including methods relevant in biostatistical analysis. Prerequisite(s): Concurrent registration in BSTT 502 and consent of the instructor.

504 Biostatistics Methods II 4 hours. Analysis of variance and multiple comparisons; model building and diagnostics; generalized linear models; logistic and Poisson regression; introduction to repeated measures and mixed models. Prerequisite(s): BSTT 502 and BSTT 503, or consent of the instructor.

511 Categorical Data Analysis 3 hours. Contingency tables and their tests, measures of association, stratified analysis; logistic regression, generalized linear model, Poisson regression, log-linear model, matched data, marginal homogeneity, ordinal data. Prerequisite(s): BSTT 504 and STAT 411, or consent of the instructor.

512 Survival Analysis 3 hours. Concepts of lifetime or survival distributions, especially with censored data; nonparametric estimation of the survival function; rank tests; proportional hazards regression models; parametric models. Prerequisite(s): BSTT 504 and STAT 411, or consent of the instructor.

513 Longitudinal Data Analysis 4 hours. Application and theory of models for longitudinal data analysis for both continuous and categorical response data, including use of statistical software for these methods. Prerequisite(s): STAT 411 and BSTT 504, or consent of the instructor.

514 Biostatistical Consulting 2 hours. Discussion of techniques required for successful biostatistical consultation; effective communication, problem formulation, data analysis, oral and written reports, supervised consulting experience. Prerequisite(s): BSTT 504 and consent of the instructor. Restricted to students enrolled in the Biostatistics major.

521 Applied Multivariate Analysis 3 hours. Analysis of vector of responses; MANOVA, data reduction methods; introduction to cluster analysis, discriminant analysis, and structural equation models. Prerequisite(s): BSTT 513 and consent of the instructor.

522 Biostatistical Investigations 4 hours. Analysis of several large data sets that will require integration of numerous biostatistical tools; written summarization and discussion of results. Prerequisite(s): BSTT 511 and BSTT 512 and BSTT 513 and BSTT 514; and concurrent registration in BSTT 521.

531 Advanced Statistical Inference 3 hours. An in-depth consideration of some important ideas of statistical inference including large-sample theory, estimation, and testing. Specific topics to be covered include asymptotic theory, parameter estimation methods, and hypothesis testing. Some computer use in class. Prerequisite(s): Consent of the instructor. Open only to PhD degree students. Recommended background: MS degree in Biostatistics or the equivalent.

533 Linear Models 4 hours. Generalized inverse matrices; distributions for quadratic forms; estimability and testable hypotheses; constrained linear model; applications to regression, ANOVA, ANCOVA model; variance component models. Prerequisite(s): Consent of the instructor. Open only to PhD degree students. Recommended background: MS degree in Biostatistics or the equivalent.

594 Special Topics in Biostatistics 1 TO 4 hours. Advanced special topics. Content varies. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

595 Biostatistics Research Seminar 1 hour. Current developments in theory and application of biostatistics and epidemiology with presentations by faculty and visiting scientists. Satisfactory/Unsatisfactory grading only. May be repeated.

Business Administration (BA)

589 Corporate Business Internship Program 0 TO 3 hours. Corporate business internship provides graduate students an opportunity to gain practical work experience in their field of study and to test their career choice. Satisfaction/Unsatisfactory grading only. May be repeated to a maximum of 6 hours. Nongraduate credit for students in the following: MS in Accounting or MS in Management Information Systems. Prerequisite(s): Consent of the director of the Business Career Center. Approval by the director of graduate studies prior to registration is required for students in the MS in Accounting and MS in Management Information Systems programs.

594 Special Topics in Business Administration 1 TO 4 hours. An intensive study of a selected topic in business administration. Topics vary by section and by term. May be repeated to a maximum of 16 hours if topics vary. Students may register in more than one section per term. Prerequisite(s): Consent of the graduate business program advisor.

Chemical Engineering (CHE)

410 Transport Phenomena 3 OR 4 hours. Continuum theory of momentum, energy, and mass transfer. Viscous behavior of fluids. Laminar and turbulent flow. Thermal conduction and convection, diffusion and coupled operations. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CHE 312 or consent of the instructor.

413 Introduction to Flow in Porous Media 3 OR 4 hours. Theoretical modeling of single-phase and multiphase flow in porous media. Darcy’s law and relative permeabilities, Oil production and hydrology. Capillary phenomena. Dispersion and miscible displacement. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CHE 312 or consent of the instructor.

421 Combustion Engineering 3 OR 4 hours. Combustion chemistry and thermochimistry; Kinetics and mechanism of combustion; ignition and pollutant formation. Detonation and deflagration; premixed and diffusion flames; Surface reaction and droplet combustion. Applications. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CHE 301 and CHE 321.

422 Biochemical Engineering 3 OR 4 hours. Enzyme-catalyzed and microbially-mediated processes. Free and immobilized enzymes. Batch and continuous cell cultures. Transport phenomena in microbial systems and fermentation processes. Design of biological reactors. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Consent of the instructor.

423 Catalytic Reaction Engineering 3 OR 4 hours. Catalytic reactions which occur under conditions for which heat and mass transfer cannot be neglected are considered. Includes porosimetry, surface area measurements and catalytic deactivation. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CHE 321 or consent of the instructor.

431 Numerical Methods in Chemical Engineering 3 OR 4 hours. Introduction to the application of numerical methods to the solution of complex and often nonlinear mathematical problems in chemical engineering. Includes methods for the solution of problems arising in phase and chemical reaction equilibria, chemical kinetics, and transport. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Graduate or advanced undergraduate standing.

438 Computational Molecular Modeling 3 OR 4 hours. Provide students with a fundamental understanding of the methods, capabilities, and limitations of molecular simulations. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): CHE 301. Recommended background: Engineering/science.

3 undergraduate hours. 4 graduate hours. Prerequisite(s): CHE 410 or consent of the instructor.

441 Computer Applications in Chemical Engineering 3 OR 4 hours. Nonnumerical applications of computers: artificial intelligence and expert systems for chemical engineering design and online diagnosis; data acquisition and control for digital process control; process design calculations. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): MATH 220 or the equivalent.

445 Mathematical Methods in Chemical Engineering 3 OR 4 hours. Advanced mathematical techniques in chemical engineering. Includes infinite series in thermodynamic perturbation theory; Laplace transforms in process control; chemical diffusion transport theories and differential equations. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): MATH 220 or the equivalent.

450 Air Pollution Engineering 4 hours. Environmental aspects of combustion processes, pollutant formation, control of pollutants and particulates, air quality control. Fundamentals of combustion. Same as ME 450. Prerequisite(s): ME 321 or consent of the instructor.

456 Fundamentals and Design of Microelectronics Processes 3 OR 4 hours. Design and practical aspects of the most advanced state of micro and nanoelectronics processing with emphasis on thin film deposition, substrate passivation, lithography and etching with thermodynamics, kinetics, reactor design, and optimization. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): Graduate standing or consent of the instructor. Recommended background: Engineering/science.

494 Selected Topics in Chemical Engineering 1 TO 4 hours. Systematic study of selected topics in chemical engineering theory and practice. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.


502 Fluid Phase Equilibria 4 hours. Application molecular theories of fluids to phase equilibrium systems. Intermolecular potentials, partition functions, correlation functions, chemical potentials, fugacity and activity coefficient and their relationships. Prerequisite(s): CHE 301 or equivalent.

503 Thermodynamics of Multicomponent Mixtures 4 hours. Thermodynamic theories of mixtures. Molecular principles of various solution theories. Conformal solutions, lattice theories, group contribution function theories, and perturbation and variational theories. Prerequisite(s): CHE 502 or the equivalent.


510 Separation Processes 4 hours. Advanced coverage of equilibrium stage apparatus. Multicomponent separation and distillation, unsteady state adsorption processes. Separation efficiencies and energy requirements. Prerequisite(s): CHE 410.

511 Advanced Mass Transfer 4 hours. Analysis of diffusion and mass transport in chemical engineering systems. Unsteady state diffusion convective diffusion, mass transfer coefficient dispersion and the study of diffusion and reaction and simultaneous mass transport. Prerequisite(s): CHE 410.

512 Microhydrodynamics, Diffusion, and Membrane Transport 4 hours. Theoretical and numerical fluid mechanics of microstructure; potential flow and virtual mass, quasistatic versus transient Stokes flow, integral theorems, multiple expansions, singularity solutions, fluctuations, and current applications. Prerequisite(s): CHE 410 and CHE 445 or consent of the instructor.

514 Biortransport 4 hours. Diffusion and flow in living systems. Blood rheology and flow. Microcirculation, oxygen transport, diffusive transport across membranes. Membrane structure; water and ion flows, active transport. Same as BDE 514. Prerequisite(s): CHE 410 or consent of the instructor.

524 Characterization Techniques in Catalysis 4 hours. The most common crystallographic, spectroscopic, and physicochemical techniques for characterization of bulk solids, solid surfaces, and gas-solid interactions are surveyed. Prerequisite(s): Consent of the instructor.


592 Specialized Problems 4 TO 8 hours. Specialized problems under faculty supervision. Prerequisite(s): Consent of the instructor.

594 Advanced Topics in Chemical Engineering 1 TO 4 hours. Systematic study of advanced topics in chemical engineering theory and practice. Subjects vary from year to year. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

595 Seminar in Chemical Engineering Research 1 hour. Advances in chemical engineering research will be discussed in a seminar setting. Students will be expected to make presentations in areas of catalysis, thermodynamics, transport phenomena, and kinetics. Prerequisite(s): Graduate standing in chemical engineering.

597 Project Research 0 TO 4 hours. A research design or reading project approved by the committee appointed by the director of graduate studies. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor. Recommended background: Completed required classes in curriculum.

598 MS Thesis Preparation 0 TO 16 hours. Individual research in specialized problems under faculty supervision. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

599 PhD Thesis Preparation 0 TO 16 hours. Individual research in specialized problems under faculty supervision. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

Chemistry (CHEM) 414 Inorganic Chemistry I 3 OR 4 hours. Introduction to the principles of inorganic chemistry. Structural and descriptive chemistry of the main-group elements. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CHEM 342 or consent of the instructor.

415 Inorganic Chemistry Laboratory 2 hours. Advanced inorganic chemistry laboratory. Preparative methods, Schlenk techniques, dry box, Fourier-transform infrared and UV-visible spectroscopy, crystal growth. Prerequisite(s): Credit or concurrent registration in CHEM 414.
416 Inorganic Chemistry II 3 OR 4 hours. Structural and descriptive chemistry of the transition elements. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CHEM 414.

421 Instrumental Analysis 4 hours. A survey of contemporary instrumentation for chemical analysis. Emphasis on fundamentals of instrumental methods with actual experience on typical equipment. Includes two weekly three-hour laboratories. Prerequisite(s): CHEM 222 and CHEM 343 or the equivalent.

432 Intermediate Organic Chemistry 2 OR 3 hours. Rigorous treatment of the principles upon which modern organic chemistry is developed. 2 undergraduate hours. 3 graduate hours. Prerequisite(s): CHEM 235 and CHEM 342.

444 Physical Chemistry III 2 OR 3 hours. Application of quantum mechanics to molecular spectroscopy, statistical mechanics and activated complex theory. 2 undergraduate hours. 3 graduate hours. Prerequisite(s): CHEM 346.

448 Statistical Thermodynamics 3 OR 4 hours. Introduction to statistical mechanics, partition functions, chemical equilibrium, assemblies, fluctuations, real gases, Einstein and Debye models of solids, magnetic materials, electrolytes, introduction to liquids. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CHEM 346.

452 Biochemistry I 4 hours. Chemistry of proteins, nucleic acids, carbohydrates, and lipids. Same as BIOS 452. Prerequisite(s): Credit or concurrent registration in CHEM 234.

454 Biochemistry II 4 hours. Continues BIOS 452. Carbohydrate and lipid metabolism, electron transport, metabolism of amino acids, nucleic acids, proteins. Biosynthesis of macromolecules and regulation of macromolecular synthesis. Same as BIOS 454. Prerequisite(s): BIOS 452 or CHEM 452.

455 Biochemistry Laboratory 3 hours. Introduction to modern biochemistry and molecular biology research. Includes recombinant DNA techniques, protein purification, site-directed mutagenesis, polymerase chain reaction, enzyme kinetics, protein structure data analysis, and molecular graphics. Prerequisite(s): CHEM 222 and CHEM 452.

456 Natural Products 3 OR 4 hours. Biogenic approach to secondary metabolites. General principles and selected studies of phenolic compounds, terpenes, alkaloids, and other interesting natural products. Same as BIOS 416. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): One year of organic chemistry.

470 Educational Practice with Seminar I 6 hours. The first half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, and approval of the department.

471 Educational Practice with Seminar II 6 hours. The second half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, credit or concurrent registration in CHEM 470, and approval of the department.

472 Teaching Methods in Chemistry 0 TO 4 hours. A course in the methods of teaching high school chemistry, including laboratory and the integration of technology. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): 24 semester hours of undergraduate chemistry including two semesters of laboratory chemistry. Recommended background: ED 210 and physical chemistry I.

474 Teaching Chemistry in High Schools 1 hour. Modern ways to help beginning learners construct in their own minds an understanding of scientific concepts and scientific method. Emphasis on the concepts of chemistry. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Approval of the department.

488 Cooperative Chemistry Practice 1 hour. Off-campus participation in a governmental or industrial training program. Credit is contingent on the submission of a final report. Satisfactory/Unsatisfactory grading only. May be repeated. A maximum of 6 hours of CHEM 488, CHEM 492, and CHEM 499 combined may be credited toward departmental undergraduate degree course requirements. Prerequisite(s): Concurrent registration in LAS 289 or consent of the instructor.

492 Independent Study 1 TO 2 hours. Individual study under supervision of a faculty member in areas not covered in standard courses. Credit is contingent on the submission of a final report. Satisfactory/Unsatisfactory grading only. May be repeated. A maximum of 6 hours of CHEM 488, CHEM 492, and CHEM 499 combined may be credited toward departmental undergraduate degree course requirements. Prerequisite(s): 250 grade point average in science courses and consent of the instructor.

494 Special Topics in Chemistry 1 TO 4 hours. Course content is announced prior to each term in which the course is given. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.

499 Supervised Research 3 hours. Individual research performed under supervision of a faculty member. Credit is contingent on the submission of a final report. Research experience is strongly encouraged for career students. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 6 hours. A maximum of 6 hours of CHEM 488, CHEM 492, and CHEM 499 combined may be credited toward departmental undergraduate degree course requirements. Prerequisite(s): Junior standing or above, approval of the department, consent of the instructor and a grade point average of 2.50 in science courses or graduate standing. Recommended background: Credit in CHEM 235 or CHEM 314.

500 Faculty Research 1 hour. Mandatory for first-year students. Faculty present their research interests to nongraduate students. Satisfactory/Unsatisfactory grading only.

510 Literature Seminar in Inorganic Chemistry 1 hour. Discussion of inorganic research from the current literature. Emphasis on student presentations. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Graduate standing or consent of the instructor.

514 Advanced Inorganic Chemistry I 4 hours. The synthesis, structure, and bonding of selected main group and transition metal species. Describes materials science applications of these compounds. Prerequisite(s): CHEM 416 or the equivalent.

516 Advanced Inorganic Chemistry II 4 hours. Structural and descriptive chemistry of the transition elements; spectroscopy and magnetism. Prerequisite(s): CHEM 416 or the equivalent.

518 Advanced Inorganic Chemistry III 4 hours. Synthesis, structure, bonding, and properties of solid-state materials. Prerequisite(s): CHEM 416 or the equivalent or consent of the instructor.

519 Special Topics in Inorganic Chemistry 3 TO 4 hours. Lectures on topics not represented in regularly scheduled courses. May be repeated. Prerequisite(s): Graduate standing or consent of instructor.

520 Literature Seminar in Analytical Chemistry 1 hour. Discussion of analytical chemical research from the current literature. Emphasis upon student presentations. Satisfactory/Unsatisfactory grading only.
522 Techniques in Mass Spectrometry and Surface Analysis 4 hours. Various methods in mass spectrometry. Nonoptical applied surface analysis, including X-ray photoelectron spectroscopy, Auger spectroscopy, and scanning probe microscopy. Instrumentation, applications, and data analysis. Prerequisite(s): CHEM 421 or the equivalent.

524 Optical Spectroscopies in Analytical Chemistry 4 hours. Theory and experimental methods in infrared, ultraviolet, and visible spectroscopies, both absorption and emission. Prerequisite(s): CHEM 346 and CHEM 421; or consent of the instructor.

526 NMR Spectroscopy in Analytical Chemistry 4 hours. Principles governing one- and multidimensional nuclear magnetic resonance (NMR) spectroscopy: applications of NMR to chemical analysis. Prerequisite(s): CHEM 346 and CHEM 421; or the equivalent or consent of the instructor.

528 Chemical Separations 4 hours. Fundamentals and recent advances in techniques and technologies for the separation of chemical substances, including both chromatographic and electrophoretic methods. Special emphasis on trace and microscale methods. Prerequisite(s): CHEM 421 or approval of the department.

529 Special Topics in Analytical Chemistry 3 TO 4 hours. Lectures and readings in areas not normally treated in standard courses. Discussion of topics of current interest in analytical chemistry. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

530 Literature Seminar in Organic Chemistry 1 hour. Discussion of organic chemical research from the current literature. Emphasis upon student presentations. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

531 Spectroscopic Organic Structure Determination 3 hours. Discussion of principles and modern practice in the elucidation of the structures of organic molecules using NMR, IR, UV, and mass spectrometry. With practical examples. Prerequisite(s): CHEM 234 or the equivalent.

532 Advanced Organic Chemistry I 4 hours. Introduction to advanced organic chemistry, drawing molecules and mechanisms, FMO theory, stereochemistry, conformational analysis, stereo-electronic effects, selected functional group interconversions. Some computer use will be required. Prerequisite(s): CHEM 432 or the equivalent.

533 Advanced Organic Chemistry II 4 hours. Continues CHEM 532. Chemical literature, chemical bonding, pericyclic reactions, physical organic chemistry, reactive intermediates, organic reaction mechanisms with an emphasis on physical principles. Prerequisite(s): CHEM 532 or the equivalent.

534 Advanced Organic Chemistry III 4 hours. Continues CHEM 533. The major reactions in organic chemistry and their uses in organic synthesis. Prerequisite(s): CHEM 533 or the equivalent.

535 Advanced Synthetic Chemistry 4 hours. Topics include control of stereochemistry (polar + acyclic), synthesis of complex natural and unnatural products (such as alkaloids, terpenes) and new methodologies. Prerequisite(s): CHEM 533.

536 Physical Organic Chemistry 4 hours. Theoretical and experimental methods of studying reaction mechanisms with an emphasis on kinetic methods and linear free energy correlations. Prerequisite(s): CHEM 533 or consent of the instructor.

539 Special Topics in Organic Chemistry 3 TO 4 hours. Discussion of topics of current interest. May be repeated. Students may register in more than one section per term. Prerequisite(s): CHEM 533.

540 Current Problems in Physical Chemistry 1 hour. Student seminars presented on varied topics in physical chemistry. Special emphasis on the application of quantum mechanics and statistical mechanics to the solving of problems in molecular structure, dynamics, and spectroscopy. Satisfactory/Unsatisfactory grading only.

542 Quantum Mechanics 4 hours. Exact solutions of the Schrödinger equation for simple systems; variational principle and perturbation theory, many-electron atoms and diatomic molecules and their electronic structures; angular momentum. Prerequisite(s): CHEM 346 or the equivalent.


544 Angular Momentum in Quantum Mechanics 4 hours. Quantum-mechanical theory of angular momentum. Application to spectroscopy, reaction dynamics, coupling of angular momenta, rotational transformations, wave functions, spherical tensors, rotational spectroscopy. Prerequisite(s): CHEM 542 or consent of the instructor.

549 Special Topics in Physical Chemistry 3 TO 4 hours. Lectures and readings in areas not normally treated in standard courses. Discussion of topics of current interest in physical chemistry. Prerequisite(s): Consent of the instructor.

550 Literature Seminar in Biochemistry 1 hour. Presentation of student papers on current research topics in biochemistry. Satisfactory/Unsatisfactory grading only.

551 Advanced Biochemistry I 4 hours. Basic and current topics on proteins, including protein structure, protein stability, protein folding and misfolding, and proteomics. Prerequisite(s): CHEM 454; and CHEM 348 or CHEM 344.

552 Chemical Biology 4 hours. Major trends and recent developments in research at the interface of chemistry and biology. Same as BIOS 552.

554 Bioinorganic Chemistry 4 hours. Structure, function, and properties of metal ion coordination centers in metalloproteins as well as the function of metal ions in enzyme activation and membrane transport. Prerequisite(s): CHEM 415 or CHEM 452.

555 Advanced Biochemistry II 4 hours. The structure of nucleic acids and the role and processing of nucleic acids in various aspects of genetic regulation. Prerequisite(s): CHEM 454.

558 Biophysical Chemistry 4 hours. The role of molecular interactions in determining the structure and function of complex biological systems, and the use of modern experimental techniques to study these interactions and systems. Prerequisite(s): CHEM 452 or consent of the instructor.

559 Special Topics in Biochemistry 3 TO 4 hours. Selected topics of current interest in biochemistry. Same as BIOS 559. May be repeated. Students may register in more than one section per term. Prerequisite(s): CHEM 454 or BIOS 454 or consent of the instructor.

572 Teaching Methods in Chemistry 3 hours. Special problems and techniques, including audiovisual methods, lecture demonstrations, the use of computers, and the design of experiments. May be repeated. A maximum of 3 hours may be credited toward departmental course requirements for the MS or PhD in Chemistry. Prerequisite(s): Approval of the department.

590 Current Problems in Chemical Research 2 hours. In-depth discussion and analysis of selective aspects of contemporary research with particular emphasis on research carried out in the department. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of instructor.
598 Master’s Thesis Research 0 TO 16 hours.
Master’s thesis work under the supervision of a faculty member. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Approval of the department.

599 PhD Thesis Research 0 TO 16 hours.
PhD thesis work under the supervision of a faculty member. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Approval of the department.

Civil and Materials Engineering (CME)

400 Advanced Design of Reinforced Concrete Structures 3 OR 4 hours.
Design of reinforced concrete building structures, including design for lateral loads due to wind, structural systems for reinforced concrete buildings, shear walls, and design for seismic forces. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 310 or the equivalent.

401 Advanced Design of Metal Structures 3 OR 4 hours.
Plate girders; unsymmetrical bending; torsion of thin-walled structures; lateral-torsional instability; composite construction. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 301.

402 Geometric Design of Highway Facilities 3 OR 4 hours.
Elements of geometric design. Driver, vehicle, and roadway system characteristics. Horizontal and vertical alignment design. Intersection design and operation. Capacity and level of service. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 302.

403 Hydraulic Design 3 OR 4 hours.
Selected applications of hydraulics and hydrology: pipe, pipe network and water distribution system design; unsaturated pipe flow; open channel design; storm water engineering; 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 215.

405 Foundation Analysis and Design 3 TO 4 hours.
Site characterization; analysis and design of shallow foundations, deep foundations and earth retaining structures; foundations on difficult soils; effects of construction; instrumentation and monitoring. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 315.

407 Soil and Site Improvement Methods 3 OR 4 hours.
Compaction, preloading, vertical drains, grouting, admixture stabilization, thermal stabilization, soil reinforcement, geosynthetics; construction of embankments on soft clay, embankments on mechanically stabilized earth walls, hydraulic barriers; case studies. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 301 and CME 310.

408 Traffic Engineering and Design 3 OR 4 hours.
Highway traffic control with an emphasis on highway capacity analysis and traffic signal design. Queuing theory, traffic flow theory; control management, and traffic safety. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Fieldwork required. Prerequisite(s): CME 302 or consent of the instructor.

409 Structural Analysis II 3 OR 4 hours.
Approximate analysis of structures including trusses and multistory frames. Influence lines, cables, and arches. Principles of limit analysis for structures and structural elements. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 205 or consent of the instructor.

410 Design of Prestressed Concrete Structures 3 OR 4 hours.
Principles of prestressed concrete. Analysis and design of statically determinate prestressed concrete members. Introduction to design and detailing of connections. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 310.

411 Chemistry for Environmental Professionals 3 hours.
Introductory atmospheric chemistry, aspects of air pollution, chemistry related to natural water and water treatment, priority organic pollutants and heavy metals. Same as EOHS 440. Prerequisite(s): One year of college chemistry.

415 Environmental Geotechnology 3 OR 4 hours.
Environmental laws and regulations, sources and types of waste materials, waste materials in geotechnical engineering applications, geotechnical management of municipal, industrial, mine, and nuclear wastes. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 315.

419 Air Quality Management I 3 hours.
Sources, control, dispersion, and effects upon receptors of air pollution: health and other adverse effects, meteorology and dispersion estimation, photochemistry, aerosol characterization. Same as EOHS 431. Prerequisite(s): EOHS 405 or CME 216 or consent of instructor.

420 Water and Wastewater Analysis Laboratory 0 TO 4 hours.
Laboratory class for environmental engineering. Analysis of water, wastewater, and soil for nutrients, pollutants, physical parameters, and biological parameters. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 216 or consent of instructor.

421 Water Treatment Design 3 OR 4 hours.
Water quality control systems. Physical-chemical unit processes applied to systems designed for treatment of municipal and industrial waters. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 201.

422 Biological Wastewater Treatment Design 3 OR 4 hours.
Processes involved in the biological treatment of wastewater: aerobic and anaerobic treatment, sludge stabilization, and nutrient removal. 3 undergraduate hours. 4 graduate hours. Field trip required at nominal fee. Prerequisite(s): CME 216 or the equivalent.

423 Management of Solid and Hazardous Wastes 3 hours.
Management of solid and hazardous waste, including radioactive waste: landfill, incineration, recycling, composting, source reduction, groundwater and air pollution impacts, control, regulations, siting, health impacts. Same as EOHS 472 and GEOG 444.

425 Environmental Remediation Engineering 3 OR 4 hours.
Sources of contamination, regulations, site characterization, impact assessment, waste disposal and containment options, waste treatment options, case studies. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 315.

427 Engineering Hydrology 3 OR 4 hours.
Processes, techniques, and concepts in hydrology of interest to the engineer: precipitation, interception, evaporation, groundwater, unit hydrographs, flood routing, and statistics. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 215.

430 Theory of Elasticity I 3 OR 4 hours.
The boundary value problems of linear elasticity. Uniqueness of solution. Reduction to two dimensions: the plane problems, torsion, bending. Polar coordinates and general orthogonal coordinates. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 204 and MATH 481 or the equivalents.

431 Introduction to Continuum Mechanics 3 OR 4 hours.
Vectors and tensors, stress, principal stresses and principal axes, deformation, compatibility conditions, constitutive equations, isotropy and mechanical properties of fluids and solids. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 203 and CME 211, or CME 203 and ME 211.
17 GradCourseDescr.qxd  7/13/06  1:39 PM  Page 190

fa i l u r e . The weakest link theory. Ti m e and their ap p l i c at i o n s . S t at i s t i c s of hours. 4 gr a d u at e hours. 4 undergr a d u ate hours. 4 grad u ate hours.

m a p s . Continuum damag e l a s t i c i t y. 3 undergr a d u at e hours. 4 grad u ate hours.

A p p l i c at ions to establish ap­ p r o x i- p r o b ability distributions of random structural systems. Solution methods problems: Tr u s s , b e a m , and frame structural systems. Solution methods of the resulting equations. Introduction to two-dimensional analysis. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 430.

Finite Element Analysis I 3 OR 4 hours. Establishment of basic finite ele- ment, matrix relations for one- dimensional heat conduction problems: Truss, beam, and frame structural systems. Solution methods of the resulting equations.

Introduction to two-dimensional analysis, 3 undergraduate hours, 4 graduate hour. Prerequisite(s): CME 205 or ME 401 and CS 108.

345 Theory of Vibrations I 3 OR 4 hours. Analytical and numerical treatment of linear, discrete systems. Nonlinear discrete systems, 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 200 or the equivalent and MATH 220.

Probability and Reliability in Structural Design 3 OR 4 hours. Maximum uncertainty principle and probability distributions of random variables. Distributions of extremes and their applications. Statistics of failure. The weakest link theory. Time to failure. Structural reliability. 3 undergraduate hours, 4 graduate hours. Prerequisite(s): Consent of the instructor.

453 Experimental Stress Analysis 0 TO 4 hours. Structural similitude and dimensional analysis. Strain measurement techniques. Introduction to photoelastici ty. 3 undergraduate hours, 4 graduate hours. Prerequisite(s): CME 430.

454 Structural Analysis and Design of Tall Buildings 3 OR 4 hours. State-of-the-art introduction to structural analysis and design of tall buildings. Load impact on different structural systems. 3 undergraduate hours, 4 graduate hours. Prerequisite(s): CME 401 or CME 409 or the equivalent, or consent of the instructor.

Recommended background: Major structural analysis and design courses.


471 Thermodynamics of Materials 0 TO 4 hours. Application of chemical and ther­ modynamic principles to processing and characterization of materials. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CME 260.

480 Welding Metallurgy 4 hours. Metallurgy of metals joining processes. Selection of processes and design of products manufacture by joining processes. Prerequisite(s): CME 368.

493 Seminar 1 TO 3 hours. Topics of mutual interest to a faculty member and a group of students. Offered as announced in the Schedule of Classes.

494 Special Topics in Civil Engineering, Mechanics, and Materials 1 TO 4 hours. Subject matter varies from section to section and from semester to semester, depending on the specialties of the instructor. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

496 Special Problems 1 TO 4 hours. Special problems or reading by special arrangement with a faculty member. Prerequisite(s): Consent of the instructor.

500 Design of Concrete Plate and Shell Structures 4 hours. Practical design of reinforced concrete slabs, walls, and shells of single and double curvatures. Includes barrel roofs, domes, and storage tanks. Prerequisite(s): CME 310.

501 Urban Transportation 4 hours. Transportation technology and its relation to travel and location phenomena in large urban areas, as a basis for planning, operating and design of multimodal transportation systems. Prerequisite(s): Grade of C or better or concurrent registration in CME 302; and MATH 210 and ECON 120. Recommended background: For transportation and urban planning majors.

502 Bridge Design II 4 hours. Theory and design procedures related to the analysis and design of modern bridges, using AASHTO Code. Includes concrete and steel structures, construction practices and procedures. Prerequisite(s): CME 406.

503 Advanced Transportation Demand Analysis 4 hours. Advanced quantitative analysis and modeling of transportation demand for planning purposes. Disaggregate choice models, traveler behavior and values, activity-based and microsimulation approach to demand modeling. Extensive computer use required. Prerequisite(s): CME 508.

505 Advanced Soil Mechanics 4 hours. Soil structure, stresses in soil mass, fluid flow, consolidation, drained and undrained shear strength, stress-strain relations, laboratory determination of strength and compressibility of soils. Prerequisite(s): CME 315.

506 Physical/Chemical Principles in Environmental Systems 4 hours. Physical and chemical principles in natural and engineered environmental systems. Environmental process equilibria and rates. Reactor design and mass transfer in environmental systems. Multiphase environmental processes. Prerequisite(s): CME 216.

508 Urban Travel Forecasting 4 hours. Theoretical method of forecasting travelers’ choices of route, mode, destination, departure time, trip frequency, and origin location in congested urban transportation networks. Prerequisite(s): CME 302 and MATH 210 and ECON 120.

509 Transportation Networks 4 hours. Application of constrained optimization methods to the analysis, planning, and design of urban transportation networks. Prerequisite(s): CME 501 and ECON 501 and MATH 484 and CME 508.

510 Advanced Design of Prestressed Concrete Structures 4 hours. Analysis and design of indeterminate prestressed concrete members. Composite beams, tension, deflections, and design and detailing of connections; special topics, such as anchorage zone design. Prerequisite(s): CME 410.

516 Design of Landfills and Impoundments 4 hours. Regular overview, site selection, waste characterization, design, and construction of landfill and impoundment components, operations, performance monitoring, closure plans, long-term impacts and monitoring, economic analysis. Prerequisite(s): CME 315.

518 Pollution Prevention Engineering 4 hours. Pollution prevention concepts, planning, and economics. Improved manufacturing operations and life cycle assessment. Design for the environment, resource conservation and sustainable development. Prerequisite(s): CME 216.

520 Earthquake Engineering of Concrete Structures 4 hours. Earthquake phenomena; response spectrum and design spectrum concepts; dynamic response of structures to earthquakes, methods of analysis; code approach to earthquake resistant design; alternative approaches. Prerequisite(s): CME 310.

521 Biological Treatment Fundamentals 4 hours. Fundamental processes for the biological treatment of wastewater, pollutants, and bioremediation. Growth and metabolism, kinetics, microbial
ecology, biogeochemistry, and pollutant biodegradation.

Prerequisite(s): Credit or concurrent registration in CME 422; or consent of the instructor.

Recommended background: A basic understanding of biology.

523 Environmental Organic Chemistry 4 hours.


Prerequisite(s): EDHS 440 or CME 411.

524 Water Chemistry 4 hours.

Chemical equilibria and kinetic principles as applied to processes occurring in natural and engineered water systems. Same as EOHS 542. Prerequisite(s): EOHS 440 or CME 411.

525 Advanced Biological Treatment and Bioremediation 4 hours.

Advanced biological treatment processes. Stoichiometry of biological reactions, kinetics, bioremediation, biochemical pathways for pollutant biodegradation, immunological and genetic characterization of microbial cultures. Prerequisite(s): Credit or concurrent registration in CME 521; or consent of the instructor.

526 Air Quality Management II 2 hours.

Air quality management: integration of diverse aspects. Data interpretation; standards setting; policy implementation; equipment design; hazardous spill modeling; indoor air pollution; case studies. Same as EOHS 532. Prerequisite(s): EOHS 431 or CME 419.

530 Theory of Elasticity II 4 hours.

Review of complex variable formulation of plane problems. Singularities and crack problems. Prerequisite(s): CME 430.

531 Nonlinear Continuum Mechanics 4 hours.

Matrices and general tensors, isotropic tensor functions, representation theorem, kinematics, polar decompositions, Cauchy-Green tensors, Cauchy stress, Piola-Kirchhoff stresses, constitutive laws, frame indifferences, hyperelastic materials and universal solutions. Prerequisite(s): CME 430 or CME 431.
488 Special Topics in Classical Civilization 3 OR 4 hours. Advanced study of topics in classical civilization. Sample topic: Augustus and his image. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. All readings are in English. Prerequisite(s): Two classics courses at the 200-level.

499 Advanced Independent Study 3 OR 4 hours. Advanced independent study under faculty direction. Reading and papers on chosen topics for qualified students based on preparation and interest. Students must consult with faculty. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the faculty member and department.

Committee on Institutional Cooperation (CIC)

500 Committee on Institutional Cooperation 0 TO 16 hours. Holding course for UIC doctoral students taking approved course work at other institutions through the CIC Traveling Scholar Program. May be repeated. Students may register in more than one section per term. Prerequisite(s): Admission to a doctoral program and approval of the Graduate College.

Communication (COMM)

404 Discourse Analysis 3 OR 4 hours. Nonverbal aspects of communication; rules of communication; speech acts; conversational coherence; acts and sequences in communication; marital communication patterns. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): COMM 304 or COMM 315 or COMM 416 or approval of the department.

410 Rhetorical Criticism 3 OR 4 hours. Analysis and evaluation of critical standards for rhetorical interpretation. Application of critical standards to contemporary rhetorical events. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): COMM 312 and COMM 313; or approval of the department.

416 Conflict and Communication 3 OR 4 hours. Students learn to manage and resolve conflict in business, government, and community settings. Practical analysis of interpersonal and group conflict cases. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): COMM 312 and COMM 313 and COMM 315; or approval of the department.

430 Media, Information, and Society 3 OR 4 hours. News as a distinct form of mass communication, involving social functions and significant questions about facts, truth, knowledge, and values. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Approval of the department.

434 Global Communication Systems 3 OR 4 hours. Structure and flow of international communication, Media organization systems. International impact of new media and information technology. Impact of U.S. media reporting on foreign affairs. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Approval of the department.

445 Cognitive Psychology of Language 3 hours. Provides students with a survey of methods, theory and research in language and discourse processing. Same as LING 474 and PSCH 454. Prerequisite(s): Graduate standing or consent of the instructor.

456 Topics in the History of Communications 3 OR 4 hours. This course introduces students to major developments in the History of Communications, with a focus on the political and cultural dimension of technologies. Same as HIST 456. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Consent of the instructor.

467 Public Opinion and Political Communication 3 OR 4 hours. Nature of public opinion and political communication systems. Patterns of opinion distribution and its measurement. Forces shaping public opinion and its impact on public policy. Same as POLS 467. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): POLS 200 or the equivalent or consent of the instructor.

473 Organizations and Their Publics 3 OR 4 hours. History of relevant theories and models; problem solving: analyzing goals, identifying publics, setting objectives, describing messages, choosing channels, planning implementation (budgeting, staffing, timetables); evaluating effects. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): COMM 201 and COMM 306; or approval of the department.

474 Internship 3 TO 8 hours. Students work in an approved professional setting. Individual projects developed through conferences with a faculty member and a field supervisor. May be repeated. Students may register in more than one section per term. A maximum of three hours may be counted toward the undergraduate communication major requirements. May not be counted toward the minimum Master of Arts degree requirements. Prerequisite(s): 12 hours of upper-division courses in communication with a 2.0 grade point average in those courses; recommendation of two faculty members and approval of the department obtained in the semester prior to internship.

490 Seminar in Culture and Communication 3 hours. Analysis of contrastive cultural paradigms (interethnic, gender, class) to develop student's awareness of own socialization and cultural orientation. Prerequisite(s): COMM 301 plus any other 300-level communication course, or approval of department.

491 Seminar in Media and Communication 3 hours. Analysis of contemporary or historical issues in mediated communication. Prerequisite(s): COMM 301 plus any other 300-level communication course, or approval of department.

494 Special Topics in Communication 3 OR 4 hours. Contemporaneous trends in the field of communication. 3 undergraduate hours. 4 graduate hours. May be repeated up to 2 times. Prerequisite(s): COMM 200 and COMM 201 and consent of the instructor, or approval of the department.

498 Independent Study 1 TO 4 hours. Individual investigation of special problems (student-initiated or related to faculty research). May be used for special projects, such as interdisciplinary seminars. May be repeated to a maximum of 8 hours. Students may register in more than one section per term. A maximum of 3 hours of credit may be applied toward the major in Communication. Credit earned may not be applied toward the minimum Master of Arts in Communication degree requirements. Prerequisite(s): Senior standing and approval of the department.

500 Introduction to Communication Research 4 hours. History of the field, research traditions, communication viewed as social science; forming research questions, reviewing and critiquing literature, formulating hypotheses and rationale, conceptually defining variables. Prerequisite(s): Consent of the instructor or graduate standing in communication.

501 Operationalizing Communication Research 4 hours. Levels of measurement; operational definitions; sampling qualitative and quantitative designs; coding and analysis of data; statistics; pilot testing and instrument/design revision; writing research reports. Prerequisite(s): COMM 500.

502 Seminar in Media Studies 4 hours. In-depth, intensive examination of theories, perspectives, and approaches to media studies. Prerequisite(s): COMM 500; or consent of the instructor.

503 Seminar in Intercultural Communication 4 hours. Introduction to basic theoretical concepts and important issues in intercultural communication. Prerequisite(s): COMM 500 or consent of the instructor.

505 Organizational Communication 4 hours. Classic and current research. Models that examine organizational communication; assessment of organizational problems and conduct of problem-solving research. Prerequisite(s): COMM 306 and COMM 500; or consent of the instructor.
506 Cross-Cultural Communication 4 hours. Analysis of different theoretical approaches to cross-cultural communication (sociolinguistic, attributional); comparative analysis of Western and non-Western cultural systems (interpersonal etiquette, discourse rules). Same as LING 506. 529 Approaches to Rhetorical Criticism 4 hours. Contemporaneous approaches to rhetorical criticism. Each offering focuses upon the distinctive contributions of specified rhetoricians to the theory and practice of rhetorical criticism. May be repeated to a maximum of 12 hours. Prerequisite(s): COMM 410. 534 Mass Communication Theory 4 hours. Introduction to major theories of mass communication: their social history and substantive claims; distinction between mass mediated and other forms of communication, implications of distinction. 567 Topics in Political Communication 4 hours. Intensive study of selected aspects; organizational communication in public institutions, urban political communication patterns, communication elites. Independent research using a variety of community research techniques. Same as PA 567 and POLS 567. Prerequisite(s): Consent of the instructor. 580 Qualitative Methods in Communication 4 hours. Qualitative methods course analyzing language and culture patterns. Same as LING 582. Prerequisite(s): COMM 501 or consent of the instructor. 591 Health Communication 4 hours. Focusing on interpersonal, organizational and public contexts, seminar participants will review current literature in health communication, and apply selected communication concepts to health-related situations. Prerequisite(s): Graduate standing in communication, or enrollment in a health professions school or college, or consent of the instructor. 594 Advanced Special Topics in Communication 1 TO 4 hours. Student may register for more than one section per term. Advanced topics in communication theory and research. Subject matter varies. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor. 596 Independent Research 1 TO 4 hours. Department approved research projects not included in thesis research. May be repeated to a maximum of 6 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the head of the department. 598 Thesis Research 0 TO 16 hours. Under guidance of an adviser and committee the student develops and conducts a research project addressing a communication problem of a basic or applied nature. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): COMM 501. 599 Community Health Sciences (CHSC) 400 Public Health Concepts and Practice 3 hours. Concepts, principles, discussion, exercises, and case studies that provide an overview of the philosophy, purpose, history, organization, functions, tools, activities, and results of public health practice. Prerequisite(s): Enrollment restricted to public health students; other graduate, professional, and advanced undergraduate students admitted by consent as space permits. To obtain consent, see the SPH registrar. 401 Behavioral Sciences in Public Health 3 hours. Provides grounding in the social and behavioral sciences to analyze public health issues. Includes analysis of individual, community, institutional, and societal factors influencing health and illness. Prerequisite(s): Enrollment restricted to public health students; other graduate, professional, and advanced undergraduate students admitted by consent as space permits. To obtain consent, see the SPH registrar. 403 The Future of Public Health 2 hours. Examines the critical issues facing the public health system in the United States by considering concepts, issues, and recommendations of public health practice experts. Prerequisite(s): Completion of CHSC 400. 405 Leadership in Public Health Practice 3 hours. Utilizing public health core functions, this course explores leadership style and practice through case studies and techniques which enhance leadership development. Same as HPA 405. Prerequisite(s): CHSC 400 and consent of the instructor. 411 Nutrition for Public Health Professionals 3 hours. Foundation course to introduce nutrition principles and their application to public health populations and problems. Prerequisite(s): CHSC 400, and graduate or professional standing; or consent of the instructor. 419 Public Health Aspects of Aging and Women’s Health 3 hours. An overview of human sexuality from a public health view with special emphasis on family planning, sexuality, and behavior effects on women’s health. Same as GWIS 419. Prerequisite(s): Graduate standing, or junior standing or above with consent of the instructor. 425 Public Health and Aging 3 hours. Gerontological public health issues are examined through the psychological and physical dimensions of the aging process and interactions between the elderly and the healthcare system. 431 Community Assessment in Public Health 3 hours. An introduction to community assessment in health promotion. Concepts and models of community health and community social dynamics; community participation and capacity building; strategies for situating inquiry and use of existing indicators, ethical issues. Fieldwork required. Prerequisite(s): Credit or concurrent registration in BSTT 400 and credit or concurrent registration in EPID 400 and credit or concurrent registration in CHSC 400 and consent of the instructor. 432 Analytic Methods in Public Health 3 hours. Provides analytic and computer skills needed for assessment and planning in public health and for maximizing the acquisition and use of public health data. Prerequisite(s): BSTT 400 and EPID 400 and CHSC 400. 433 Public Health Planning and Evaluation 3 hours. Planning and evaluation for community health programs, including proposal development and evaluation; considerations for community/consumer involvement in planning process. Prerequisite(s): Credit or concurrent registration in CHSC 431 and credit or concurrent registration in CHSC 480, or consent of the instructor. 434 Introduction to Qualitative Methods in Public Health 3 hours. Introduction to the major techniques used in qualitative research (observation, participant observation, in-depth interviews). Includes field and in-class exercises, and introduces computer-assisted qualitative data analysis. 441 Introduction to Maternal and Child Health 3 hours. Title V maternal and child health programs; concepts of delivery risks by age, effective interventions and public sector organization for delivery of MCH services. Same as GWIS 441. Prerequisite(s): Consent of the instructor. Recommended background: Some knowledge of maternal and child health issues. 446 Research Methods in Community Health 3 hours. Introduction to principles and techniques for scientific investigation of problems in public health research and practice. Prerequisite(s): BSTT 400 or the equivalent. Restricted to graduate or professional standing, or consent of the instructor. 447 Survey Planning and Design 3 hours. Theoretical and practical applications of sample survey planning and design for conducting research in health sciences and related fields. Addresses three major topics: survey design and planning, sampling, and data collection procedures. Same as PA 447. Prerequisite(s): Graduate or professional standing and BSTT 400 or the equivalent. Recommended background: Credit in CHSC 446 or the equivalent. 450 Introduction to International Health 3 hours. Survey of health conditions focus-
ing on Third World issues including consequences of population trends, disease prevalence, prevention/ control, and technology transfer in socioeconomic context.

456 Women's Health: A Primary Healthcare Approach 3 hours. Health promotion and disease prevention in women's health. Includes community experience with community women. Primary healthcare approaches examined. Same as NUHC 455 and NWMC 455.

Prerequisite(s): Consent of the instructor.

464 Survey of Developmental Disabilities 3 hours. Survey of the developmental disabilities field, including basic definitions, history of DD services, relevant public policies and legislation, service delivery systems, and research. Same as DHD 464.

Prerequisite(s): Graduate standing or consent of the instructor.

480 Health Education and Health Promotion 3 hours. Theories of health education and health promotion for public health professionals; approaches for individual, group, and community-level behavior change. Prerequisite(s): Graduate or professional standing. Priority enrollment given to students in the division of Community Health Sciences within the School of Public Health. Recommended background: For CHSC students, CHSC 401 is recommended as a prerequisite.

485 Communications, Mass Media, and Public Health 3 hours. Examines the development, theoretical bases, and assessments of mass media interventions, and the intended and unintended effects of the mass media in society.

494 Special Topics in Community Health Sciences 1 TO 4 hours. Study of topics in maternal and child health, gerontology, behavioral science of health and illness, international health, community health, and public health practice. May be repeated. Students may register in more than one section per term. Topics vary by semester.

Prerequisite(s): Consent of the instructor. Restricted to graduate or professional standing, or consent of the instructor.

500 Proseminar in Community Health Sciences 3 hours. Analysis of current key literature from behavioral sciences, maternal and child health, gerontology, general and miscellaneous fields of community health sciences. Prerequisite(s): CHSC 400 and 8 semester hours in student’s major field.

514 Nutritional Epidemiology 3 hours. Examination of nutritional epidemiologic techniques to the design of population-based nutritional research. Students complete research proposal using nutritional assessment, epidemiology, and research skills. Prerequisite(s): CHSC 411 or EPID 403 or consent of the instructor.

526 Family Perspectives on Disability 3 hours. Examines trends, theories and research methods, policies, and family-centered intervention approaches for families of persons with disabilities. Same as DHD 526 and DIS 526.

Prerequisite(s): Consent of the instructor.

527 Critical Issues in Long-Term Care Policy 3 hours. Long-term care organization, financing, delivery utilization, and policy; emphasizing affordability, access, and quality in a managed care environment. Same as HPA 527.

Prerequisite(s): CHSC 400 and CHSC 425; or consent of the instructor.

528 Societal Analysis of Aging, Health, and Healthcare 3 hours. Analysis of aging, health, and healthcare issues mainly from sociological and public health perspectives. Review and application of appropriate concepts, theories, and methods. Same as SOC 528.

Prerequisite(s): CHSC 425 or consent of instructor.

529 Gerontological Health/illness Behavior 3 hours. Perceptions and behaviors of older adults are examined in reference to illness prevention, health promotion, and reactions to acute and chronic illness. Priority enrollment is given to students in the Gerontology track of the Division of Community Health Sciences within the School of Public Health or consent of the instructor.

534 Management and Analysis of Qualitative Data 3 hours. A hands-on course that teaches conceptual and technical skills for organizing and analyzing qualitative (textual) data from focus groups, in-depth interviews, and other sources, using specialized text-analysis computer software. Extensive computer use required. Prerequisite(s): CHSC 434 or consent of the instructor.

542 Advanced Maternal and Child Health Applied Programs 3 hours. Interventions and services in healthcare programs for maternal and child populations. In-depth program analysis and problem solving with emphasis on public sector programs, population needs and program evaluation. Prerequisite(s): CHSC 441.

543 MCH Policy and Advocacy 3 hours. Explores the social, economic, and political dynamics which influence the development and implementation of MCH policy and U.S. health policy in general. Prerequisite(s): CHSC 441 or consent of the instructor.

544 Public Health Aspects of Adolescent Health 3 hours. Students research contemporary issues in adolescent health, relating them to physical and emotional development, to policy and to the Year 2010 Objectives. Prerequisite(s): Credit or concurrent registration in CHSC 441.

545 Reproductive and Perinatal Health 3 hours. Focuses on the epidemiology of key reproductive and perinatal health outcomes and relevant health services and health policies. Same as EPID 545. Prerequisite(s): BSTT 401 and EPID 400 or EPID 403; or consent of the instructor.

547 Public Health Approaches to Maternal and Child Nutrition 2 hours. Advanced seminar to integrate role and application of nutrition for maternal and child populations. Prerequisite(s): CHSC 411 or CHSC 441 or consent of the instructor.

548 Readings in Reproductive and Perinatal Epidemiology 2 hours. Advanced seminar in reproductive/perinatal epidemiology with particular emphasis on methodologic issues. Same as EPID 548.

Prerequisite(s): CHSC 441 and EPID 404 or consent of the instructor. Recommended background: Maternal and child health and epidemiology.

549 Advanced Applied Methods in MCH Epidemiology 3 hours. Given conceptual and technical understanding of statistical and epidemiologic methods, builds skills/proficiency in applying these. Attention is given to data handling tasks and to statistical/epidemiologic strategies for analysis and presentation. Same as EPID 549.

Prerequisite(s): EPID 402 or EPID 404, and BSTT 401 and EPID 406; or consent of the instructor. Recommended background: Credit or concurrent registration in EPID 501.

551 Foundations of Public Health Inquiry 3 hours. Examination of research paradigms, precepts of theory development, literature synthesis, and ethical principles. All enhance the scholarliness and meaningfulness of doctoral students’ public health inquiry. Prerequisite(s): Open only to PhD degree students.

554 International Women’s Health: Current and Emerging Issues 3 hours. Enhance students' understanding of, and sensitivity to, current and emerging international women’s health issues. The focus will include studying social and cultural factors affecting women’s physical as well as psychosocial health. Prerequisite(s): CHSC 400; or consent of the instructor.

556 Theory and Methods of Needs Assessment in Aging and Disability 4 hours. Introduces theories of need, models of the needs assessment process, and reviews research methods typical/used in conducting needs assessments. Emphasis will be on needs assessments in health-related community agencies. Same as DIS 556 and OT 556.

Prerequisite(s): A 400- or 500-level research course such as OT 510, DHD 415, CHSC 446, or SOC 500. The prerequisite research course needs to provide students with an understanding of basic research design, sampling strategies, and an introduction to methods.
Students develop and present questionnaires related to their individual mental disabilities into community sciences 1 TO 4 hours. Pertaining to the empowerment and instructor.

480 or consent of the instructor.

Disabilities 3 hours.

Developmental 594 and CHSC 480.

Interventions 3 hours.

Focus on the bases of facilitating community organizing processes in health promotion including theories, fieldwork tools, and feminist and international perspectives. Fieldwork required. Prerequisite(s): CHSC 460 or consent of the instructor.

Health Behavior Interventions 3 hours.

Advanced concepts and strategies for the development, implementation, and evaluation of public health interventions to change health behaviors. Individual intervention project proposal (according to federal guidelines) or equivalent final paper required. Prerequisite(s): CHSC 446 or CHSC 447; or consent of the instructor.

Community Organizing for Health 3 hours.

Focus on the bases of facilitating community organizing processes in health promotion including theories, fieldwork tools, and feminist and international perspectives. Fieldwork required. Prerequisite(s): CHSC 460 or consent of the instructor.

Advanced Health Behavior Interventions 3 hours.

Advanced concepts and strategies for the development, implementation, and evaluation of public health interventions to change health behaviors. Individual intervention project proposal (according to federal guidelines) or equivalent final paper required. Prerequisite(s): CHSC 446 or CHSC 447; or consent of the instructor.

Recommended background: Advanced placement in graduate program.

Computer Science (CS)

401 Computer Algorithms I 3 OR 4 hours.

Design and analysis of computer algorithms. Divide-and-conquer, dynamic programming, greedy method, backtracking. Algorithms for sorting, searching, graph computations, pattern matching, NP-complete problems. Same as MCS 401. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MCS 360 and grade of C or better in STAT 381; or grade of C or better in CS 202.

411 Artificial Intelligence I 3 OR 4 hours.

Problem representation; rule-based problem-solving methods; heuristic search techniques. Application to expert systems, theorem proving, language understanding. Individual projects. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CS 202.

415 Computer Vision I 3 OR 4 hours.

Computer vision system design. Segmentation and representation of regions and boundaries; image filtering; object recognition; advanced topics (examples: texture, stereo, color). Applications. Programming assignments. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CS 202 or MCS 360; or consent of the instructor.

421 Natural Language Processing 3 OR 4 hours.

Design of natural language processing systems: part-of-speech tagging, statistical and symbolic parsers; semantic interpretation; discourse and dialogue processing; natural language generation; applications. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CS 301 or MCS 441.

422 User Interface Design and Programming 3 OR 4 hours.

User interface design, implementation, and evaluation: user-centered design methodologies, windowing systems, I/O devices and techniques, event-loop programming, user studies. Programming projects. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CS 340.

426 Multimedia Computing 3 OR 4 hours.

Processing multimedia information, including video, images, audio, text, and specialty data. Multimedia sources, formats, operations, and algorithms. Implementation projects. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CS 340 and CS 450.

440 Software Engineering I 3 OR 4 hours.

Software lifecycle model, requirement specification techniques, large-scale software design techniques and tools, implementation issues, testing and debugging techniques, software maintenance. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CS 340.

441 Distributed Object Programming Using Middleware 3 OR 4 hours.

Design and implementation of distributed object programs using middleware software standards; interface definition languages and programming-language mappings; static and dynamic object communication mechanisms. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): CS 340 and CS 385.

442 Software Engineering II 3 OR 4 hours.

Advanced concepts in software development: requirements engineering, cost estimation, risk analysis, extreme programming, regression test case selection, and design patterns. Software lab assignments required. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): CS 440.

450 Introduction to Networking 3 OR 4 hours.

Network protocols, algorithms, and software issues. Topics include the Open Systems Interconnection model, d ata link, network and transport layers, TCP/IP, ATM, mobile networks. 3 undergraduate hours. 4 graduate hours. Credit is not given for CS 450 if the student has credit for ECE 439. Prerequisite(s): CS 202 and CS 385; and STAT 381 or STAT 401 or E 342.

455 Design and Implementation of Network Protocols 3 OR 4 hours.

Network protocols and their software. Examines CS network interface through network layers. Topics include routing, congestion control, fault tolerance, security, name servers, multicast, and performance. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CS 340 and CS 450.

466 Advanced Computer Architecture 3 OR 4 hours.

Design of high performance computer architecture. Cost-Performance; Instruction Sets; Pipelining; Memory Hierarchy; I/O. 3 undergraduate hours. 4 graduate hours. Credit is not given for CS 466 if the student has credit for ECE 466. Prerequisite(s): CS 366.

469 Computer Systems Design 3 OR 4 hours.

Analysis and modeling of digital systems; hardware description languages; CAD tools for simulation, synthesis, and verification of computer systems. Project: a simple processor design. 3 undergraduate hours. 4 graduate hours. Credit is not given for CS 469 if the student has credit in either ECE 368 or ECE 469. Prerequisite(s): CS 366.

473 Compiler Design 3 OR 4 hours.

Language translation: lexical analysis, parsing schemes, symbol table management, syntax and semantic error detection, and code generation. Development of fully-functional compiler. Same as MCS 411. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in CS 301 or grade of C or better in MCS 441; and grade of C or better in CS 202 or grade of C or better in MCS 360; and grade of C or better in CS 266.

474 Object-Oriented Languages and Environments 3 OR 4 hours.

Database, classes and objects, messages and methods, polymorphism and dynamic binding, inheritance. Object-oriented design. Pure and hybrid object-oriented languages. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CS 340.
475 Object-Oriented Programming 3 OR 4 hours.  
Prerequisite(s): CS 340.  
Credit is not given for CS 475 if the student has credit for CS 474.  
Students in EECS 475 may repeat the course with the permission of the instructor.  
Concurrent registration in CS 340 required.  
Prerequisite(s): CS 202; and consent of the instructor.

493 Special Problems 2 TO 4 hours.  
Prerequisite(s): Consent of the instructor.

499 Seminar 1 TO 4 hours.  
Prerequisite(s): Consent of the instructor.
parallel, and data-flow systems; and logic programming and rule-based systems. Prerequisite(s): Consent of the instructor.

559 Neural Networks 4 hours. Artificial neural networks, perception, backpropagation, Kohonen nets, statistical methods, Hopfield nets, associative memories, cognition. Same as ECE 559. Prerequisite(s): Consent of the instructor.

560 Fuzzy Logic 4 hours. Crisp and fuzzy sets; membership functions; fuzzy operators; fuzzy relations and their solutions; approximate reasoning; fuzzy modeling and programming; applications; projects. Prerequisite(s): Consent of the instructor.

565 Algorithms for VLSI Physical Design 4 hours. Computer-aided physical design of integrated circuits; circuit partitioning and placement; floorplanning; global and detailed routing; timing optimization; general optimization tools; local search; constraint relaxation. Credit is not given for CS565 if the student has credit for ECE565. Prerequisite(s): CS 401 and CS 469; or consent of the instructor.

566 Parallel Processing 4 hours. Parallel processing from the computer science perspective. Includes architecture (bus based, lockstep, SIMD), programming languages (functional, traditional and extension), compilers, interconnection networks, and algorithms. Prerequisite(s): CS 466.

568 High-Performance Processors and Systems 4 hours. Instruction-level parallelism, multiprocessor system issues, branch prediction, instruction and data prefetching, novel cache and DRAM organization, high-performance interconnect, compilation issues, case studies. Prerequisite(s): CS 466.

577 Object Stores 4 hours. Use, design, and implementation of object stores. An object store enables object-oriented programming to be extended by storing objects on disk and communicating objects between processes. Prerequisite(s): CS 385 and CS 480; and knowledge of C++ or consent of the instructor.

580 Query Processing in Database Systems 4 hours. Query processing in deductive databases and in distributed/parallel databases systems. Same as IDS 511. Prerequisite(s): CS 480.

581 Database Management Systems 4 hours. Concurrency control, reliability, recovery, data integrity, database machines, and current topics. Prerequisite(s): CS 480.

582 Information Retrieval 4 hours. Document retrieval, office automation. Optimal retrieval, relevance feedback, clustered search, construction of clusters, model of term weighting, thesaurus construction, multimedia data, handling of audio and video. Prerequisite(s): CS 480.

583 Data Mining and Text Mining 4 hours. Provide students with a sound knowledge in data and text mining tasks and techniques as well as ensure students’ ability to use this technology. Prerequisite(s): CS 401. Recommended background: Algorithm probability.

586 Data and Web Semantics 4 hours. Data modeling and semantics; knowledge representation, querying, and reasoning for the semantic Web; metadata; data integration and interoperation; Web services; applications. Extensive computer use required. Prerequisite(s): CS 480 or equivalent.

587 Computer Systems Security 4 hours. Security policies; security properties; protection mechanisms for single systems, networked systems, and distributed computing; trust attacks on computer systems. Extensive computer use required. Prerequisite(s): CS 485 or CS 450; or consent of the instructor.

594 Special Topics 4 hours. Subject matter varies from term to term and section to section, depending on the specialties of the instructor. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

595 Departmental Seminar 0-4 hours. Seminar by faculty and invited speakers. Satisfactory / Unsatisfactory grading only. May be repeated.

596 Individual Study 1-4 hours. Individual study or research under close supervision of a faculty member. May be repeated. Students may register in more than one section per term. No graduation credit for students in the following: MS in Computer Science or PhD in Computer Science. Prerequisite(s): Consent of the instructor. For Computer Science majors only.

597 Project Research 0-16 hours. A research design or reading project approved by the committee appointed by the director of graduate studies. Satisfactory / Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor. For CS majors only.

598 MS Thesis Research 0-16 hours. MS thesis work under the supervision of a graduate advisor. Satisfactory / Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor. For CS majors only.

599 PhD Thesis Research 0-16 hours. PhD thesis work under supervision of a graduate advisor. Satisfactory / Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor. For CS majors only.

402 Trial Interaction 3 OR 4 hours. Language use, culture, and law in the trial process. Analysis of qualitative methods applied to legal processes and change. Same as LNG 402. 3 graduate hours. 4 graduate hours. Prerequisite(s): Prerequisite: CRJ 261 and CRJ 350; or consent of the instructor.

404 Roman Law and the Civil Law Tradition 3 OR 4 hours. Roman law and its relationship to values and social structure; social analysis through law, continental law tradition. Same as CL 404 and HIST 404. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CRJ 200 or CL 203 or HIST 203 or consent of the instructor.

405 The Problem of Justice 3 OR 4 hours. Premodern and modern views of justice and their practical utility in analyzing legislative, executive, and judicial programs for enhancing or restricting justice. Same as POLS 405. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CRJ 101, plus two 200-level courses in criminal justice or two 200-level courses in political science.

421 Juvenile Justice System 3 OR 4 hours. Theories of juvenile delinquency and rule-breaking; juvenile rights; organization and administration of the juvenile justice system in the US. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CRJ 210 and CRJ 220.

422 Victimization 3 OR 4 hours. Survey of criminal victimization theory and research. Examination of causes, consequences, and prevention of violent crime and of victims’ experiences in the criminal justice system. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CRJ 101 and two 200-level criminal justice courses.

423 Violence 3 OR 4 hours. Explores how men and women have experienced violence historically and in modern times. Students examine how violence is perpetuated through words, pictures, physical harm, and silences. Same as ANTH 424. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CRJ 101 and CRJ 200.

424 Gender, Crime, and Justice 3 OR 4 hours. An in-depth examination of the etiology of female crime and the involvement of females in the criminal justice system as offenders, victims, and workers/professionals. Same as GWS 424. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CRJ 101 and CRJ 220; or consent of the instructor.

435 Organized and White Collar Crime in the United States 3 OR 4 hours. Analysis and evaluation of organized crime, including its public perception; sociological, political, and economic impacts as well as past and
442 Comparative Criminal Justice
Institutions 3 OR 4 hours. Comparative study of law, jurisprudence, enforcement, and punishment in Western and non-Western societies, including civil law, common law, and Islamic systems. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Two 200-level criminal justice courses.

456 Community Corrections 3 OR 4 hours. History, processes, and functions of programs organized for sanctioning offenders in community settings, such as probation, parole, halfway houses, restitution, community service, home confinement, 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Two 200-level criminal justice courses.

480 Application of Science to the Law 4 hours. Issues affecting the development, accessibility, and admissibility of forensic science services by the criminal justice system; problems which may compromise the quality, fairness and effectiveness of scientific inquiries. Same as BPS 480. Prerequisite(s): CRJ 210 and CRJ 355; plus one 200-level criminal justice course.

491 Topics in Rule Breaking 3 OR 4 hours. Content of course varies, addressing major issues. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Students may register in more than one section per term. Prerequisite(s): Six 200- or 300-level criminal justice courses.

492 Topics in Rule Application 3 OR 4 hours. Content of course varies, addressing major issues. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Students may register in more than one section per term. Prerequisite(s): Six 200- or 300-level criminal justice courses.

500 Law and Society 4 hours. Emergence and growth of rule-governed social order; social organization of legal actors; functional aspects of law including social control, dispute resolution, rule-interpreta-
tion, and the promotion of social and economic enterprises.

520 Criminological Theory 4 hours. Critical examination of the major traditions in criminological theories; emphasis on critical, positivist, interpretivist, and postmodern.

539 Seminar in Rule Breaking 4 hours. Study of a specific area of rule-breaking such as liens, criminal violence, corporate crime, political crime, public order crime, or occupational crime. Content varies. May be repeated to a maximum of 8 hours. Prerequisite(s): Consent of the instructor.

540 Criminal Justice: Process and Institutions 4 hours. Critical examination of the criminal justice system. The dynamics and processes of contemporary police, judicial, and correctional institutions are evaluated in the context of key historical developments and relevant research.

541 The Dynamics of Behavior in Criminal Justice Agencies 4 hours. Leading theories of organizational behavior used to interpret organizational patterns, functions, and constraints in rule-governing institutions; emphasis on the application of these theories to the problems of planned change.

547 Race, Class, and Gender Dimensions of Crime and Justice 4 hours. Theories addressing the intersections of race, class, gender, crime, and justice. Specifically, students examine criminological theories; social construction of race, class, and gender; legal decision-making and implications of this for justice in our society. Same as GWS 547.

548 Legal Discourse and Culture in Law and Society 4 hours. Discourse, power, and culture in legal settings and analysis of power and resistance in the construction of law as a social fact.

555 Corrections: Institutions and Field Operations 4 hours. Examines institutions and field services in public and private sectors. Addresses historical and empirical approaches to the analysis of policy and correctional effectiveness; the neoclassical challenge to rehabilitation, and corrections case law. Prerequisite(s): CRJ 540.

560 Quantitative Methods and Design 4 hours. Fundamentals of scientific inquiry, the logic of causal inference, and quantitative methods. Development of critical perspective and identification of weaknesses in research design and measurement. Development of skills in proposal development and data collection unique to criminal justice. Prerequisite(s): CRJ 262 or consent of the instructor.

561 Qualitative Methods and Design 4 hours. Theories and techniques of qualitative research methods, particularly fieldwork and in-depth interviews. Criminal justice problems amenable to these techniques and methods and interpersonal relationships between the researcher role and substantive findings. Prerequisite(s): CRJ 262 or consent of the instructor.

562 Statistical Applications in Criminal Justice I 4 hours. Basic descriptive and inferential statistics, their applications in data analysis, and assumptions underlying use of these procedures in criminal justice research. Prerequisite(s): CRJ 262 or the equivalent.

563 Evaluation Research in Criminal Justice 4 hours. Experimental, quasi-experimental, and nonexperimental approaches to evaluation research; indicators of effectiveness. Applications to crime prevention, police, courts, and correctional programs. Politics of researcher-agency interactions. Prerequisite(s): One graduate-level course in research methods and consent of the instructor.

564 Statistical Applications in Criminal Justice II 4 hours. Introduction to multivariate statistics with emphasis on multiple regression in criminal justice research, analysis, and interpretation of regression output, coding of variables, and path analysis. Prerequisite(s): CRJ 562.

570 Advanced Methods in Criminal Justice 4 hours. Methodological problems in criminal justice measurement including the identification problem in estimating deterrence and the limitations of survival analysis in estimating recidivism. Students are required to submit a paper demonstrating evidence of independent research skills. Prerequisite(s): CRJ 560 and CRJ 561 or the equivalent.
997
Project
Research 0 TO 8 hours.
Independent research project under the supervision of a faculty member.
Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 8 hours. Prerequisite(s): Graduate standing in the MA in Criminal Justice program and consent of the instructor.
998
Thesis
Research 0 TO 16 hours.
For students doing thesis research or writing. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 8 hours. Prerequisite(s): Consent of the student’s adviser; and acceptance of the thesis topic and preliminary thesis outline by the thesis committee.

Curriculum, Instruction, and Evaluation (CIE)

410
Literature, Social Studies, and the Arts in the Elementary School 4 hours.
Theory and practice in curriculum development, planning instruction, and assessing learning in elementary classrooms. Literature, social studies, and the arts content focus.

411
Creating Learning Environments in the Elementary School 3 hours.
Examination of beliefs about teaching culture and learning in urban America in relation to the creation of learning environments with emphasis on application of state standards in classrooms and the development of an electronic teaching portfolio. 20 hours of fieldwork required. Prerequisite(s): Open only to master’s degree students.

412
Dynamics of Learning Environments 3 hours.
Exploration of multiculturalism and bilingualism/biculturalism in schools and families. Continued development of electronic portfolio for meeting Illinois professional teaching and technology standards. Prerequisite(s): Graduate standing and satisfactory completion of fieldwork and grade of B or better in CIE 411.

413
Foundations of Literacy Instruction, K–8 4 hours.
Instruction to teaching literacy K–8: examining cognitive, social, developmental perspectives; relationships between language and literacy; connections to other school subjects; aligning instruction, assessment, standards. Extensive computer use required. Prerequisite(s): Language 410; and consent of the instructor. Open to Middle’s degree students and PhD students. Recommended background: Admission to MEd in Instructional Leadership: Literacy, Language, and Culture.

414
Middle and High School Literacy 3 hours.
Focuses on the teaching of reading and writing strategies appropriate for disciplinary learning and expression. Fieldwork required. Prerequisite(s): Junior standing or above, and consent of the instructor.

415
Urban Youth Fieldwork 3 hours.
Experience in planning, teaching in, and evaluating innovative physical activity-based urban youth programs. Accompanying seminar to examine related literature and explore the interface between theory and practice. May be repeated to a maximum of 6 hours. Fieldwork required. Prerequisite(s): Junior standing or above, and consent of the instructor. Requires interview and placement.

416
Programs for Undererved Youth 3 hours.
Survey and evaluation of physical activity-based and other models and programs designed to help underserved youth in school, extended day, and special programs. Includes development of new models. Prerequisite(s): Junior standing or above, and consent of the instructor.

464
Bilingualism and Literacy in a Second Language 4 hours.
Theoretical foundations of second language acquisition and the teaching of English as second language. Methods and materials for teaching reading and writing in bilingual/ESL settings. Prerequisite(s): Junior standing and admission into the College of Education or consent of instructor.

472
Language Proficiency Assessment and ESL Instruction 4 hours.
English language proficiency assessment instruments and procedures; effective planning and ESL instructional practices; methods, materials, and technology resources for teaching ESL in K–12 school settings. Prerequisite(s): Junior standing or above.

480
Technology and Multimedia: Learning Tools in the Classroom 3 OR 4 hours.
New technologies to support teaching and learning in preschool classrooms. Same as SPED 460. 3 undergraduate hours. 4 graduate hours.

481
Foundations and Current Issues in Educating English Language Learners 4 hours.
Philosophical, theoretical, socio-cultural, and educational examination of learning and achievement issues that culturally and linguistically diverse students face in American schools. Fieldwork required. Prerequisite(s): Junior standing or above.

482
Assessment and Instruction: A Multilingual/Multicultural Perspective 4 hours.
Methods and materials for teaching English language learners (ELLs) in bilingual/ESL classrooms. Emphasis upon curricular and methodological practices, assessment for academic placement, and instruction. Prerequisite(s): Junior standing or above. Recommended background: CIE 481.

483
Methodology of TESOL 3 OR 4 hours.
Methods of teaching listening, speaking, reading, and writing to speakers of English as a second or foreign language. Same as LING 483. 3 undergraduate hours. 4 graduate hours.

Prerequisite(s): Junior standing and consent of the instructor.

484
Curriculum and Instruction in the Middle School 3 hours.
Philosophy, curriculum, and instructional methods for teaching middle grade students (grades five through eight). Content area reading is included. Prerequisite(s): SPED 403 or ED 402, and either ED 421 or ED 422 or ED 445 and either ED 430 or ED 431 and approval of the College of Education.

494
Special Topics in Curriculum, Instruction, and Evaluation 1 TO 4 hours.
Exploration of an area not covered in existing course offerings. Content varies. May be repeated to a maximum of 12 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

500
Proseminar in Curriculum and Instruction 1 hour.
Research-oriented colloquia on issues in curriculum and instruction. Serves as introduction to faculty research interests. Provides opportunity to consider issues in research design. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Admission to the PhD in Education program or consent of instructor.

502
Mathematics and Science in the Elementary School 4 hours.
Integrating mathematics and science content with issues of teaching and learning, including planning and developing curriculum, planning, classroom interactions, and assessment in elementary classrooms. Prerequisite(s): ED 402 or ED 403, and either ED 421 or ED 422 or ED 445 and ED 430, and a second reading methods course.

503
Advanced Foundations of Literacy Instruction, K–8 4 hours.
Introduction to teaching literacy K–8: examining cognitive, social, developmental perspectives; relationships between language and literacy; connections to other school subjects; aligning instruction, assessment, and standards. Extensive computer use required (word processing on writing, search engines for examining literacy curriculum, professional organizations, e-mail networks).
Prerequisite(s): CE 450; or consent of the instructor. Open to Master’s degree students and PhD degree students. Recommended background: Admission to MEd in Instructional Leadership: Literacy, Language, and Culture.

504 Secondary Literacy 4 hours. This course focuses on the foundations of literacy and on the literacy processes of middle and secondary students and how these processes apply to reading and writing in the disciplines. Fieldwork required.

505 Integrated Reading and Writing Instruction 4 hours. Examination of the reading-writing relationship. Specific instructional strategies for teaching reading and writing together in the elementary grades. Prerequisite(s): CE 460, or consent of the instructor.

507 Teaching and Learning Mathematics in the Elementary School 4 hours. Integrating mathematics content with teaching and learning issues, including adapting and developing curriculum, planning, classroom interactions, and assessment in K–9 classrooms. Prerequisite(s): CE 411 and CE 412.

508 Teaching and Learning Science in Elementary School 4 hours. To help prospective teachers develop multiple frameworks for facilitating the learning of science in students of various abilities, cultures, and backgrounds. Prerequisite(s): CE 411 and CE 412.

509 Reading and Writing with Young Children 4 hours. The early writing and reading behaviors of children and how these develop during the primary grades. Observation, teaching, and assessing are emphasized. Prerequisite(s): ED 422; and consent of the instructor.

511 Student Teaching in the Elementary Grades I 6 hours. The culminating course in the graduate elementary teacher education sequence. Meets Illinois State Board of Education requirements for certification. Prerequisite(s): Completion of all professional education courses and program requirements. Must enroll concurrently in CE 512.

512 Student Teaching in the Elementary Grades II 6 hours. The culminating course in the graduate elementary teacher education sequence. Meets Illinois State Board of Education requirements for certification. Prerequisite(s): CE 501 and CE 502. Must enroll concurrently in CE 511.

515 Urban Youth Program Evaluation 3 hours. Analysis of the impact of social trends and problems on urban youth. Evaluation of urban youth programs with emphasis on affective and moral dimensions.

517 Seminar in Urban Youth Development 3 hours. In-depth analysis of topics and issues in the field of youth development, with special attention to the urban context and the role of physical activity. Prerequisite(s): Consent of the instructor.

520 The K–12 Mathematics Curriculum: Theory, Politics, and Reform 4 hours. A look at the K–12 curriculum from three perspectives: theoretical (epistemological, learning, teaching), political (whose interests are served) and practical (implementation issues in schools). Prerequisite(s): Consent of the instructor.

521 Learning and Teaching Mathematics with Technology 4 hours. Can technology support conceptually-based learning of mathematics? Issues of learning, teaching, and equity related to technology in the K–12 mathematics classroom. Prerequisite(s): Consent of the instructor.

522 Social Context of Mathematics Education 4 hours. Examination of contextual, social, and linguistic factors which influence the learning of mathematics; emphasis on sociohistorical and activity theories, and equity in schooling. Prerequisite(s): Graduate standing in the College of Education or consent of the instructor.

525 Assessment and Instruction for Struggling Readers, K–12: Part 1 4 hours. Theoretical and practical issues concerning the etiology of reading problems and clinical diagnostic techniques. Children with reading problems are diagnosed and taught in the practicum component. Prerequisite(s): CE 450, and CE 503 or CE 504; and consent of the instructor.

526 Assessment and Instruction for Struggling Readers, K–12: Part 2 4 hours. Continued study of theoretical and practical issues concerning the etiology of literacy problems and clinical diagnostic and instructional techniques. Practicum involves tutoring clients in the UIC Reading Clinic. Prerequisite(s): CE 525.

527 Reading Specialists As Literacy Leaders 4 hours. Theories and practices related to the role of the reading specialist, including management and evaluation of support systems, programs, personnel, and professional development in literacy. Prerequisite(s): CE 450 and CE 503 and CE 504.

528 Assessing Literacy in Classrooms 4 hours. Introduction to K–12 classroom literacy assessment, focus on relationships among assessment, teaching and learning, tools and procedures, data analysis and interpretation, reporting and record keeping. Extensive computer use required (word processing on writing, search engines for identifying research studies, including teacher research Web sites). Prerequisite(s): CE 450 or CE 503 or CE 504; and consent of the instructor. Requires admission to the MEd in Instructional Leadership: Language, Literacy, and Culture program or consent of the instructor.

536 Colloquium on Literacy 1 hour. Various areas of reading, writing, and literacy, including research on learning, instruction, and use. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 12 hours. Prerequisite(s): Enrollment in a graduate specialization in reading, and consent of the instructor.

539 Internship in Instructional Leadership 4 hours. Conceptualization, development, implementation, analysis, and interpretation of a curriculum and/or instructional improvement in an educational setting (supervised by university faculty and leadership from the setting). May be repeated to a maximum of 9 hours. Prerequisite(s): CE 532.

540 Linguistics for Teachers 4 hours. Introduction to linguistic concepts as they apply to teaching in monolingual and bilingual classrooms. Relation of linguistic theory to theories of language and cognition.

541 Oral Language: Its Development and Role in the Classroom 4 hours. Analyses of oral language development and children’s varying patterns of language use; analyses of talk in classroom settings; and instructional decision-making processes to assess and optimize student learning. Extensive computer use required. Fieldwork required. Prerequisite(s): CE 450 and either CE 503 or CE 504. Restricted to graduate students in education, psychology or English.

542 Improving School/District Literacy Achievement 4 hours. Review of research on school factors implicated in improvement of literacy achievement. Role of empirical evidence (best practices, scientifically-based research, research synthesis, meta-analysis) in literacy programs.
school decision making and policy. Prerequisite(s): CE 450 and CE 503 and CE 504.

543 Using Multimedia Environments to Support Literacy and Learning 4 hours. Introduction to ways changes in technologies of communication transform environments for teaching and learning. Analizing technologies, linear and non-linear reading environments, and designing instructional strategies to enhance multiple literacies. Extended computer use required. Prerequisite(s): One social science course or one computing course focused on the human use of computing.

544 Foundations of Writing 4 hours. Introduction to K–8 writing research, theory and practice, including writing development, processes, test pedagogy assessment. Combination of academic study of writing with guided inquiry. Computer use required (word processing on writing; search engines for examining literacy curriculum, professional organizations, e-mail networks, use of PowerPoint and Web page composition). Prerequisite(s): CE 450. Recommended background: Admission to the MEd in Instructional Leadership: Literacy, Language, and Culture.

545 Educational Evaluation 4 hours. Examination of theoretical and operational assumptions of alternative evaluation models; analysis and critique of evaluation case studies. Prerequisite(s): Admission to PhD in Education program or PhD in Public Policy Analysis program.

546 Children’s and Adolescent Literature 4 hours. Overview of trade books written for children from preschool through adolescence. Emphasizes critically reading, selecting, evaluating books appropriate for developmental stages, curricular connections, and students in our multicultural society. Prerequisite(s): CE 450 and CE 503 and CE 504; and consent of the instructor.

547 Integrating Literacy Instruction 4 hours. Engaging in professional experiences (e.g., teaching, reading, teacher book clubs) that support the design and adaptation of frameworks and units that emphasize meaningful instructional connections among reading, writing, and talk in the classroom. Extended computer use required. Prerequisite(s): CE 450 and either CE 503 or CE 504. Restricted to graduate students in Education, Psychology or English.

548 Leadership for Literacy Instruction 4 hours. School and system leadership practices for promoting effective literacy instruction in urban elementary and secondary schools. Assessment and improvement of literacy curriculum, pedagogy, and evaluation. Same as PS 548. Prerequisite(s): Consent of the instructor; admission to a degree program in the College of Education. Students admitted to the EdD in Urban Education Leadership, prerequisites also include PS 550 and PS 552.

549 Teaching for Social Justice in K–12 Schools: Theory and Practice 4 hours. Examine theory and practice of social justice teaching in schools, including history, literate pedagogies, culturally relevant and critical pedagogies, funds of knowledge, critical multiculturalism and antiracist pedagogy, critical race theory. Same as PS 549. Prerequisite(s): Consent of the instructor.

550 Conflicts in Curriculum Development 4 hours. Analysis of theoretical models for curriculum development; special attention to alternative and often conflicting viewpoints about the particulars of the development process. Prerequisite(s): Admission to a graduate program in education.

552 Curriculum and Cultural Context 4 hours. Influence of cultural, political, sociological, and economic factors on curriculum at the instructional, institutional, societal, and ideological levels. Prerequisite(s): CE 574 or consent of instructor.

553 History of Curriculum Thought 4 hours. Analysis of selected documents on curriculum theory and policy from antiquity to present; secondary treatments and primary sources; interaction of theory and practice. Prerequisite(s): CE 574 or consent of the instructor.

556 Proseminar in Literacy, Language, and Culture I 4 hours. Socialization of students into field through intensive introduction to literacy, its relationship to language and culture, using the collective knowledge and research experience of faculty. Emphasis on developing student inquiry in urban contexts. Restricted to first-year doctoral students with a specialization in Literacy, Language, and Culture.

557 Proseminar in Literacy, Language, and Culture II 4 hours. Socialization of students into field through intensive introduction to literacy, its relationship to language and culture, using the collective knowledge and research experience of faculty. Emphasis on developing student inquiry in urban contexts. Restricted to first-year doctoral students with a specialization in Literacy, Language, and Culture.

558 The Historical and Philosophical Bases of Literacy and Language Instruction 4 hours. Critical examination of historical and philosophical bases of current literacy and language instruction from social, cultural, and psychological perspectives. Emphasis on historical patterns of reading and writing instruction in the U.S. Prerequisite(s): Consent of the instructor.

559 The Social and Cultural Contexts of Literacy and Language Instruction 4 hours. Critical examination of theoretical and methodological orientations that inform the study of sociocultural influences on the definition and practices of literacy in classrooms, at school level, and in out-of-school contexts. Prerequisite(s): Consent of the instructor.

561 Genre Theory and Practice 4 hours. Analysis of perspectives and methodologies employed in genre theory and practice; exploration and evaluation of discourse analysis approaches used in genre research; critical examination of sociocultural bases of genre. Prerequisite(s): Consent of the instructor.

562 Design and Conduct of Literacy Research 4 hours. Design principles for the study of literacy development and education. Emphasis is on examining lines of literacy research from multiple design perspectives; relationship between research design and theory and epistemology. Fieldwork required. Computer use required. Prerequisite(s): Consent of the instructor.

563 Analysis of Research in Literacy 4 hours. Critical analyses of literacy-related research methods, their implications for interpreting research, the forms in which research is published, manuscript review process, and ethical considerations that inform all of the above. Prerequisite(s): CE 561 or CE 590, and consent of the instructor.

564 Design and Conduct of Literacy Research 4 hours. Introduction to design principles informing the study of literacy development and education. Emphasis on conducting literacy research from multiple design perspectives and the relationship between epistemology, theory and research design. Prerequisite(s): ED 502 and ED 503 and CE 563. Priority enrollment will be given to students admitted into Literacy, Language, and Culture doctoral program.

568 Research in Children’s and Adolescent Literature 4 hours. Topical seminar that examines research on a specific area of children’s or adolescent literature, such as multicultural literature, picture books, nonfiction texts, or the development of literacy understanding in children/adolescents. May be repeated to a maximum of 8 hours. Prerequisite(s): Consent of the instructor and an undergraduate or master’s level survey course on children’s/adolescent literature.

570 Critical Issues in Science Education 4 hours. Explores the nature of scientific activity and educational issues, such as constructivism, discourse, gender and multicultural issues, assessment, the role of technology, and teacher research. Prerequisite(s): Admission to a graduate program in the College of Education or consent of the instructor.

571 Integrating Mathematics, Science, and ESL 4 hours. Curriculum and instructional issues and practice related to the integra-
17 GradCourseDescr.qxd  7/13/06  1:39 PM  Page 202

572 Assessment in Science and Math Education  4 hours.
Examines different purposes of assessment, generates principles to
guide assessment, studies “new” assessment practices, and explores
ways to implement them in science and mathematics classes.
Prerequisite(s): Admission to graduate study in education or con-
sent of the instructor.

574 Foundations of Curriculum Design  4 hours.
Curriculum as a area of inquiry; historical, philosophical, cultural, and
related foundations; variations on curriculum theory and practice;
alternative paradigms of curriculum inquiry. Prerequisite(s): ED 430 or admission to the PhD in
Education program or the PhD in Public Policy Analysis program.

575 Seminar in Research Issues with English Language Learners  4 hours.
Selected topics on research in the education of language minority stu-
dents for advanced MEd and PhD students. Topics vary each semester.
May be repeated to a maximum of 12 hours. Prerequisite(s): CIE 481.

576 Conceptions of Teaching and Schooling  4 hours.
Philosophical and conceptual analy-
sis of teaching and schooling and
the impact of those conceptions on the
conduct of educational practice. Prerequisite(s): CIE 574 or con-
sent of the instructor.

577 Literacy In and Out of School  4 hours.
Analysis of literacy practices in for-
mal and informal contexts. Focus on
community and family contributions
to literacy learning; emphasis on con-
sequences of cultural congruity and
discontinuity between in- and
out-of-school literacy practices.
Prerequisite(s): Consent of the instructor.

578 Advanced Studies in Qualitative Research Methods  4 hours.
The dynamics of data collection and
analysis, the use of theory and inter-
disciplinary frameworks, and writing
up and presenting original research.
Prerequisite(s): ED 502.

579 Biliteracy: Theory, Research, and Practice  4 hours.
Theoretical foundations, research
paradigms, and issues focusing on
bilingual and biliteracy practices in
and between home, school, and
community contexts. Prerequisite(s): Consent of the instructor.

581 Perspectives on Reading: Theory, Research, and Practice  4 hours.
Introduction of doctoral students to
perspectives underlying theory,
research, and practices related to
understanding reading and reading
instruction. Study of how research
and practice are framed, shaped,
and constrained by theoretical per-
pectives. Prerequisite(s): Priority
will be given to students admitted to
the Literacy, Language, and
Culture doctoral program.

582 Research Perspectives on Literacy in the Disciplines  4 hours.
Literacy is an integral part of expert-
ise in the major fields of study. This
course reviews the research in liter-
cy and its related constructs in the
disciplines of mathematics, science,
history, and English. Prerequisite(s): Consent of the instructor.

583 Early Literacy: Theory, Research, and Practice  4 hours.
Analysis of theories and research
focusing on the initial phases of
young children’s acquisition of read-
ing and writing, with emphasis on
issues related to instruction.
Prerequisite(s): CIE 503 and consent of the instructor.

584 Semiotics, Literacy, and Learning  4 hours.
Theory and research focusing on
language and literacy as they relate
to other embodied forms of meaning
making; how these varied meanings
are socially and culturally mediated;
the ways in which they enable and
contain processes of learning.
Prerequisite(s): Consent of the instructor.

585 Seminar in Literacy Studies  4 hours.
Selected topics in literacy theory,
research, and practice for advanced
PhD students. Topics vary each semester. May be repeated to a
maximum of 12 hours.
Prerequisite(s): CIE 563 or the equivalent or consent of instructor.

586 Perspectives on Writing Instruction: Theory, Research, and Practice  4 hours.
An examination of research and theo-
retical perspectives on writing and multimodal text construction, includ-
ing critical reflection on perspectives that have contributed to changes in
the ways we view texts, writing, writ-
ers, and instruction. Prerequisite(s): CE 544; and consent of the instructor. Priority in
enrollment will be given to students
admitted into Literacy, Language, and Culture doctoral program.

587 Literacy Assessment: Theory, Research, and Practice  4 hours.
Theory and practice in literacy
assessment. Measurement issues
unique to literacy assessment,
including word recognition, vocabu-
lar y, comprehension, and writing.
Critical consideration of how assess-
ment both enables and constrains
instructor. Prerequisite(s): CE 503 and consent of the instructor.

588 Design Research in the Study of Literacy  4 hours.
Emphasis on understanding the
conceptual frameworks that inform
design research, integrating theory
into the design of teaching
and learning environments; the use
of design research in the study of
literacy in various instructional set-
ings. Individual and group
participation, including participation
on course listserv. Prerequisite(s): Consent of the instructor.

589 Literacy and Learning Technologies: Theory, Research, and Practice  4 hours.
Critical analyses of how technologi-
cally based, multimedia transform
instruction, with a focus on the
design of strategies to enhance writ-
ten, visual, and oral literacies using
linear and non-linear software and
online environments. Prerequisite(s): Consent of the instructor.

590 Alternative Paradigms of Qualitative Research in Education  4 hours.
Methodology cases, and rationale
for action research, educational criti-
cism, critical ethnography, historiog-
raphy, and phenomenological
hermeneutics as alternatives in
qualitative research in education.
Prerequisite(s): CE 579 or con-
sent of instructor; and admission to
PhD in Education program or PhD in
Public Policy Analysis program.

592 Apprenticeship in Teacher Education  1 TO 4 hours.
Faculty guidance and supervision of
doctoral students’ teaching experi-
ence related to curriculum and
instruction. Variable credit (1-4 hrs)
given based upon scope of stu-
dents’ teaching responsibilities and
proposed reflection on them.
Prerequisite(s): Consent of the instructor and program coordinator.

593 PhD Research Project  1 TO 8 hours.
Students design, implement, and
analyze results of a research prob-
lem in this area of specialization.
Completed study is reviewed by fac-
ulty. May be repeated to a maximum
of 8 hours. Prerequisite(s): Admission to the PhD in Education program.

594 Special Topics in Curriculum, Instruction, and Evaluation  2 TO 4 hours.
Seminar on a preannounced topic
focusing on methodology, research,
and educational implications of
recent models of learning, problem
solving, and thinking. May be
repeated to a maximum of 12
hours. Students may register in
more than one section per term.
Prerequisite(s): Consent of instructor.

596 Independent Study  1 TO 4 hours.
Students design, implement, and
analyze the results of a research
problem in this area of specializa-
tion. May be repeated to a maxi-
mum of 12 hours. Students may
register in more than one section per term. Prerequisite(s): Consent of study adviser.

599 Thesis Research  0 TO 16 hours.
Research on the topic of the stu-
dent’s dissertation. Satisfactory/Unsatisfactory grading only. May be
repeated. Students may register in
more than one section per term.
Prerequisite(s): Consent of the dissertation advisor.
Disability and Human Development (DHD)

401 Foundations of Disability and Human Development 3 hours.
A critical review of key concepts and issues in disability. Students will develop a framework for understanding disability as a multilevel entity, including the impact of disability at personal, social, and societal levels. Prerequisite(s): Enrollment in the MS in Disability and Human Development program or consent of the instructor.

430 Introduction to Disability Policy and Organization 3 hours.
Legislative, legal, and administrative foundations for the provision of services to persons with disabilities in the U.S. Roles of residential institutions, the independent living movement, class action litigation, and advocacy. Prerequisite(s): DHD 401 or consent of the instructor.

440 Introduction to Assistive Technology: Principles and Practice 3 hours.
Principles and exemplary practice of assistive technology used by individuals with disabilities, including augmentative communication, seating, mobility, computer access, environmental control, home modifications, and workplace modifications. Prerequisite(s): Graduate standing or consent of the instructor.

Recommened background: Undergraduates enrolled in health sciences, education, or engineering and working professionals seeking to develop assistive technology as an area of concentration.

444 Assistive Technology for Literacy, Learning, and Participation in Pre-K through High School 3 hours.
Use of communication systems, computers, adapted equipment, and strategies to foster participation and inclusion of students in grades pre-school through high school. Same as SPED 444.

445 Topics in Disability Studies 3 OR 4 hours.
This course will focus on topics structured around particular aspects of disability studies and its practical, cultural, and theoretical implications. Same as ENGL 445. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 361 or ENGL 362 or ENGL 363 or ENGL 364, and senior standing or above; or consent of the instructor.

460 Fundamentals of Behavior Analysis 3 hours.
Introduction to the principles, concepts, and applications of behavioral principles. Content includes philosophical origins, historiè and current practices of experimental and applied behavior analysis. Prerequisite(s): Credit or concurrent registration in DHD 401 or the equivalent.

464 Survey of Developmental Disabilities 3 hours.
Survey of the developmental disabilities field, including basic definitions, history of DD services, relevant public policies and legislation, service delivery systems, and research. Same as CHSC 464. Prerequisite(s): Graduate standing or consent of the instructor.

494 Special Topics in Disability and Human Development 1 TO 4 hours.
Systematic study of selected topics in disability and human development. May be repeated. Students may register in more than one section per term. Prerequisite(s): Graduate standing or consent of the instructor.

510 Concepts in Interdisciplinary Research on Disability 3 hours.
Core concepts and methodologies of the major research traditions used in disability research. Same as DIS 510.

514 Ethical Issues in Disability 3 hours.
Examines contemporary ethical issues affecting the lives of persons with disabilities and disability professionals. Critiques the application of ethical principles to problems of genetics, treatment decisions, and competency.

515 Statistical Methods in Disability Studies 3 hours.
Examination of parametric and nonparametric statistical methods commonly used in disability research with microcomputer applications to supplement text and lecture materials. Same as DIS 515. Prerequisite(s): An introductory course in statistics.

517 Ethics and Disability: Contemporary Problems 3 hours.
Ethical theories and ethical decision making are examined from an interdisciplinary/disability studies perspective in relation to people with disabilities. Topics include assisted suicide, deinstitutionalization, and genetic discrimination. Same as PSCH 517. Prerequisite(s): DHD 514 or consent of the instructor.

520 Disability and Physical Activity 3 hours.
Examination of the foundations of physical activity for persons with disabilities. Emphasis on strategies for promoting physical activity among persons with disabilities in community settings. Same as MNSC 520.

525 Technology to Promote Physical Activity Among Persons with Disabilities 3 hours.
Applications of new and emerging technologies to promote participation in and adherence to healthful physical activity by people with disabilities. Emphasis on designing physical, social, and attitudinal environments to achieve these outcomes. Recommended background: DHD 515 or an equivalent course on interpreting research findings.

526 Family Perspectives on Disability 3 hours.
Examines trends, theories and research methods, policies, and family-centered intervention approaches for families of persons with disabilities. Same as DIS 526 and CHSC 526. Prerequisite(s): Consent of the instructor.

529 Community Intervention 3 hours.
Theory, research, and practice of community interventions in public, nonprofit, and voluntary settings, such as disability organizations; intervention types and effectiveness; roles of community intervenor. Same as PSCH 532. Prerequisite(s): Consent of the instructor.

535 Advocacy and Empowerment in Disability 3 hours.
In-depth review of academic literature on advocacy and empowerment. Relevant theories, research, and interventions in the context of individuals with disabilities will be reviewed. Same as DIS 559.

537 Disability and Health Promotion 3 hours.
Examinations of issues in disability with emphasis on health promotion and preventing secondary disease. Relationship of emerging theories of health promotion to disability are discussed.

541 Advanced Concepts in Disability Research 3 hours.
Seminar-based applications of advanced scholarship skills. Topics covered include problem formulation, manuscript development, and critical reviews. Same as DIS 541.

546 Qualitative Methods in Disability Research 4 hours.
Examinations of qualitative research methods, design, data collection, analysis, and report writing. Issues of ethical conduct, power relationships, and collaboration approaches. Same as DIS 546.

551 Computers, Communication, and Controls in Rehabilitation Technology 3 hours.
Provides information on operation and use of alternative controls for computers, augmentative communication devices, and powered mobility. Emphasis on matching consumer’s need and assistive technology. Same as OT 551. Recommended background: Speech-language pathology, occupational therapy, special education.

552 Seating and Wheeled Mobility 3 hours.
Focuses on issues of wheelchair seating, positioning, and mobility for children and adults with physical disabilities. Assessment procedures, technology selection, current research, and analysis of funding sources. Prerequisite(s): DHD...
Recommended background: Engineering, occupational therapy, physical therapy, special education, and speech and language pathology.

570 Disability and Culture 3 hours. Development of a cultural comparative approach in disability studies; American and cross-cultural aspects of disability; imagery of disability; disability and the body; gender and life-course issues; cultures of disability. Prerequisite(s): DHD 401 or consent of the instructor.

571 Eugenics in America, 1848-1945 4 hours. Critical examination of the philosophy and practice of eugenics toward people with disabilities during the period from mid-nineteenth to mid-twentieth centuries. Same as DIS 571.

572 A Representational History of Disability 4 hours. Examines historical and contemporary representations of “the body” to demonstrate how cultural concepts such as normality, health, and morality are created in reference to “aberrant bodies.” Same as DIS 572. Prerequisite(s): Graduate or professional standing.

575 History of Human Differences: Disability Minorities in America 3 hours. Historical experiences of disability minorities during the modern era. Focus on American experiences and comparing them to premodern and contemporaneous experiences in Western European societies. Prerequisite(s): DHD 440 or consent of the instructor.

576 Visualizing the Body 4 hours. Survey of key moments in the representational life of disability in film. Film portrayals of disability will be analyzed from the perspective of narrative theory, film grammar, and social history. Same as DIS 576. Prerequisite(s): Graduate or professional standing.

590 Field Experience in Disability and Human Development 0 TO 12 hours. Opportunities for guided experience working with agencies, families, and persons with disabilities providing concrete, practical applications of concepts and principles of disability and human development. May be repeated to a maximum of 12 hours. Prerequisite(s): DHD 401 and DHD 415; or consent of the instructor.

593 Independent Research 1 TO 8 hours. Advanced study and analysis of a topic selected by a student under the supervision of a faculty member. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

594 Advanced Special Topics in Disability and Human Development 1 TO 4 hours. Systematic study of advanced selected topics in disability and human development. May be repeated. Students may register in more than one section per term.

596 Seminar in Disability and Human Development 1 TO 4 hours. Identifies and analyzes a broad range of issues related to disability and human development. Topics vary according to student interests and instructor availability. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term.

597 Project Research 0 TO 16 hours. Independent research project under the supervision of a faculty member. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Graduate standing in the MS in Disability and Human Development program and consent of the instructor.

598 Master’s Thesis Research 0 TO 16 hours. Thesis research to fulfill master’s degree requirements. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Graduate standing in the MS in Disability and Human Development program and consent of the instructor.

501 Disability Studies (DIS) 4 hours. Provides analysis of contemporary classification and diagnosis systems for disability, as well as the conceptual foundations for disability studies as a content area.

502 Disability Studies II 4 hours. Current approaches and practices in disability studies, critically considered from a variety of perspectives. Service delivery systems and the influence that civil rights and self-determination have had.

510 Concepts in Interdisciplinary Research on Disability 3 hours. Core concepts and methodologies of the major research traditions used in disability research. Same as DHD 510.

515 Statistical Methods in Disability Studies 3 hours. Examination of parametric and nonparametric statistical methods commonly used in disability research with microcomputer applications to supplement text and lecture materials. Same as DHD 515. Prerequisite(s): An introductory course in statistics.

517 Ethics and Disability: Contemporary Problems 3 hours. Ethical theories and ethical decision making are examined from an interdisciplinary/interdisciplinary perspective in relation to people with disabilities. Topics include assisted suicide, deinstitutionalization, and genetic discrimination. Same as DHD 517. Prerequisite(s): DHD 514 or consent of the instructor.

526 Family Perspectives on Disability 3 hours. Examines trends, theories and research methods, policies, and family-centered intervention approaches for families of persons with disabilities. Same as DHD 526 and CHSC 526. Prerequisite(s): Consent of the instructor.

535 Advocacy and Empowerment in Disability 3 hours. In-depth review of academic literature on advocacy and empowerment. Relevant theories, research, and interventions in the context of individuals with disabilities will be reviewed. Same as DHD 535.

536 Fatiguing Conditions and Disability 3 hours. Empirically supported concepts related to assessment and man-
agement of fatiguing conditions. Course also explores the relationship between fatigue and disability from social, psychological, and community-based perspectives.

Same as OT 536.

Recommended background: Health or behavioral sciences.

541

Advanced Concepts in Disability Research 3 hours. Seminar-based applications of advanced scholarship skills. Topics covered include problem formulation, manuscript development, and critical reviews. Same as DHD 541.

546

Qualitative Methods in Disability Research 4 hours. Examines qualitative research methods, design, data collection, analysis, and report writing. Issues of ethical conduct, power relationships, and collaborative approaches. Same as DHD 546.

550

Disability in the Urban Environment 4 hours. Features of urban contexts that influence experiences of persons with disabilities are examined as they exacerbate problems or enhance resources in low income communities. Same as OT 550.

556

Theory and Methods of Needs Assessment in Aging and Disability 4 hours. Introduces theories of need, models of the needs assessment process, and reviews research methods typically used in conducting needs assessments. Emphasis will be on needs assessments in health-related community agencies. Same as CHSC 556 and OT 556. Prerequisite(s): A 400- or 500-level research course such as OT 510, DHD 415, CHSC 446, or SOC 500. The prerequisite research course needs to provide students with an understanding of basic research design, sampling strategies, and an introduction to methods such as surveys and focus groups. Recommended background: Health or behavioral sciences, research methods.

564

Community Integration in Developmental Disabilities 3 hours. Historical and contemporary issues pertaining to the empowerment and integration of persons with developmental disabilities into community settings. Same as CHSC 564 and DHD 564.
107 and 108 or PHYS 142; or consent of the instructor.

448 Plate Tectonics 4 hours.
Basic concepts and recent developments including plate kinematics, marine magnetics and paleomagnetics, evolution of oceanic lithosphere, subduction zones, and passive margins.
Prerequisite(s): MATH 180; and PHYS 107 and 108 or PHYS 142; or consent of the instructor.

465 Clastic Sedimentology and Sequence Stratigraphy 4 hours.
Processes, facies, and sedimentary architecture in fluvial, deltaic, coastal, and offshore marine clastic depositional environments. Relative sea-level change and its controls on the stratigraphic record. Basin and reservoir modeling. Field trips required at nominal fee. Prerequisite(s): EAES 350 or consent of the instructor.

486 Principles of Paleontology 4 hours.
Theory and methods of evolutionary paleontology: includes paleoecology, functional morphology, and major features of organic evolution. Same as BIOS 486.
Prerequisite(s): EAES 360 or BIOS 360 or consent of the instructor.

470 Surficial Processes 4 hours.
Quantitative analysis of the mechanics, rates, and distribution of physical processes that modify Earth's and other planets' surfaces. Introduction to field, theoretical, and modeling approaches. Prerequisite(s): EAES 101 and MATH 181.

475 Hydrology/Hydrogeology 4 hours.
The occurrence, storage, movement, and quality of water above, on, and below the Earth’s surface. Topics include atmospheric water vapor processes, Earth surface hydrology, and groundwater hydrology. Field trips required at nominal fee. Prerequisite(s): EAES 101 or EAES 107; and MATH 181; or consent of the instructor.

480 Statistical Methods in Earth and Environmental Sciences 4 hours.
Techniques of probability and data analysis as applied to problems in environmental sciences. Sampling, statistical inference, descriptive statistics, multivariate methods, time series analysis. Prerequisite(s): Consent of the instructor.

520 Advanced Mineralogy 4 hours.
Various types in one of the following categories: structural determination, advanced diffractometry techniques, crystal chemistry, and structural mineralogy. Lectures, seminars, and laboratory. May be repeated if topics vary.
Prerequisite(s): Consent of the instructor.

530 Advanced Petrology 3 TO 4 hours.
Selected topics: generation and properties of magmas, formation of metamorphic rocks, reaction rates in metamorphic rocks. May be repeated if topics vary.
Prerequisite(s): Consent of the instructor. Recommended background: Credit in EAES 430.

541 Seismology 4 hours.
Elastic wave propagation theory, instrumentation, seismic source mechanisms, body and surface waves, free oscillations, Earth's interior, local mechanisms, earthquakes, and plate tectonics.
Prerequisite(s): EAES 444 or consent of the instructor.

543 Advanced Geophysics and Plate Tectonics 4 hours.
Advanced topics in geophysics and plate tectonics, including subjects such as mantle convection, driving forces of plate tectonics, and evolution of rifted continental margins. May be repeated if topics vary. Students may register in more than one section per term.
Prerequisite(s): EAES 444 or EAES 448.

545 Spatial and Temporal Analysis and Modeling 4 hours.
Methods for the analysis and modeling of spatial and temporal patterns in the earth and environmental sciences. Data acquisition.
Prerequisite(s): Graduate standing; and consent of the instructor.

555 Advanced Sedimentary Geology 3 hours.
Advanced topics in modern sedimentology and stratigraphy. May be repeated if topics vary. Field trips required at nominal fee.
Prerequisite(s): EAES 455 or consent of the instructor.

560 Topics in Paleontology 3 TO 4 hours.
In-depth analysis of current problems and issues in paleontology, involving reading primary literature, student presentations, and critical discussions. Same as BIOS 560. May be repeated if topics vary. Prerequisite(s): Consent of the instructor.

570 Advanced Surficial Processes 4 hours.
Advanced topics in theoretical, empirical, and applied aspects of hillslope processes, sediment transport mechanics, river mechanics, weathering and soil development, or drainage basin development. May be repeated if topics vary. Prerequisite(s): EAES 470.

572 Quaternary Environmental Systems 3 hours.
Interrelations between eluvial, lacustrine, marine, and glacial environments for the past 1.8 million years; geochronologic and isotopic methods; stratigraphic and geomorphic approaches.
Prerequisite(s): EAES 470.

575 Advanced Hydrology 3 hours.
Selective topics: mechanics of near-surface groundwater, flow in fractured rocks, groundwater contamination, unsaturated-saturated flow, surface-groundwater interactions. May be repeated if topics vary. Prerequisite(s): EAES 475.

576 Paleoclimatology 3 hours.
Principles of climatology and paleoclimatology; mechanisms and causes of climate change for the past 63 million years; geologic records of climate and modeling.
Prerequisite(s): EAES 470.

580 Aquatic Science 3 hours.
Addresses environmental issues related to lakes, rivers, estuaries, and coastal zones. Topics will cover sampling techniques, impact of humans, and global change. Field trip required at nominal fee. Prerequisite(s): EAES 475; or consent of the instructor.

585 Departmental Seminar 1 hour.
Special one-hour seminar, every Thursday, by invited speakers from other earth and environmental sciences departments, governmental agencies, and industry. Satisfactory/unsatisfactory grading only.
awarded by the Department of the BA, B.S., M.A., or PhD degree may not be used to satisfy the economics for the MA or PhD in Economics.

442 Topics in Economic Education 1 TO 4 hours. Topics vary. Course content is announced prior to each term in which it is given. May be repeated for credit. Prerequisite(s): Consent of the head of the department and the faculty member who will supervise the study.

598 Master’s Thesis Research 0 TO 16 hours. Individual work under the supervision of faculty members in their respective fields. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the thesis supervisor.

999 PhD Thesis Research 0 TO 16 hours. Individual work under the supervision of faculty members in their respective fields. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the thesis supervisor.

Economics (ECON)

436 Mathematical Economics 3 OR 4 hours. Application of mathematics to theories of consumer and producer behavior, determination of prices in markets, growth, and stability features of macroeconomic models. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ECON 218 or ECON 220; and either ECON 345 or MATH 165 or MATH 180.

441 Teaching Methods in Economics 3 OR 4 hours. Develops skills in preparing and giving lectures and examinations, computer usage, and other aspects of teaching economics and consumer economics at secondary/higher education levels. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ECON 218 or ECON 220; and either ECON 345 or MATH 165 or MATH 180.

475 Real Estate Markets and Valuation 3 OR 4 hours. Real estate market analysis. Sales comparison, cost, and income approaches to estimating residential and commercial property values. Statistical procedures for real estate analysis. 3 undergraduate hours. 4 graduate hours. Course may not be applied toward the minimum required courses in economics for the MA or PhD in Economics. Prerequisite(s): ECON 218 or ECON 220.

495 Competitive Strategy 4 hours. Multidisciplinary analysis of organizational strategy and policy, using case method and/or business simulation. Assignments involve extensive library research and oral and written reports. Prerequisite(s): Senior standing in the College of Business Administration and completion of all other CBA core courses, or consent of the instructor.

499 Independent Study in Economics 1 TO 3 hours. Independent study of a topic not covered in a graduate-level course. Prerequisite(s): Consent of the director of graduate studies and the instructor.

500 Managerial Economics 4 hours. Economic analysis applied to business operations; demand theory; production cost analysis; capital valuation; pricing policies; capital budgeting. Prerequisite(s): ECON 501 or ECON 520.

501 Microeconomics I 4 hours. Theories of consumer and producer behavior and determination of market price. Systematic treatment of the core of microeconomic theory. Prerequisite(s): ECON 220 and MATH 165.

502 Microeconomics II 4 hours. Advanced microeconomic theory. Theories of consumer behavior, uncertainty, general equilibrium, welfare economics. Prerequisite(s): ECON 501.

504 The Economics of Organization of Business Enterprises 4 hours. The economic reasons for the existence of firms, the determinants of firm size, and the theory of organizational structure. Prerequisite(s): ECON 501 or ECON 520.

511 Macroeconomics I 4 hours. Static and dynamic theories of income, employment, and the price level; advanced treatment of consumption, investment, money demand, and aggregate production functions; stabilization theory and policy. Prerequisite(s): ECON 221.

512 Macroeconomics II 4 hours. Neoclassical and modern market-clearing models of real and monetary influences on economic growth, inflation, and business cycles. Prerequisite(s): ECON 511.

513 Special Topics in Macroeconomics and International Economics 4 hours. Intensive study of selected research topics in macroeconomics and international economics. Topics may vary. Prerequisite(s): ECON 512.

514 International Trade Policy 4 hours. Theoretical models on the causes and consequences of international trade and their empirical validation. Effects of tariff and nontariff trade policies and preferential trade agreements. Prerequisite(s): ECON 501 or ECON 502 or ECON 521.

515 International Monetary Policy 4 hours. Capital mobility and stabilization policy under fixed and flexible exchange rates; optimum currency areas; reform of international monetary system; problems of liquidity adjustment and confidence. Prerequisite(s): ECON 511 or ECON 521.

516 Economic Development in an Interdependent World 4 hours. Theoretical and empirical studies of economic development with intersectoral and international perspectives; structural change and resource reallocation; factor proportions, substitutability, and movement; export-led growth. Prerequisite(s): ECON 501 or ECON 520 or consent of the instructor.

520 Microeconomics for Business Decisions 4 hours. Efficient allocation of resources by consumers, profit and nonprofit firms and government, regulation of industry, monopoly and imperfect competition, business ethics and the market place, efficiency versus equity, social welfare. Credit is not given for ECON 520 if the student has credit in ECON 501 or ECON 540 or MBA 502.
Focus on demographic groups, institutional constraints, and decisions. Determination of factors affecting economic activity, inflation, interest rates, and exchange rates. Role of monetary and fiscal policy. Credit is not given for ECON 521 if the student has credit in ECON 511 or MBA 502 and MBA 508.

531 Labor Economics I 4 hours. Determinants of wage differentials; analysis of determinants and consequences of investments in human capital (schooling, on-the-job training, health); labor mobility, supply, and allocation of time. Prerequisite(s): ECON 501 or ECON 520.

532 Labor Economics II 4 hours. Impact of training, legislation, institutional constraints, and discrimination on the labor market. Focus on demographic groups (race, nativity, ethnicity, gender). Prerequisite(s): ECON 501 or ECON 520.

533 Economic Development and Human Resources 4 hours. Economic theory applied to less developed countries, focusing on human aspects of development. Household economy, employment, earnings; labor productivity, unemployment; migration, population growth, income distribution. Prerequisite(s): ECON 501 or ECON 520.

534 Econometrics I 4 hours. Detailed treatment of the multivariate linear regression model using matrix algebra. Emphasis on formulating and testing static and dynamic econometric models. Prerequisite(s): ECON 445 or IDS 532.

535 Econometrics II 4 hours. Detailed treatment of simultaneous equations estimation; evaluation of alternative estimators; problems of estimation, including PROBIT, LOGIT, Tobit, and error component models. Prerequisite(s): ECON 534.

536 Advanced Mathematical Economics 4 hours. Mathematics theory and applications, including calculus and linear algebra, to theories of consumer and producer behavior, general equilibrium, welfare economics, externalities, and social choice. Prerequisite(s): MATH 181.

537 Business Research and Forecasting I 4 hours. The role of research in business; forecasting methods and techniques, including models and their applications. Same as IDS 582. Prerequisite(s): ECON 534 and at least one statistics course with regression analysis at the 300-level or above.

538 Business Research and Forecasting II 4 hours. The role of research in business; forecasting methods and techniques, including multivariate time series models and their applications. Same as IDS 583. Prerequisite(s): IDS 476 or IDS 582 or ECON 537.

539 Microeconometrics 4 hours. Application of econometric techniques to empirical problems in microeconomics with emphasis on issues of identification and causality; and the selection, implementation, and testing of statistical models. Prerequisite(s): ECON 501 and ECON 535.

540 Economics for the Noneconomists 4 hours. Basic introduction to economics for graduate and professional school students. Supply/demand, opportunity cost, economic behavior of consumers/business firms, macroeconomy, inflation, and business cycles. Credit is not given for ECON 540 if the student has credit in ECON 501 or ECON 520. No graduation credit given to students enrolled in MBA, MA, or PhD in Economics, or PhD in Business Administration.

541 Economics of Education 4 hours. Basic concepts and tools of economics applied to education. Economic implications of educational outcomes for the economy and for socioeconomic structure (e.g., income distribution, fertility patterns, ethnic group differences). Prerequisite(s): ECON 501 or ECON 520.

542 Economic Demography 4 hours. Economic analysis of fertility (number and timing of children), mortality, marriage and divorce, population age structure, the relationship between population growth and economic development. Prerequisite(s): ECON 501 or ECON 520.

543 Economics of Religion 4 hours. The economic determinants of participation in religious activities; the effects of religion on economic and demographic behavior, health, and well-being. Prerequisite(s): ECON 501 or ECON 520.

555 Health Economics I 4 hours. Topics in the supply and demand for health services; the role of insurance in the medical care industry; public policy issues of cost and quality regulation. Prerequisite(s): ECON 501 or ECON 520, or consent of the instructor.

556 Health Economics II 4 hours. Economics of health-related behaviors, prevention and health promotion, health disparities, health and development, evaluation of health-related interests. Prerequisite(s): ECON 501 or ECON 520; or consent of the instructor.

560 Industrial Organization 4 hours. Analysis of industry structure, behavior, and performance; firms in imperfect competition; concentration measurement; oligopoly; theory; cartels; price discrimination; vertical and horizontal integration. Prerequisite(s): ECON 501 or ECON 520; or consent of the instructor.

570 Environmental and Natural Resource Economics 4 hours. Analytical methods for evaluating the impacts and control costs of pollution externalities and natural resource changes. Consequent implications for public and business policy. Prerequisite(s): ECON 501 or ECON 520 or MBA 502.

571 Urban Real Estate and Land Economics 4 hours. Economic analysis of urban real estate and land. Real estate appraisal. Demand for urban land; supply of land and improvements. Prerequisite(s): ECON 501 or ECON 520.

572 Urban Economics 4 hours. Urban economic models and economic analysis of urban problems. Firm location, housing, transportation, local public finance. Prerequisite(s): ECON 501 or ECON 520.

575 Economic Analysis of Public Expenditures 4 hours. Microeconomic theory as applied to public expenditure decisions; externals, shadow prices and investment criteria in cost-benefit analysis; uncertainty and the value of life, extensive illustrative case studies. Prerequisite(s): ECON 501 or ECON 520.

576 Economics of Taxation 4 hours. Analysis of the effects of taxation on economic behavior; taxation and public choice; the effects of taxation on the distribution of income; theory and empirical analysis of welfare effects of taxes; optimal tax theory; issues in tax policy and tax reform. Prerequisite(s): ECON 501 or ECON 520.

592 Workshop in Economics 4 hours. Bridges the transition from course work to dissertation research. The nature of a PhD dissertation, topic selection, career design, research support networks. Students define a potential dissertation topic, survey the literature, and present it in class. Prerequisite(s): Comprehensive exams in micro and macro.

593 Internship Program 0 TO 8 hours. Under the direction of a faculty supervisor, students work in government or a private firm on problems related to their major field of interest. Specific credit allotted is determined by the Graduate Curriculum Committee after receiving the supervisor’s recommendation. Prerequisite(s): Completion of the core courses in the degree program in which the student is enrolled and approval of the internship program by the graduate adviser and the Graduate Curriculum Committee.
596 Independent Study 1 TO 4 hours. Independent study under faculty supervision. Prerequisite(s): Consent of the instructor.

598 Master’s Thesis Research 0 TO 16 hours. Research on a MA thesis. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the chair of the Thesis Committee.

599 PhD Thesis Research 0 TO 16 hours. Research on a PhD thesis. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the chair of the Thesis Committee.

Education (ED)

402 Philosophy of Education and Urban School Policy 3 hours. Selected social and education philosophies and their impact on urban school curriculum design, school organization and control.

403 Policy Issues in the History of American Education 3 hours. Political, economic, and cultural influences shaping the development of American education policy; emphasis on issues of education theory and practice in their historical settings.

421 Advanced Educational Psychology 3 hours. Examines current theory and research on the teaching-learning process with particular attention to general learning and curriculum-relevant problem-solving skills. Prerequisite(s): ED 210 or graduate standing.

422 Advanced Developmental Psychology and Educational Processes 3 hours. Focuses on cognitive and social development from birth to adolescence. Examines relations between development, learning, and educational processes. Same as PSYH 422. Prerequisite(s): PSYH 100 and any one from ED 210, PSYH 250, PSYH 320; or graduate standing and consent of the instructor.

429 Practicum in Secondary Classrooms 2 hours. Students will observe secondary classrooms, tutor individuals, and teach small groups. Discussions explore curriculum, instruction, and assessment practices within context areas and cultural contexts. Prerequisite(s): Admission into a secondary teacher education program and graduate standing. Must enroll concurrently in ED 430.

430 Curriculum, Instruction, and Evaluation in Education 3 hours. Introduction to curriculum, instruction, and evaluation as areas of inquiry; implications of these areas of inquiry for educational practice; related contemporary problems and issues. Prerequisite(s): Admission to graduate study in education, or consent of the instructor.

431 Improving Learning Environments 3 hours. Analysis of structural, normative, and social dimensions of learning environments and their relationships to student learning. Exploration of change processes to improve those environments. Prerequisite(s): Graduate standing or consent of the instructor.

432 Instruction and Evaluation in Secondary Education 5 hours. Instructional planning and curriculum design; strategies for instruction and classroom management; forms of formative and summative evaluation; and professional development issues. Fieldwork required. Prerequisite(s): Completion of education core courses in undergraduate teacher certification program: ED 200 and ED 210 or in graduate teacher certification program: ED 402 or ED 403 or PS 401; and ED 421 or ED 422 or ED 445.

445 Adolescence and the Schools 3 hours. Physiological, intellectual, and social development of adolescence. Relations between aspects of adolescent development and the academic and social demands of secondary schools. Prerequisite(s): ED 210 or the equivalent, or graduate standing.

450 Composing a Teaching Life I 15 hours. Begins the capstone experience of the program, full-time student teaching in an elementary classroom. It is accompanied with a weekly seminar to discuss experiences, reason about learning, and reflect on students’ own learning. Prerequisite(s): Senior standing or above and admission to the Bachelor of Arts in Elementary Education program.

451 Composing a Teaching Life II/ Senior Reflective Seminar 5 hours. Provides the capstone experience for students, with a weekly Senior Reflective Seminar in which students reflect upon their teaching through the lenses of the five program curricular strands. Fieldwork required. Prerequisite(s): Admission to the Bachelor of Arts in Elementary Education program. Senior standing and successful completion of ED 450.

461 Political and Sociocultural Perspectives on Special Education 3 hours. Students will examine issues of access and equity through legislation, litigation, and sociocultural perspectives and be introduced to major theoretical frameworks that influence special education programs. Same as SPED 461. Fieldwork required.

470 Educational Practice with Seminar I 6 hours. The first half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the college. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, credit or concurrent registration in ED 470, and approval of the college or department of specialization.

472 Promoting Academic and Prosocial Behavior I 3 hours. The importance of school-wide and classroom structure and climate in the educational process. Strategies to promote academic success and desired social behavior. Same as SPED 472. Fieldwork required. Prerequisite(s): SPED 461 or ED 461 or the equivalent or consent of the instructor.

473 Teaching Math and Science with Adaptations 3 hours. Provides prospective teachers with assessment strategies and a range of adaptations, modifications, and interventions in math and science for students with disabilities. Same as SPED 473. Fieldwork required. Prerequisite(s): SPED 461 or ED 461 or the equivalent or consent of the instructor.

500 Philosophical Foundations of Educational Inquiry 4 hours. Philosophical foundations of various forms of educational inquiry. Epistemological and ethical dimensions of different research approaches. Prerequisite(s): Admission to the PhD in Education program or consent of the instructor.

501 Data and Interpretation in Educational Inquiry 4 hours. Data, interpretation, reliability, validity, accuracy, stability, and generalizability from different methodological perspectives; how research design, data collection, and interpretation vary with different philosophical approaches. Prerequisite(s): Admission to the PhD in Education program or consent of the instructor.

502 Essentials of Qualitative Inquiry in Education 4 hours. Hands-on introduction to qualitative research methods, including foundations, practices, and ethics in qualitative research. Prerequisite(s): Admission to
the PhD in Education program or consent of the instructor.

503 Essentials of Quantitative Inquiry in Education 4 hours. Introduces theory and assumptions behind parametric statistics. Also provides hands-on experience in conducting basic quantitative research (t-test, correlation, regression, analysis of variance). Same as EPSY 503. Prerequisite(s): Admission to the PhD in Education program or consent of the instructor.

543 Research on Teaching 4 hours. Review and analysis of history, paradigms, methods, and findings of research on teaching. Focus on the development of research questions and strategy. Prerequisite(s): ED 490 or ED 503 or GE 578; and consent of the instructor.

544 Research Design 4 hours. Alternative research design models and evaluation methodologies; quantitative and qualitative approaches; ethnography; historiography; experimentation and quasi-experimentation; institutional and practitioner research designs and methods. May be repeated. Prerequisite(s): Admission to the PhD in Policy Studies in Urban Education (Educational Organization and Leadership Concentration) or the EdD in Urban School Leadership Program and consent of the instructor.

580 Colloquium on Diversity in Secondary Education 2 hours. Designed to provide candidates with opportunities to interact with experts who deal with various issues of diversity in education, to discuss those issues with their cohorts, and to explore ways of meeting students’ diverse needs. Satisfactory/Unsatisfactory grading only.

594 Special Topics in Education 1 TO 4 hours. Exploration of a topic not covered in existing course offerings. May be repeated if topics vary. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

596 Independent Study 1 TO 4 hours. Students independently study related topics not covered by course, under faculty supervision. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the adviser.

Educational Psychology (EPSY)

420 Social Development of Urban Children 3 OR 4 hours. General principles of social development and socialization during childhood and the factors common to urban children that illustrate and modify these principles. Same as PSCH 420. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Admission to a graduate program in education or psychology, or consent of the instructor.

429 Constructivist Approaches to Development: Piaget and Vygotsky 3 OR 4 hours. Piaget’s and Vygotsky’s theories of development of knowledge. Empirical and logico-mathematical forms of knowledge. Thought and action. Thought and language. Same as PSCH 429. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ED 422 or PSCH 422 or the equivalent and graduate standing in education or graduate standing in psychology or consent of the instructor.

446 Characteristics of Early Adolescence 3 hours. Physiological, social, emotional, and cognitive development of early adolescence. The relationship between these developmental characteristics and success in the middle grades. Same as PSCH 423. Prerequisite(s): ED 210 or ED 421 or ED 422 or PSCH 422 or the equivalent, and approval of the College of Education; or admission to the PhD in Psychology program; or consent of the instructor.

494 Topics in Educational Psychology 1 TO 4 hours. Seminar on a preannounced topic focusing on methodology, research, and educational implications of recent models of learning, problem solving, and thinking. May be repeated to a maximum of 12 hours. Prerequisite(s): Consent of the instructor.

496 Independent Study 1 TO 4 hours. Students carry out independent study under the direction of educational psychology faculty member. Prerequisite(s): Junior standing or above; and consent of the instructor.

500 Proseminar in Educational Psychology 2 hours. Interdisciplinary colloquia on selected topics in educational psychology. Serves as introduction to faculty research focus. Same as PSCH 550. Satisfactory/Unsatisfactory grading only.

Prerequisite(s): Admission to the PhD in Education program or the PhD in Psychology program, or consent of the instructor.

501 Cognition and Instruction 4 hours. Current research on relations among cognitive processes, learning, and instruction. Same as PSCH 551. Prerequisite(s): Admission to the PhD in Education program or the PhD in Psychology program, or consent of the instructor.

502 Social Psychology of Education 4 hours. Social psychological factors influencing academic and social outcomes in schools. Achievement motivation, peer relations, social values in relation to student characteristics and school practice. Same as PSCH 517. Prerequisite(s): Admission to the PhD in Education program or the PhD in Psychology program; or consent of the instructor.

503 Essentials of Quantitative Inquiry in Education 4 hours. Introduces theory and assumptions behind parametric statistics. Also provides hands-on experience in conducting basic quantitative research (t-test, correlation, regression, analysis of variance). Same as PSCH 503. Prerequisite(s): Admission to the PhD in Education program or consent of the instructor.

504 Rating Scale and Questionnaire Design and Analysis 4 hours. Development and administration of rating scales and questionnaires, analysis of data, and reporting of results. The focus is on rating scales. Same as PSCH 504. Previously listed as EPSY 550. Prerequisite(s): ED 501, and ED 503 or EPSY 503 or the equivalents or consent of the instructor.

506 Item Response Theory/Rasch Measurement 4 hours. Statistical inference with item response theory models, useful to measure an individual’s performance on a test or questionnaire. Models include parametric, nonparametric, unidimensional, multidimensional, and cognitive. Same as PSCH 506.
522  
**Student Teaching in the Primary Grades**  6 hours.  
Instructional methods in curricula in primary grades. Meets Illinois State Board of Education requirement for Type 04 Certification. Fieldwork required. Meets 8 weeks of the semester. **Prerequisite(s):** EPSY 519, and consent of the instructor.

524  
**Parent and Staff Relations in Early Education**  4 hours.  
Methods for involving parents in early childhood programs. The role of the director in program administration and in hiring, training, and supervising teachers and staff. **Prerequisite(s):** Consent of the instructor.

525  
**Advanced Adolescent Development**  3 hours.  
Examines current theory and research on physiological, intellectual, emotional, and social development during the adolescent years. Examines relationship amongst individual, interpersonal, and contextual factors related to adolescent development. **Prerequisite(s):** EPSY 446 or EPSY 502 or ED 421 or ED 422 or ED 445; or consent of the instructor. 
**Recommended background:** Course work in Educational Psychology or Psychology.

526  
**Development in Infancy and Early Childhood**  4 hours.  
Consideration of development in the preschool years. Stress on theory, research, individual child study, and educational implications. Same as PSCH 520. **Prerequisite(s):** ED 422 or PSCH 422 or the equivalent.

527  
**Seminar in Moral Development,**  
**Character Formation,**  
and **Education**  4 hours.  
Philosophical assumptions, psychology, research, and theory underlying current approaches to moral and character education. Cultural and developmental factors in value formation. Same as PSCH 527. **Prerequisite(s):** ED 422 or PSCH 422 or the equivalent, or admission to the PhD in Education program, PhD in Psychology program, or PhD in Social Work program, or consent of the instructor.

529  
**Cognition and Instruction:**  
**Advanced Constructivist Approaches**  4 hours.  
Piatets’s and Vygotsky’s theories of knowledge development. Emphasis on competing approaches concerning the relation of thought to action, to language, and to social relations. Same as PSCH 552. **Prerequisite(s):** EPSY 429 or PSCH 429 or the equivalent, and admission into a PhD program in the College of Education or Psychology or consent of instructor.

530  
**Achievement Motivation**  4 hours.  
The psychology of achievement motivation will be explored from the perspectives of personality, social, and educational psychology. Same as PSCH 525. **Prerequisite(s):** Graduate standing in education or psychology or consent of the instructor.

546  
**Educational Measurement**  4 hours.  
Introduces methods based on true score theory, generalizability theory, and Rasch measurement that are used to address issues of reliability and validity. **Prerequisite(s):** ED 501, and ED 503 or EPSY 503 or the equivalent or consent of the instructor.

547  
**Multiple Regression in Educational Research**  4 hours.  
Introduction to multiple correlation and regression techniques as tools for the analysis and interpretation of educational and behavioral science data. **Prerequisite(s):** EPSY 503.

553  
**Assessment for Teachers**  4 hours.  
Plan, construct, administer, score, and report on classroom assessments that measure a wide variety of learning outcomes, from simple to complex; select and use standardized achievement tests; developing defensible grading procedures. **Prerequisite(s):** EPSY 421 and EPSY 422; or consent of the instructor.

560  
**Educational Program Evaluation**  4 hours.  
An introduction to concepts, approaches, techniques, and practices of educational program evaluation. Students work toward acquiring knowledge and skills to plan and conduct evaluations of programs, projects, curriculum and institutions. **Prerequisite(s):** ED 501 and EPSY 503; or consent of the instructor.

561  
**Assessment for Measurement Professionals**  4 hours.  
Plan, construct, administer, score, and report on classroom assessment, select and use standardized achievement tests; develop defensible grade procedures; measure issues in classroom assessment; validity and reliability of classroom assessments. **Prerequisite(s):** ED 421 and ED 422; or consent of the instructor.

563  
**Advanced Analysis of Variance in Educational Research**  4 hours.  
Detailed coverage of the principles of analysis of variance and the analysis of data collected from research employing experimental designs. **Prerequisite(s):** EPSY 503.

582  
**Forging Collaborations with Family and Community**  3 hours.  
Develops skills necessary to work in partnership with the families of children with disabilities, and community members. Same as SPED 582. **Prerequisite(s):** ED 461 or SPED 461 or the equivalent or consent of the instructor.

583  
**Multivariate Analysis of Educational Data**  4 hours.  
Introduction to multivariate statistical methods in education including data screening, canonical correlation, MANOVA/MANOCVA, DFA, profile analysis, component/factor analysis, confirmatory factor analysis, and structural equation modeling. **Prerequisite(s):** EPSY 547 or EPSY 563.

588  
**Current and Specialized Topics in Psychometrics**  2 hours.  
Seminar on current and specialized topics in psychometrics. Satisfactory/unsatisfactory grading only. May be repeated. Extensive computer use required. **Prerequisite(s):** Credit or concurrent registration in EPSY 546 or credit or concurrent registration in EPSY 550; and credit or concurrent registration in EPSY 550; or consent of the instructor.
589  
Topics in Educational Statistics  
Seminar on a preannounced topic on educational statistical methodology for the analysis of educational data. May be repeated.  
Prerequisite(s): ESY 547.  
593  
PhD Research  
Project  1 TO 8 hours.  
Students design, implement, and analyze results of a research problem in this area of specialization. Completed study is reviewed by faculty. May be repeated to a maximum of 8 hours.  
Prerequisite(s): Admission to the PhD in Education program.  
594  
Special Topics in Educational Psychology  1 TO 4 hours.  
Seminar on a preannounced topic focusing on methodology, research, and educational implications of recent models of learning, problem solving, and thinking. May be repeated to a maximum of 12 hours.  
Prerequisite(s): ED 421 and ED 422, or consent of the instructor.  
596  
Independent Study  
1 TO 4 hours.  
Students carry out independent study in educational psychology under the direction of a faculty member. May be repeated to a maximum of 12 hours. Students may register in more than one section per term.  
Prerequisite(s): ED 490 or the equivalent, and consent of the advisor and instructor.  
599  
Thesis  
Research  0 TO 16 hours.  
Research on the topic of the student’s dissertation. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the dissertation advisor.  

Electrical and Computer Engineering (ECE)  

400  
Introduction to Microelectromechanical Systems  3 OR 4 hours.  
Definition, classification, and case studies of transducers, sensors, and actuators. Microfabrication methods for microelectromechanical systems (MEMS). Design, simulation, and modeling of MEMS. 3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): ECE 346.  
401  
Quasi-Static Electric and Magnetic Fields  3 OR 4 hours.  
Static electric and magnetic fields. Material description, boundary value problems. Field energy, its conversion, and scaling laws. Quasi-static fields, field diffusion, eddy currents, energy losses. 3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): ECE 322.  
407  
Pattern Recognition I  3 OR 4 hours.  
The design of automated systems for detection, recognition, classification, and diagnosis. Parametric and nonparametric decision-making techniques. Applications in computerized medical and industrial image and waveform analysis.  
Same as BIE 407. 3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): MATH 220.  
410  
Network Analysis  3 OR 4 hours.  
Matrix algebra for network analysis, network parameters, macro-modeling, high-frequency measurements, network functions and theorems. Topics in computer-aided analysis. 3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): Grade of C or better in ECE 310.  
412  
Introduction to Filter Synthesis  3 OR 4 hours.  
Fundamentals of network synthesis, filter approximations, and frequency transformations. Active filter synthesis using bilinear and biquad circuits. Topics in computer-aided design. 3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): Grade of C or better in ECE 310.  
415  
Image Analysis and Computer Vision I  3 OR 4 hours.  
Image formation, geometry, and stereo. Two-dimensional image analysis by Fourier and other 2-D transforms. Image enhancement, color, image segmentation, compression, feature extraction, object recognition. 3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): MATH 310 or a grade of C or better in ECE 310.  
417  
Digital Signal Processing II  0 TO 5 hours.  
Computer-aided design of digital filters; quantization and round-off effects; FFT algorithms; number-theoretic algorithms; multirate signal processing; DSP architectures and programming. 4 undergraduate hours. 5 graduate hours.  
Prerequisite(s): ECE 317 and ECE 341.  
418  
Statistical Digital Signal Processing  3 OR 4 hours.  
Stochastic signal models, LMS identification, identification of signals from noise, Wiener filtering, blind separation of mixed signals, discrete Wavelet Transforms, compression and denoising, cepstral analysis. 3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): ECE 317 and ECE 341.  
421  
Introduction to Antennas and Wireless Propagation  3 OR 4 hours.  
Potential, antenna parameters, radiation from linear wires and loops, impedance, arrays, communication link and path loss, tropospheric propagation, fading and diversity. 3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): ECE 225 and ECE 322.  
423  
Electromagnetic Compatibility  3 OR 4 hours.  
EMC requirements for electronic systems. Nonideal behavior of components. Radiated and conducted emissions. Susceptibility. Coupling and shielding. Electrostatic discharge. System design for EMS. 3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): ECE 320 and ECE 322.  
424  
RF and Microwave-Guided Propagation  0 TO 5 hours.  
Maxwell’s equations, transmission lines, Smith chart, strip lines, rectangular and circular waveguides, TE and TM waves, wave impendence, resonators, two-port parameters, power and energy considerations. 4 undergraduate hours. 5 graduate hours.  
Prerequisite(s): ECE 225 and ECE 322.  
427  
Modern Linear Optics  3 OR 4 hours.  
Geometrical optics, wave optics, two-dimensional Fourier analysis, scalar diffraction theory, Fourier transforming properties of lenses, coherent and incoherent images, holography, electromagnetic optics, polarization and crystal optics, resonators. 3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): ECE 330 and ECE 331.  
431  
Analog Communication Circuits  0 OR 5 hours.  
Introduction to radio frequency circuit design: narrowband transistor amplifiers, impedance matching networks, oscillators, mixers, amplitude and frequency modulation/demodulation, phase-lock loop circuits, amplifier noise and stability analysis. Laboratory. 4 undergraduate hours. 5 graduate hours.  
Prerequisite(s): ECE 311 and ECE 340.  
432  
Digital Communications  3 OR 4 hours.  
Source coding, quantization, signal representation, channel noise, optimum signal reception, digital modulation: ASK, PSK, FSK, MSK, M-ary modulation. Probability of error. Intersymbol interference. 3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): ECE 311 and ECE 341.  
434  
Multimedia Systems  3 OR 4 hours.  
Multimedia systems; compression standards; asynchronous transfer mode; Internet; wireless networks; television; videoconferencing; telephony; applications. 3 undergraduate hours. 4 graduate hours. Extensive computer use required.  
Prerequisite(s): ECE 333.  
435  
Wireless Communication Networks  3 OR 4 hours.  
Radio technology fundamentals; channel and propagation models; channel multiple access technologies; wireless mobile communication fundamentals; generic wireless mobile network; cellular/PCS wireless mobile network standards. 3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): ECE 432 and ECE 333.  
436  
Computer Communication Networks II  3 OR 4 hours.  
Explores integrated network architecture of service, control signaling and management, examples of high-speed LAN/WAN, next generation Internet, and mobile wireless network. 3 undergraduate hours. 4 graduate hours. Extensive computer use required.  
Prerequisite(s): ECE 333.
Wireless Communications 3 OR 4 hours. Cellular concept, frequency reuse, mobile radio propagation, channel fading, noise in analog communications, mobile radio channel equalization, multiple access techniques (FDMA, TDMA, CDMA), wireless networking. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ECE 311 and ECE 341.

Power Semiconductor Devices and Integrated Circuits 0 TO 5 hours. Covers the physics of devices encountered in the power-electronic and switching converter systems. 4 undergraduate hours. 5 graduate hours. Credit is not given for ECE 442 if the student has credit for EECS 442. ECE 442 is a supplement for ECE 445 and ECE 545. Prerequisite(s): ECE 542 and ECE 546.

Analysis and Design of Power Electronic Circuits 0 TO 5 hours. Analysis of different isolated and nonisolated power-converter topologies, understanding of power-converter components, switching schemes. 4 undergraduate hours. 5 graduate hours. Prerequisite(s): ECE 342 and a grade of C or better in ECE 310.

Transistors 3 OR 4 hours. Bipolar junction transistors, electronic processes in surface-controlled semiconductor and dielectric devices. Metal oxide semiconductor field effect transistors, surface and interface effects, diode lasers, integrated opto-electronic devices. 5 undergraduate hours. 4 graduate hours. Prerequisite(s): ECE 346.

Microdevices and Micromachining Technology 0 TO 5 hours. Microfabrication techniques for microsensors, microstructures, and microelectronics. Selected examples of physical/chemical sensors and actuators. Simulation experiments. Laboratory. Same as ME 449. 4 undergraduate hours. 5 graduate hours. Prerequisite(s): ECE 347.

Control Engineering 3 OR 4 hours. State-space representation of systems; realization theory; stability; performance; modern control design techniques, including fuzzy, learning, adaptive, and nonlinear control. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ECE 350.

Robotics: Algorithms and Control 3 OR 4 hours. Kinematic and dynamic modeling of robots; configuration space; motion planning algorithms; control of robots; sensors and perception; reasoning; mobile robots. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CS 201; and a grade of C or better in ECE 210 or a grade of C or better in ECE 225.

Analysis of high performance analog circuits, analog and digital design. 3 OR 4 hours. Prerequisite(s): Grade of C or better in ECE 225.

Digital Systems Design 3 OR 4 hours. Switching algebra, combinational circuits, Mux, ROM, DCO, PLA-based designs, advanced combinational circuit minimization techniques, synchronous and asynchronous sequential circuit synthesis (minimization, hazards, races, state assignment) testing. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in ECE 366 and a grade of C or better in ECE 265 and a grade of C or better in PHYS 142.

Computer Architecture 3 OR 4 hours. Design and analysis of high performance microprocessors. Topics include arithmetic; multiplication, division, shifting; processor: pipelining, multiple function units; instruction sets; memory: caches, modules; virtual machines; 3 undergraduate hours. 4 graduate hours. Credit is not given for ECE 466 if the student has credit for CS 466. Prerequisite(s): ECE 366.


Advanced Analog Filter Design 0 TO 5 hours. Design of high performance analog filters. Filter design techniques, including inductors, capacitors, and active and reactive components. 3 OR 4 hours. Prerequisite(s): ECE 430.

Advanced Analog Filter Synthesis 4 hours. Design of active second-order filters. Design of active first-order and second-order filters. 4 graduate hours. 5 graduate hours. Prerequisite(s): ECE 410; or consent of the instructor.

Digital Image Processing 4 hours. Operations on 2-D digital images, such as transforms, enhancement, restoration, warping, segmentation, registration, compression, and reconstruction from projection. Prerequisite(s): ECE 317 and ECE 341.


Advanced Microwave Theory 4 hours. Microwave integrated circuits: analysis, design. Microwave devices: filters, cavities, and phase shifters. Millimeter waves: components and circuits, millimeter wave applications. Prerequisite(s): ECE 420 and ECE 520.
523 Advanced Antenna Engineering 4 hours. Radiation from helix and spiral; aperture antennas; linear and planar array synthesis; Hallen’s and other methods for impedance; design of array feeds; reflector and lens antennas. Prerequisite(s): ECE 421 and ECE 520.

526 Electromagnetic Scattering 4 hours. Exact solutions of exterior boundary-value problems. Low-frequency expansions. High-frequency methods, including geometrical and physical theories of diffraction. Hybrid techniques. Radar cross sections. Prerequisite(s): ECE 520.


528 Fiber and Integrated Optics 4 hours. Preparation in thin films and fibers. Mode launching, coupling, and losses. Sources, detectors, modulators, interferometers. Fabrication and measurement techniques. Fiber optics systems. Prerequisite(s): ECE 520 or the equivalent.

530 Random Signal Analysis 4 hours. Probability for communications, properties and series representations of random processes, random processes through linear and nonlinear systems, minimum MSE and maximum SNR systems. Prerequisite(s): ECE 341 or consent of the instructor.

531 Detection and Estimation Theory 4 hours. Bayes, Neyman-Pearson, and minimax detection for discrete and continuous time random processes. Estimation of random and nonrandom signal parameters. Estimation of signals. Prerequisite(s): ECE 418 or consent of the instructor.

532 Advanced Digital Communications 4 hours. Characteristics of digitally modulated signals; digital signals in additive noise; communication over fading channels and with intersymbol interference; source and channel coding; synchronization; spread spectrum techniques. Prerequisite(s): ECE 432 or consent of the instructor.

533 Advanced Computer Communication Networks 4 hours. Computer and telecommunication networks; integrated (data, voice, and video) services; network performance; quality of service provisioning. Prerequisite(s): ECE 333 and ECE 341; or consent of the instructor.

534 Elements of Information Theory 4 hours. Entropy and mutual information; fundamentals of coding theory; data compression, complexity of sources, channel mutual information and capacity; rate distortion theory; information theory applications. Prerequisite(s): ECE 341 or consent of the instructor.

535 Advanced Wireless Communication Networks 4 hours. 2nd generation: IS-95-based wireless mobile network; 2nd generation: GSM-based wireless mobile network; 2.5 generation: wireless mobile data/voice network; 3rd generation: broadband wireless mobile multimedia network. Prerequisite(s): ECE 435.

537 Wireless Data Communications and Networking 4 hours. The course discusses data services evolution in (2G) wireless systems to achieve specified data rates of 3G. The course focuses on wireless data services in the wide and local area networks. Prerequisite(s): ECE 432 and ECE 435; and senior standing or above; or consent of the instructor.

540 Physics of Semiconductor Devices 4 hours. Electrons in periodic lattice; equilibrium carrier distribution; energy band diagrams in junctions, in homogeneous semiconductors; recombination and generation; nonequilibrium processes, radiation and electric fields; diodes. Same as PHYS 540. Prerequisite(s): ECE 436 or the equivalent.

541 Microelectronic Fabrication Techniques 4 hours. Current fabrication techniques of microelectronic technology, plasma and CVD processes; etching techniques; ion implantation; surface analytical methods. Same as ME 541. Prerequisite(s): ECE 347 or ECE 448.

542 Advanced Semiconductor Devices 4 hours. Bipolar transistor and related devices; MOSFET transistor and related devices, MESFET and related devices, quantum-effect devices, photonic devices. Prerequisite(s): ECE 540.

545 Advanced Power-Electronics Design 4 hours. High-frequency-magnetics design and measurement, parasitics, modeling, estimation, and measurement, soft switching for DC-DC converters, distributed DC-DC converters, and design layout. Prerequisite(s): ECE 445.

550 Linear Systems Theory and Design 4 hours. State variable description, linear operators, impulse response matrix, controllability, observability, reducible and irreducible realizations, state feedback, state observers and stability. Prerequisite(s): ECE 350.

551 Optimal Control 4 hours. Optimal control of dynamic systems in continuous and discrete time, maximum principle, dynamic programming and constraints, learning systems. Prerequisite(s): ECE 550 or consent of the instructor.

552 Nonlinear Control 4 hours. Nonlinear phenomena, linear and piecewise linear approximations, describing functions, servomechanisms, phase plane, limit cycles, Lyapunov’s stability theory, bifurcation, bilinear control, vibro-rotational control, learning systems. Prerequisite(s): ECE 550 or consent of the instructor.

553 System Identification 4 hours. Online and offline identification of control systems in frequency and time domain, considering noise effects, nonlinearities, nonstationarities, and distributed parameters. Prerequisite(s): ECE 550.

559 Neural Networks 4 hours. Artificial neural networks, perceptron, backpropagation, Kohonen networks, statistical methods, Hopfield nets, associative memories, large memory networks, cognition. Same as CS 559. Prerequisite(s): Consent of the instructor.

560 Fuzzy Logic 4 hours. Crisp and fuzzy sets; membership functions; fuzzy operations; fuzzy relations and their solution; approximate reasoning; fuzzy modeling and programming; applications; projects. Prerequisite(s): Consent of the instructor.

561 VLSI Design Automation 4 hours. Computer-aided physical design of integrated circuits; circuit partitioning and placement; floor planning; global and detailed routing; timing optimization; general optimization tools; local search, constraint relaxation. Prerequisite(s): CS 401 and ECE 466.

566 Parallel Processing 4 hours. Parallel processing. Includes multi-computer architectures, parallel programming languages, interconnection networks, and parallel algorithms. Prerequisite(s): CS 401 and ECE 466.

567 Advanced VLSI Design Automation and Design 4 hours. VLSI subsystem and system design: synthesis, design styles, design process, testing. Case studies: switching networks, graphics engine, CPU. Projects use computer-aided design tools. Prerequisite(s): ECE 467.

568 Advanced Microprocessor Architecture and Design 4 hours. Microprocessors: embedded control; processor core; system-on-chip; power-aware design; SMT design; Java processors; media processors; network processors; crypto processors; trusted processor architectures; architecture simulation. Extensive computer use required. Prerequisite(s): ECE 466 and consent of the instructor.

569 High-Performance Processors and Systems 4 hours. Instruction-level parallelism, multiple-instruction issue, branch prediction, instruction and data prefetching, novel cache and DRAM organization, high-performance interconnect, compilation issues, case studies. Prerequisite(s): ECE 466.
572  
Nanoscience  
Semiconductor Structures: Electronic and Optical Properties  4 hours.  
Electronic and optical properties of nanoscale semiconductors and devices, carrier interactions in dimensionally confined nanostructures, deformation potential, piezoelectric potential, polar-optical phonon interaction potential.  
Prerequisite(s): PHYS 244 and ECE 346.  
Recommended background: Background in semiconductor device fundamentals, such as covered in ECE 346, as well as the underlying physical principles as covered in PHYS 244.

594  
Special Topics  4 hours.  
Subject matter varies from term to term and section to section, depending on the specialties of the instructor. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

595  
Departmental Seminar  0 hours.  
Seminar by faculty and invited speakers. Satisfactory/Unsatisfactory grading only. May be repeated.

596  
Individual Study  1 TO 4 hours.  
Individual study or research under close supervision of a faculty member. May be repeated. Students may register in more than one section per term. No graduation credit for students in the following: MS in Electrical and Computer Engineering and PhD in Electrical and Computer Engineering.  
Prerequisite(s): Consent of the instructor.

597  
Project Research  0 TO 9 hours.  
A research design or reading project approved by the committee appointed by the director of graduate studies. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor. For ECE majors only.

598  
MS Thesis Research  0 TO 16 hours.  
MS thesis work under the supervision of a graduate adviser. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor. For ECE majors only.

599  
PhD Thesis Research  0 TO 16 hours.  
PhD thesis work under supervision of a graduate adviser. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor. For ECE majors only.

Engineering (ENGR)  
400  
Engineering Law  3 OR 4 hours.  
3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): Senior standing or above.

401  
Engineering Management  3 OR 4 hours.  
Theory, strategy, and tactics of the use of project management, including project planning, matrix management concept, and team meetings. 3 undergraduate hours. 4 graduate hours.  
Extensive computer use required. This is an online Web-based course.  
Prerequisite(s): Senior standing or above.

402  
Intellectual Property Law  3 OR 4 hours.  
Patent, copyright, trade secret, mask work, and cyber-squatting legal and procedural principles; protection for novel software, biotech inventions, and business methods; and trademark protection for domain names. 3 undergraduate hours. 4 graduate hours.  
Extensive computer use required. This is an online Web-based course.  
Prerequisite(s): Senior standing or above.

404  
Entrepreneurship  3 hours.  
Identify new business opportunities in technology, market value assessment, competition, business plan, funding acquisition, intellectual property protection, and case studies.  
Prerequisite(s): Open only to seniors; and consent of the instructor.

410  
Wireless Data  3 OR 4 hours.  
Data communications, existing wireless data networks, planning, topology, performance, and operation. 3 undergraduate hours. 4 graduate hours.  
Extensive computer use required. This is an online Web-based course.  
Prerequisite(s): A course in digital communications and an introductory course in wireless communications. Graduate or professional standing.

420  
Engineering for Success  1 hour.  
Interactive seminars will be given by persons with engineering degrees having shown high achievement in either engineering or noneengineering endeavors. Satisfactory/Unsatisfactory grading only.  
Prerequisite(s): Junior standing or above.

424  
Special Topics in Engineering  3 OR 4 hours.  
Course on multidisciplinary engineering topics that vary from term to term depending on current student and instructor interests. 3 undergraduate hours. 4 graduate hours.  
May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Junior standing or above; and consent of the instructor.

430  
Modern English  3 OR 4 hours.  
This is a course on the sound system, the lexicon, and syntax-semanticics of modern American English taught from the linguistic perspective. 3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): Senior standing or 9 hours of English or consent of the instructor.  
Recommended background: ENGL 200.

442  
Rhetoric  3 OR 4 hours.  
Intensive study of central topics in rhetorical theory in their historical depth. 3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): ENGL 542 or ENGL 391 or ENGL 370 or ENGL 372 or ENGL 374 or ENGL 375; and senior standing or above; or consent of the instructor.

450  
Introduction to Old English Literature  3 OR 4 hours.  
The elements of Old English grammar and readings from the literature of England before the Norman Conquest. 3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): ENGL 240; and ENGL 241 or ENGL 242 or ENGL 243; or consent of the instructor.

455  
Topics in Old English Literature  3 OR 4 hours.  
Studies in the language and literature of pre-Conquest England. Content varies. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time.  
Prerequisite(s): ENGL 403; or consent of the instructor.

460  
Topics in Medieval Literature  3 OR 4 hours.  
Topics in English literature from the period 450-1500. Content varies. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time.  
Prerequisite(s): ENGL 311 or ENGL 312 or ENGL 313 or ENGL 314; and senior standing or above; or consent of the instructor.

470  
History of the English Language  3 OR 4 hours.  
Development of English from its Proto-Indo-European origin to the present; detailed examination of the external and internal history of Old, Middle, and Modern English. 3 undergraduate hours. 4 graduate hours.  
Prerequisite(s): Senior standing or above, or consent of the instructor.  
Recommended background: ENGL 200.
416 Topics in Renaissance Literature and Culture 3 OR 4 hours.
Study of a topic in English literature written between 1500 and 1700. Content varies. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 311 or ENGL 312 or ENGL 313 or ENGL 314; and senior standing or above; or consent of the instructor.

417 Topics in Restoration and Eighteenth-Century Literature and Culture 3 OR 4 hours.
Focus on a particular topic or theme in British literature, 1660–1780. Content varies. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 313 or ENGL 314 or ENGL 315 or ENGL 316; and senior standing or above; or consent of the instructor.

419 Topics in Romantic Literature and Culture 3 OR 4 hours.
Concentrates on a particular aspect of British Romantic writing in order to provide a greater depth of study in the period. Content varies. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 313 or ENGL 314 or ENGL 315 or ENGL 316; and senior standing or above; or consent of the instructor.

421 Topics in Victorian Literature and Culture 3 OR 4 hours.
Study of a major author, genre, or theme in the Victorian period. Content varies. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 315 or ENGL 316 or ENGL 317 or ENGL 318; and senior standing or above; or consent of the instructor.

422 Topics in Postcolonial and World Literature in English 3 OR 4 hours.
Study of a major author, topic, movement, or genre within postcolonial and world literatures in English. Content varies. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 318 or ENGL 319 or ENGL 320 or ENGL 333; and senior standing or above; or consent of the instructor.

426 Topics in American Literature and Culture to 1900 3 OR 4 hours.
This course analyzes selected topics in American literature and culture to 1900. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 323 or ENGL 324 or ENGL 325; and senior standing or above; or consent of the instructor.

427 Topics in American Literature and Culture, 1900–Present 3 OR 4 hours.
Study of a specific topic relating American literature to society, culture, history, race, gender, ethnicity. Content varies. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 324 or ENGL 325 or ENGL 326 or ENGL 327; and senior standing or above; or consent of the instructor.

428 Topics in Literature and Culture, 1900–Present 3 OR 4 hours.
Study of a specific topic relating twentieth-century literature to society, culture, history, race, gender, ethnicity. Content varies. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 318 or ENGL 319 or ENGL 320 or ENGL 325 or ENGL 326 or ENGL 327; and senior standing or above; or consent of the instructor.

429 Topics in Literature and Culture 3 OR 4 hours.
Study of a specific topic relating literature to society, culture, history, race, gender, ethnicity. Content varies. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): Six hours of English at the 300-level and senior standing or above; or consent of the instructor.

437 Topics in Poetry and Poetic Theory 3 OR 4 hours.
Investigations into the nature of poetry. Discussions of issues such as technical, theoretical, formal, and historical developments. Topics and readings vary. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 303 or ENGL 316 or ENGL 355; and senior standing or above; or consent of the instructor.

438 Topics in Performance Studies 3 OR 4 hours.
In-depth study of a topic, movement, artist, or author in the field of drama and performance studies; broadly defined. Content varies. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 304 or ENGL 313 or ENGL 341 or ENGL 342 or ENGL 370 or ENGL 375; and senior standing or above; or consent of the instructor.

439 Topics in Fiction and Theories of Fiction 3 OR 4 hours.
Study of fiction related to a particular theory of fiction (realism, romance, literary naturalism, narrative theory, fictional poetics). Content varies. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 305; and senior standing or above; or consent of the instructor.

440 Topics in Cultural and Media Studies 3 OR 4 hours.
Study of a medium, genre, theme, period, influence, or problem in culture and cultural theory. Topics vary. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 302 or ENGL 341 or ENGL 342; and senior standing or above; or consent of the instructor.

441 Topics in Asian American Literature and Culture 3 OR 4 hours.
An advanced seminar that examines various forms of cultural production by Asian American artists of diverse ethnic backgrounds. Topics vary. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 302 or ENGL 341 or ENGL 342; and senior standing or above; or consent of the instructor.

443 Topics in Gender, Sexuality, and Literature 3 OR 4 hours.
Specific study of topics in gender and literature. Content varies. Same as GWS 443. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 361 or ENGL 362 or ENGL 363 or GWS 101 or GWS 102; and senior standing or above; or consent of the instructor.

444 Topics in Theories of Gender and Sexuality 3 OR 4 hours.
Advanced study of topics related to theories of gender and sexuality. Same as GWS 444. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 361 or ENGL 362 or ENGL 363 or GWS 101 or GWS 102; and senior standing or above; or consent of the instructor.

445 Topics in Disability Studies 3 OR 4 hours.
This course will focus on topics structured around particular aspects of disability studies and its practical, cultural, and theoretical implications. Same as DHO 445. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 361 or ENGL 362 or ENGL 363 or ENGL 364; and senior standing or above; or consent of the instructor.

446 Topics in Criticism and Theory 3 OR 4 hours.
Focus on a particular critical or theoretical topic, movement, tradition, or figure. Content varies. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 361 or ENGL 362 or ENGL 363 or ENGL 364; and senior standing or above; or consent of the instructor.

447 Topics in Rhetorical Studies 3 OR 4 hours.
Study of rhetorical intersections between rhetoric and cultural studies to describe and explain the ways in which discourse constructs identity, knowledge, and values. Content varies. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 374 or ENGL 375 or ENGL 342 or ENGL 402; and senior standing or above; or consent of the instructor.

459 Introduction to the Teaching of English in Middle and Secondary Schools 3 OR 4 hours.
Intended as a general initiation to the field of secondary English teaching, the course focuses on many of the crucial issues facing teachers in contemporary language arts classrooms. 3 undergraduate hours. 4 graduate hours. Fieldwork required. Prerequisite(s): Completion of the English Composition require-
469 Women’s Literary Traditions  3 OR 4 hours.
An exploration of issues such as the female aesthetic, women’s literature, theories that enable creativity, and differences of race and class. Same as GWS 469; 3 undergraduate hours, 4 graduate hours. Prerequisite(s): ENGL 302 or ENGL 362 or ENGL 363; and senior standing or above; or consent of instructor.

470 Topics in Multietnic Literatures in the United States  3 OR 4 hours.
Topics in the literatures of American racial and ethnic groups. Content varies; 3 undergraduate hours, 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 328 or ENGL 333 or ENGL 350 or ENGL 351 or ENGL 355 or ENGL 357; or ENGL 359; and senior standing or above; or consent of the instructor.

471 Topics in Native American Literatures  3 OR 4 hours.
The history and development of literature by and about American Indians. Content varies. Same as NAST 471. 1 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): Senior standing or above and 6 hours of English, African-American studies, or Latin American studies or consent of the instructor.

472 Women and Film  3 OR 4 hours.
Roles and representations of women in classical Hollywood, European art, and independent feminist cinemas. Same as AH 434 and GWS 472. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ENGL 302 or ENGL 342 or ENGL 361 or ENGL 362 or ENGL 363; and senior standing or above; or consent of instructor.

473 Topics in African-American Literature  3 OR 4 hours.
African-American literature and culture for students with significant background in the field. Topics vary. Same as AAST 490. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): AAST 357 or AAST 360 or ENGL 357; and senior standing or above; or consent of the instructor.

474 Topics in Popular Culture and Literature  3 OR 4 hours.
Study of a specific topic relating to popular culture, such as sport, television, and best-sellers. Critical analysis of the cultural mythology encasing these subjects. Content varies; 3 undergraduate hours, 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 302 or ENGL 341 or ENGL 342; and senior standing or above; or consent of the instructor.

478 The Bible as Literature  3 OR 4 hours.
Literary analysis of the English Bible (including the Apocrypha) in its historical and religious contexts; study of the King James Version and successive revisions of it. Same as JST 478 and RELS 478. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in ENGL 240; and grade of C or better in ENGL 241 or grade of C or better in ENGL 242 or grade of C or better in ENGL 243; or consent of the instructor.

480 Reading Black Women Writing  3 OR 4 hours.
Examines inscriptions of race, gender, class, and sexuality as they shape the literary and critical practices of nineteenth- and twentieth-century black women writers. Same as AAST 470 and GWS 470. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): AAST 350 or AAST 351 or AAST 355 or AAST 357 or AAST 360; or ENGL 350 or ENGL 351 or ENGL 355 or ENGL 361 or ENGL 363; and consent of the instructor.

481 Methods of Teaching English in Middle and Secondary Schools  3 OR 4 hours.
Theory and practice; emphasis on current approaches to language and literature. 3 undergraduate hours, 4 graduate hours. All students in the teacher education program must take this course in the term preceding their student teaching. Prerequisite(s): Senior standing or 9 hours of English or consent of the instructor.

482 Campus Writing Consultants  4 hours.
Tutoring in the Writing Center. Students are required to consult with others on their writing. Emphasis on practice and theories of writing. Appropriate for prospective teachers. Prerequisite(s): Senior standing or 9 hours of English and consent of the instructor. Students must obtain override from the Writing Center.

483 Studies in Language and Rhetoric  3 OR 4 hours.
Study of a particular topic or movement in language or rhetoric. Content varies; 3 undergraduate hours, 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): Senior standing or above; or consent of the instructor.

484 Studies in Language and Cognition  3 OR 4 hours.
Examination of relationships among theories of language structure, cognition, and discourse, with applications of such theories to the writing process. 3 undergraduate hours, 4 graduate hours. Prerequisite(s): ENGL 401; or consent of the instructor.

485 Studies in the English Language and Linguistics  3 OR 4 hours.
Study of a topic such as language diversity and literacy, theories of grammar, literacy in society, or ethnic and language. Content varies; 3 undergraduate hours, 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): Senior standing or 9 hours of English or consent of the instructor.

486 The Teaching of Writing in Middle and Secondary Schools  3 OR 4 hours.
Rhetoric and composition pedagogy. Study of a topic. Content varies. 3 undergraduate hours, 4 graduate hours. Prerequisite(s): Senior standing or 9 hours of English or consent of the instructor.

489 The Teaching of Reading and Literature in Middle and Secondary Schools  3 OR 4 hours.
Intended as a part of the English education methods sequence, with particular emphasis on helping prospective teachers assist struggling readers in the study of literature. 3 undergraduate hours. 4 graduate hours. Fieldwork required. Prerequisite(s): ENGL 459; and completion of the English Composition requirement; or consent of the instructor.

490 Advanced Writing of Poetry  3 OR 4 hours.
Advanced work on poetic techniques and practices; emphasis on analysis of student work, using published examples; particular attention to individual student development. 3 undergraduate hours, 4 graduate hours. May be repeated up to 1 time by undergraduates. Prerequisite(s): Undergraduates: Grade of B or better in ENGL 210. Registration restrictions: Graduate students must obtain approval of the Department of English.

491 Advanced Writing of Fiction  3 OR 4 hours.
Advanced practice; emphasis on analysis of student work and published examples. 3 undergraduate hours, 4 graduate hours. May be repeated up to 1 time by undergraduates. Prerequisite(s): Undergraduates: Grade of B or better in ENGL 212. Registration restrictions: Graduate students must obtain approval of the Department of English.

492 Advanced Writing of Nonfiction Prose  3 OR 4 hours.
Advanced practice in writing essays, articles, reviews, or other forms of nonfiction prose. Content varies; 3 undergraduate hours, 4 graduate hours. May be repeated up to 1 time by undergraduates. Prerequisite(s): Undergraduates: Grade of B or better in ENGL 201. Registration restrictions: Graduate students must obtain approval of the Department of English.

493 Internship in Nonfiction Writing  3 hours.
Individual projects in approved professional setting to practice writing skills at an advanced level. May be repeated up to 1 time. A maximum of 3 hours may be applied toward either the undergraduate major in English or a graduate degree in English. Credit is not given for ENGL 493 if the student has credit in ENGL 593. Prerequisite(s): ENGL 201 and ENGL 202 or the equivalent and an interview with the coordinator of the internship program prior to
Topics in the Teaching of English 1 TO 4 hours. Study of a topic in literature, composition, and/or pedagogy. The content varies with each offering. May be repeated to a maximum of 8 hours. Students may register in more than one section per term. 

Prerequisite(s): Consent of the instructor.

Playwriting 3 OR 4 hours. The development of scripts for stage performance. Same as THTR 453. 3 undergraduate hours, 4 graduate hours. 

Prerequisite(s): Junior standing or above; and approval of the department and submission and approval of a playwriting sample or dialog-centered fiction prior to registration.

Educational Practice with Seminar I 6 hours. The first half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Satisfactory/Unsatisfactory grading only. Graduate credit only with approval of the department. 

Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, and approval of the department.

Educational Practice with Seminar II 6 hours. The second half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Satisfactory/Unsatisfactory grading only. Graduate credit only with approval of the department. 

Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, credit or concurrent registration in ENGL 498, and approval of the department.

500 Master's Proseminar 4 hours. Study of disciplinary foundations of research in literary criticism, broadly defined.
555
Teaching College Writing 4 hours. Methods, materials, and practice in teaching college writing. Satisfactory/Unsatisfactory grading only.

556
Teaching Creative Writing 4 hours. Methods, materials, and practice in teaching creative writing. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Admission to the Program for Writers or consent of the instructor.

557
Language and Literacy 4 hours. Emphasizing breadth of knowledge in a field of inquiry involving genres, authors, topics, periods, or issues in language and literacy, broadly conceived.

560
Practicum in the Teaching of English 1 TO 4 hours. Provides an opportunity for supervised discussion and evaluation of materials and methods used in undergraduate English instruction. Participation in appropriate departmental workshops. For English department teaching assistants. Satisfactory/Unsatisfactory grading only. May be repeated. No graduation credit. Prerequisite(s): Students may enroll only during terms in which they hold a teaching assistantship in the English department.

567
Discourse Analysis 4 hours. Emphasizing breadth of knowledge in a field of inquiry involving discourse.

570
Program for Writers: Poetry Workshop 4 hours. Emphasis on poems written by students. May be repeated to a maximum of 12 hours. Prerequisite(s): Admission to the Program for Writers.

571
Program for Writers: Fiction Workshop 4 hours. Emphasis on fiction written by students. May be repeated to a maximum of 12 hours. Prerequisite(s): Admission to the program for writers.

572
Program for Writers: Novel Workshop 4 hours. Emphasis on novels written by students. May be repeated to a maximum of 12 hours. Prerequisite(s): Admission to the Program for Writers.

573
Program for Writers: Translation Workshop 4 hours. Emphasis on translations by students. May be repeated to a maximum of 12 hours. Prerequisite(s): Admission to the Program for Writers or consent of the instructor.

574
Program for Writers: Nonfiction Workshop 4 hours. Emphasis on nonfiction written by students. May be repeated to a maximum of 12 hours. Prerequisite(s): Admission to the Program for Writers.

575
Program for Writers: Experimental Writing Workshop 4 hours. Emphasis on experiential studies by students. May be repeated to a maximum of 12 hours. Prerequisite(s): Admission to the Program for Writers.

576
Program for Writers: Editing and Publishing 4 hours. Practicum in basic procedures for students desiring careers in publishing, or who wish to understand the stages of production from proposal to publication. Prerequisite(s): Consent of the instructor.

579
The Past Decade 4 hours. Discussion of the past decade of critical work in any given field within literary, rhetorical, linguistic, or cultural studies.

580
Seminar in Genres of Literature, Film, and Media 4 hours. A single genre, such as the Gothic novel, or mode, such as poetry, fiction, or drama. May be repeated to a maximum of 12 hours.

581
Seminar in Interdisciplinary English Studies 4 hours. Relation between literature and such fields as fine arts, philosophy, psychology, religion, science, sociology, and politics. Content varies. May be repeated to a maximum of 12 hours. Prerequisite(s): Minimum of 4 hours in a field of literature to be studied.

582
Seminar in Multietnic and Transatlantic Cultures 4 hours. Study of a genre, movement, topic, or author in American multiethnic and/or transatlantic culture. Content varies. May be repeated to a maximum of 12 hours. Prerequisite(s): Minimum of 3 hours in Native American literature.

583
Seminar in Theories of the Popular 4 hours. Study of a theme, form, era, or methodological approach. Content varies. May be repeated to a maximum of 12 hours. Prerequisite(s): Minimum of 3 hours in film.

584
Seminar in Visual Technologies 4 hours. One topic or movement. Content varies. May be repeated to a maximum of 12 hours. Prerequisite(s): Consent of the English department internship coordinator. Resume and writing samples are required.

585
Seminar in Theoretical Sites 4 hours. One author, topic, or movement in advanced theory. Topic varies by instructor. May be repeated to a maximum of 12 hours. Prerequisite(s): Consent of the instructor and consent of the director of graduate studies.

586
Seminar in Discourse, Culture, Mind 4 hours. Interdisciplinary readings relating language and cognition from writing, rhetoric, cognitive psychology, and linguistics on a particular topic. May be repeated to a maximum of 12 hours. Prerequisite(s): ENGL 484.

588
Seminar in Great Cities/Global Cultures 4 hours. One author, topic, or movement in text, culture, and public space. May be repeated to a maximum of 12 hours.

591
Prospectus Preparation 1 TO 4 hours. Students who have passed their preliminary exams may enroll in this independent study with their primary adviser the semester after they have successfully completed their exams. Satisfactory/Unsatisfactory grading only. May be repeated.

592
Preliminary Examination Research 1 TO 8 hours. Supervised research and reading in preparation for the preliminary examinations. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 12 hours. Prerequisite(s): Consent of the instructor and consent of the director of graduate studies.

593
Graduate Internship in Nonfiction Writing 1 TO 4 hours. Directed field experience in an approved professional setting to practice writing, editing, and research skills at an advanced level. May be repeated. A maximum of four hours of credit may be applied toward a graduate degree in English. Credit is not given for ENGL 593 if the student has credit for ENGL 493. Prerequisite(s): Consent of the English department internship coordinator.

596
Independent Study 1 TO 4 hours. Independent study and research in literature, creative writing, or language, literacy, and rhetoric. May be repeated to a maximum of 12 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor and consent of the director of graduate studies.

597
Master’s Project Research in English 1 TO 4 hours. Supervised research and reading that facilitates the student in preparation of the project research. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 12 hours. No more than 4 hours of ENGL 597 may be applied toward the degree. Prerequisite(s): Consent of the instructor and consent of the director of graduate studies. Open only to master’s degree students.

599
Thesis Research 0 TO 16 hours. For students involved in dissertation research and writing. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of instructor and the director of graduate studies.
Course Descriptions

English as a Second Language (ESL)

401 Teaching Methods for International Teaching Assistants 1 TO 3 hours. Basic communication and presentation skills for international teaching assistants. The culture of the American college classroom. Satisfactory/Unsatisfactory grading only. No grad credit. Prerequisite(s): Score of 150 on the Test of Spoken English (TSE or Speak test) and consent of the instructor.

Entrepreneurship (ENTR)

430 Family Business Management 3 hours. Competitive strengths/weaknesses of a family business; dynamics of family interactions within the overlapping family; management and ownership systems. Credit is not given for ENTR 430 if the student has credit for MGMT 430. Recommended background: Prior experience in a family business.

454 Introduction to Entrepreneurship 3 hours. Awareness and realistic understanding of the new venture formation process; role of the entrepreneur in the economy and society; self-evaluation; venture feasibility. Credit is not given for ENTR 454 if the student has credit for MGMT 455 or MKTG 454. Prerequisite(s): FIN 300 and MGMT 340 and MKTG 360, or consent of the instructor.

464 Entrepreneurial Consulting 3 hours. Student teams diagnose and recommend solutions to problems and opportunities facing Chicagoland entrepreneur and smaller enterprises. Application of previous coursework. Credit is not given for ENTR 464 if the student has credit for MKTG 464. Prerequisite(s): ENTR 454; and ECON 218 or ECON 220, and 6 credit hours of other entrepreneurship courses.

494 Special Topics in Entrepreneurship 3 hours. Exploration of areas not covered in existing course offerings or study of selected topics in greater depth. Subject will vary from semester to semester. May be repeated if topics vary. Prerequisite(s): ENTR 454 and senior standing or above and approval of the department.

502 Entrepreneurship 4 hours. Launching new ventures and entrepreneurial companies; components of successful business plans and feasibility studies; perceptual processes of opportunity recognition; entrepreneurial creativity and innovation. Career opportunities. Credit is not given for ENTR 502 if the student has credit for MBA 510 or MGMT 502 or MKTG 502. Prerequisite(s): ACTG 500 and MKTG 500 or the equivalent courses.

555 Entrepreneurship: New Venture Formation 4 hours. Awareness and understanding of new venture creation and/or acquisition by developing a plan for a business; assessment of personal entrepreneurial potential. Credit is not given for ENTR 555 if the student has credit for MGMT 555 or MKTG 555. Prerequisite(s): ENTR 502 or consent of the instructor.

558 Entrepreneurial Electronic Commerce 4 hours. The role of e-commerce in entrepreneurial; competitive practices, marketing strategies, financing options, creating an e-commerce business plan. Credit is not given for ENTR 558 if the student has credit in MGMT 558 or MKTG 558. Prerequisite(s): ACTG 500 or MBA 501; and MKTG 500 or MBA 506.

559 Entrepreneurial Consulting 4 hours. Application of principles from management and marketing to entrepreneurial firms. Emphasis on consulting with young and small firms and developing a consulting practice. Assessment, problem solving, and change facilitation. Credit is not given for ENTR 559 if the student has credit for MGMT 559 or MKTG 559. Fieldwork required. Prerequisite(s): ENTR 502.

594 Special Topics in Entrepreneurship 4 hours. Exploration of areas not covered in existing course offerings or study of selected topics in greater depth. Subject will vary from semester to semester. Prerequisite(s): ENTR 502 and approval of the department.

596 Independent Study in Entrepreneurship 1 TO 4 hours. Independent study of an approved topic in entrepreneurship. Student must prepare a written report under the guidance of the instructor. Prerequisite(s): Approval of the department.

Environmental and Occupational Health Sciences (EOHS)

400 Principles of Environmental Health Sciences 3 hours. Environmental influences on health: population, food, energy; community hygiene and injury control; solid/hazardous wastes, air and water pollution, radiation; industrial hygiene and occupational health. Prerequisite(s): Enrollment restricted to public health students; other graduate, professional, and advanced undergraduate students admitted by consent as space permits. To obtain consent, see the SPH registrar.

405 Environmental Calculations 2 hours. Problem solving techniques as applied to environmental and occupational health: dimensional analysis, mass and energy balances, trial and error solutions, numerical and graphical techniques. Recommended background: Mathematics through calculus, college physics and chemistry.

406 Biological, Chemical, Explosives, and Nuclear Weapons as Public Health Threats 3 hours. Preparation, understanding of threats, and rescue and response issues pertaining to potential terrorist incidents from a public health perspective. Same as EPID 408. Prerequisite(s): Graduate or professional standing; or consent of the instructor. Recommended background: EOH 400 and EPID 410.

411 Water Quality Management 4 hours. Water pollution; historical and current developments in problems and solutions: characterization of pollutants, regulatory framework, risk assessment, standards, modeling, water purification, public health concerns. Prerequisite(s): Taught online. Consent of the instructor.

418 Analysis of Water and Wastewater Quality 2 hours. Basic instrumentation and procedures related to measurement and surveillance of various water quality parameters.

421 Fundamentals of Industrial Hygiene 2 hours. Recognition, evaluation, and control of chemical, biological, and physical agents in the workplace. Application to preliminary surveys, measurement of exposure, and evaluation of control measures. Prerequisite(s): EOH 400 or consent of the instructor.

424 Environmental Acoustics 2 hours. Fundamentals of noise generation/propagation; filtering; weighting; hearing biomechanics; health effects; audiometry; hearing control methods; sound fields; directivity; diffraction/barriers; regulations; instrumentation; control. Prerequisite(s): General college physics and ordinary calculus, or consent of the instructor.

428 Industrial Hygiene Laboratory 1 2 hours. Detailed methods and experiments for measuring chemical, biological, and physical agents; and methods for evaluating the effectiveness of control measures. Prerequisite(s): EOH 400 and EOH 405 and EOH 421, or consent of the instructor.

431 Air Quality Management 3 hours. Sources, control, dispersion, and effects upon receptors of air pollution: health and other adverse effects, meteorology and dispersion estimation, photochemistry, aerosol characterization. Same as CME 419. Prerequisite(s): EOH 405 or CME 216 or consent of instructor.
438 Air Quality Laboratory 2 hours. Basic instrumentation and procedures related to measurement and surveillance of ambient air quality. Methods for collection and identification of gaseous and particulate pollutants. Prerequisite(s): EOH 405 or consent of the instructor.

440 Chemistry for Environmental Professionals 3 hours. Introductory atmospheric chemistry, aspects of air pollution, chemistry related to natural water and water treatment; priority organic pollutants and heavy metals. Same as CME 411. Prerequisite(s): One year of college chemistry.

450 Principles of Occupational and Environmental Medicine 2 hours. Causes, transmission, control, and prevention of the physical/chemical environmental stressors in the work environment; industrial processes and hazards, contrasts between developed and developing countries.

455 Environmental and Occupational Toxicology 3 hours. General and applied toxicology as it relates to environmental and occupational exposures to hazardous agents. Emphasis on basic principles, specific types of toxicity, and major classes of toxic agents. Prerequisite(s): CHEM 232 and CHEM 234 and BIOS 100 or the equivalent courses and senior standing or above or consent of the instructor.

461 Community Health and Consumer Protection 2 hours. Prevention of health hazards due to infectious and chemical agents and physical processes, especially in the home and small community environments; role of health agencies. Prerequisite(s): EOH 405 or consent of the instructor.

472 Management of Solid and Hazardous Wastes 3 hours. Management of solid and hazardous waste, including radioactive waste, landfills, incineration, recycling, composting, source reduction, groundwater and air pollution impacts, control, regulations, siting, health impacts. Same as CME 423 and GEOG 444.

482 Occupational Safety Science 2 hours. Principles of occupational safety, safety regulations, accident investigation procedures, and engineering, behavioral, and administrative techniques for occupational accident control. Prerequisite(s): EOH 421 or consent of the instructor.

495 Environmental/Occupational Health Seminar 1 hour. Discussions of current environmental health and occupational health topics, with presentations by students, faculty members, and visiting scientists.

512 Water and Wastewater Treatment 3 hours. Water and wastewater characterization: physical, chemical, and biological methods of water and wastewater treatment; regulatory and control trends; and environmental impact determinations. Prerequisite(s): EOH 411 or consent of the instructor.

523 Engineering Controls/Ventilation 4 hours. Design/evaluation of engineering control technology for workplace hazards: process modification, industrial ventilation, air cleaning, shielding, toxic air contaminants, mechanical hazards, (non)ionizing radiation, and temperature.

529 Industrial Hygiene Laboratory II 2 hours. Fieldwork: comprehensive industrial hygiene surveys of local work places. Health hazard analysis, design of sampling strategies, collection of field data, report preparation. Prerequisite(s): EOH 428 and EOH 438; or consent of the instructor.

532 Air Quality Management II 2 hours. Air quality management: integration of diverse aspects. Data interpretation; standards setting; policy implementation; equipment design; hazardous spill modeling; indoor air pollution; case studies. Same as CME 526. Prerequisite(s): EOH 431 or CME 419.

542 Water Chemistry 4 hours. Chemical equilibria and kinetic principles as applied to processes occurring in natural and engineered water systems. Same as CME 524. Prerequisite(s): EOH 440 or CME 411.


551 Occupational Diseases 4 hours. Diseases caused by physical, chemical, and biological agents in the workplace: toxicology, epidemiology, pathophysiology, diagnosis, treatment, prevention, high risk populations, early detection.

554 Occupational and Environmental Epidemiology 2 hours. Methods and issues of environmental epidemiology: outbreak, cluster analysis, cross-sectional, case-control, cohort, ecological, and time series designs; contemporary issues: cancer and reproductive hazards. Same as EPID 554. Prerequisite(s): EPID 401 and EOH 400; or consent of the instructor.

555 Advanced Topics in Toxicology 3 hours. An in-depth consideration of biotransformation, toxicokinetic modeling, biomarkers, and chemical carcinogenesis. The course is based on articles from the primary literature. Molecular through physiological level effects are considered. Prerequisite(s): Grade of B or better in EOH 455; or consent of the instructor.

556 Risk Assessment in Environmental and Occupational Health 3 hours. Methodologies for utilizing toxicological and epidemiological data to estimate health risks due to exposure to pollutants in environments. Prerequisite(s): EOH 405 and BSTT 401 and EPID 400; or consent of the instructor.

557 Design and Analysis of Experiments 4 hours. Detailed consideration of the mathematical, statistical, and practical aspects of design and analysis of experiments that are encountered in physicochemical, biological, and engineering investigations. Extensive computer use required. Prerequisite(s): Completion of one course in statistics, working knowledge of at least one statistical software package (SAS, Design Expert, Minitab, etc.), and consent of the instructor. Recommended background: A working knowledge of linear algebra and additional advanced course work in statistics.

558 Industrial Toxicology 2 hours. Clinical toxicology and mechanisms of workplace toxicants: metals, fibers, dusts, and organics. Diagnosis and treatment. Prerequisite(s): EOH 400 and EOH 457.

564 Geographic Information System Application in Public Health 3 hours. Examination of GIS applications in public health and the process of designing a GIS-based public health investigation. Same as HPA 564. This is an online course. Prerequisite(s): BSTT 400 and HPA 465 and consent of the instructor.

565 Datamining Applications in Public Health 3 hours. Presents the key public health information system sources, describes the process of datamining, and introduces the student to a sample of datamining techniques. Same as HPA 565. Extensive computer use required. Prerequisite(s): BSTT 400.

570 Hazardous Materials Management 3 hours. Definition and application of methods for managing hazardous materials: site health and safety plan development; remediation technique evaluations; incinerator design; computerized hazard response program applications. Prerequisite(s): EOH 405 and EOH 421 and EOH 429; or consent of instructor.

572 Environmental Risk Assessment and Management 4 hours. Risk assessment from a public health, quantitative, and environmental risk management perspective.
584 Radiation Protection 3 hours. Radioactivity, energetics, kinetics, interactions, external protection, dosimetry, recommendations and standards, measurement, radiation. 
Prerequisite(s): EPID 401 or consent of the instructor.

594 Advanced Special Topics in Environmental Health 1 TO 4 hours. Environmental/occupational topics of current importance to public health: pollution, industrial hygiene, and related topics. Variable course contents arranged to supplement the existing curriculum. 
Prerequisite(s): Consent of the instructor.

597 Advanced Laboratory Projects in Environmental Health 1 TO 4 hours. Application and integration of sampling and measurement techniques for characterization of inside and ambient environments. Individuals or groups supervised by EPID faculty members. 
Prerequisite(s): Consent of the instructor.

Epidemiology (EPID)

400 Principles of Epidemiology 3 hours. Introduction to descriptive and analytic epidemiology, determinants of health and disease in populations, application of epidemiologic methods to disease control; includes use of basic epidemiologic software. 
Prerequisite(s): Consent of the instructor.

403 Introduction to Epidemiology: Principles and Methods 3 hours. Introduction to descriptive and analytic epidemiology, and determinants of health and disease in populations. Measures of occurrence, association, and statistical testing will be addressed, along with study designs, bias, and confounding. 
Prerequisite(s): Credit or concurrent registration in BSTT 400 and graduate or professional standing; or consent of the instructor.

404 Intermediate Epidemiologic Methods 4 hours. Introduction to multivariable methods in epidemiology, including stratified analysis and regression modeling. Students will use statistical software to analyze data from epidemiologic studies. 
Prerequisite(s): EPID 403 and EPID 406; and credit or concurrent registration in BSTT 400 and graduate or professional standing; or consent of the instructor.

405 Human Growth and Nutrition 3 hours. Worldwide variation in human growth and the factors that contribute to differences between populations and individuals in the timing and pattern of growth and development. 
Same as ANTH 405.

406 Epidemiologic Computing 3 hours. Hands-on course for students using SAS and other computer tools for epidemiologic analysis. Addresses theoretical and practical issues in statistical programming for epidemiology students. 
Prerequisite(s): BSTT 400 and EPID 400; or BSTT 400 and EPID 403; or consent of the instructor.

408 Biological, Chemical, Explosives, and Nuclear Weapons as Public Health Threats 3 hours. Preparation, understanding of trends, and rescue and response issues pertaining to potential terrorist incidents from a public health perspective. 
Same as EPID 408. 
Prerequisite(s): Graduate or professional standing; or consent of the instructor. 
Recommended background: EPID 400 and EPID 410.

Prerequisite(s): EPID 400 or consent of the instructor.

410 Epidemiology of Infectious Diseases 2 hours. Epidemiology of selected infectious diseases, including incidence, prevalence, and control of disease. 
Prerequisite(s): EPID 400 or credit or concurrent registration in EPID 403. 
Prerequisite(s): Credit or concurrent registration in EPID 400; or credit or concurrent registration in EPID 403.

411 Epidemiology of Chronic Diseases 3 hours. Selected topics in chronic diseases with critical analysis of current epidemiologic literature. 
Prerequisite(s): EPID 400 or consent of the instructor.

412 Introduction to Psychosocial Epidemiology 2 hours. Reviews landmark studies of psychosocial and psychiatric disorders in U.S. communities; evaluates research methodology, case definition, identification, and empirical findings. 
Prerequisite(s): EPID 400 or consent of the instructor.

426 Pharmacoepidemiology 2 hours. Reviews processes of ethical drug development. Epi methodologies for drug evaluation are presented, giving students opportunity to critically appraise efficacy and safety of clinical data. 
Prerequisite(s): EPID 400 or consent of instructor.

471 Population 3 OR 4 hours. The measurement and study of major trends and differentials in fertility, mortality, migration, growth, and compositional characteristics of the population of the United States and other nations. 
Same as SOC 471. 3 undergraduate hours. 4 graduate hours. 
Prerequisite(s): 6 hours of upper-division sociology, including SOC 201, or consent of the instructor.

494 Introductory Special Topics in Epidemiology 1 TO 4 hours. Special topics in substantive areas of epidemiology (including infectious disease, chronic disease, environmental/occupational, social). Course content will vary with each offering. May be repeated. Students may register in more than one section per term. 
Prerequisite(s): EPID 400 or EPID 403 or consent of instructor; and graduate or professional standing.

501 Advanced Quantitative Methods in Epidemiology 3 hours. Advanced quantitative methods used in the analysis of case-control and cohort studies, including computer applications. 
Prerequisite(s): EPID 401 and BSTT 401; or consent of the instructor.

510 Advanced Epidemiology of Infectious Diseases 2 hours. Controversies regarding the etiology, transmission, and prevention of selected infectious diseases. Literature reviews and study designs developed by students are a prominent part of course. 
Prerequisite(s): EPID 410 or consent of instructor.

513 Epidemiology of Aging 2 hours. Current methodologic and public health issues in the epidemiology of aging will be explored. 
Prerequisite(s): EPID 401 or EPID 411; and consent of the instructor.

515 Cancer Epidemiology 3 hours. Critical review of topics and issues relevant to cancer epidemiology to promote synthesis of current knowledge and awareness of research issues.
Prerequisite(s): EPID 401 and EPID 411; or consent of the instructor.

516 Advanced Cancer Epidemiology 2 hours. Critical review of the epidemiology of selected cancer sites to promote synthesis of knowledge, awareness of methodologic issues, and stimulate future research. Prerequisite(s): EPID 501 and EPID 515; or consent of the instructor. Recommended background: EPID 520.

517 Epidemiology of Cardiovascular Diseases 2 hours. Epidemiology and risk factors of cardiovascular diseases. Prerequisite(s): EPID 411 or consent of instructor.

518 The Epidemiology of Pediatric Diseases 3 hours. Familiarizes the student with issues unique to research on children. Lecture topics include epidemiology of childhood diseases, important research studies, and methodologic problems specific to studying children. Prerequisite(s): EPID 401 and BSTT 400; or consent of instructor.

519 Research Protocol and Grant Development 1 hour. A review of funding options and examples of developing fundable research proposals. Satisfactory/Unsatisfactory grading only. Prerequisite(s): EPID 400.

520 Genetics in Epidemiology 2 hours. Topics in genetic/molecular epidemiology, including genetics, population genetics, molecular biology, and molecular genetics. Familiarizes students with laboratory/statistical concepts and applications in epidemiological studies. Prerequisite(s): EPID 401 or consent of the instructor.

548 Readings in Reproductive and Perinatal Epidemiology 2 hours. Advanced seminar in reproductive/perinatal epidemiology with particular emphasis on methodologic issues. Same as CHSC 546. Prerequisite(s): CHSC 441 and EPID 404 or consent of the instructor. Recommended background: Maternal and child health and epidemiology.

549 Advanced Applied Methods in MCH Epidemiology 3 hours. Gives conceptual and technical understanding of statistical and epidemiological methods, builds skills/proficiency in applying these. Attention is given to data handling tasks and to statistical/epidemiologic strategies for analysis and presentation. Same as CHSC 540. Prerequisite(s): EPID 402 or EPID 404; and BSTT 401 and EPID 406; or consent of the instructor. Recommended background: Credit or concurrent registration in EPID 501.

554 Occupational and Environmental Epidemiology 2 hours. Methods and issues of environmental epidemiology: outbreak, cluster analysis, cross-sectional, case-control, cohort, ecological, and time series designs; contemporary issues: cancer and reproductive hazards. Same as ECHS 554. Prerequisite(s): EPID 401 and BSTT 401 and ECHS 400; or consent of the instructor.

591 Current Epidemiologic Literature 2 hours. Student presentation of recently published scientific papers of epidemiologic interest to promote breadth of knowledge and critical examination of evidence. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): EPID 401 or EPID 403 or consent of instructor.

594 Advanced Special Topics in Epidemiology 1 to 4 hours. Advanced special topics in substantive areas of epidemiology (including infectious disease, chronic disease, environmental/occupational, social, methods, etc). Course content will vary with each offering. May be repeated. Students may register in more than one section per term.

595 Epidemiology Research Seminar 1 hour. Current developments in theory and application of biostatistics and epidemiology with presentations by faculty and visiting scientists. Satisfactory/Unsatisfactory grading only. May be repeated.

596 Prerequisite(s): Credit or concurrent registration in EPID 400 or EPID 403 or consent of the instructor.

597 Finance (FIN) 412 Portfolio Management 3 hours. Development of portfolio theory; establishment of portfolio objectives for individuals, corporations, banks, pension, and mutual funds; evaluation of portfolio performance. Prerequisite(s): FIN 510.

515 Fixed Income Securities 3 hours. Valuation of fixed income securities, term structure estimation, and arbitrage trading with practical application using real data. Prerequisite(s): FIN 310.

416 Options and Futures Markets 3 hours. History and institutional structure of options and futures markets. Uses of futures and options for arbitrage, speculation, and hedging by managers of domestic and multinational organizations. Analysis of factors which determine futures and options prices. Prerequisite(s): FIN 310.

430 Introduction to Money and Banking 3 hours. Payment and banking systems; credit and market risk management; the Federal Reserve System; globalization of monetary, banking, and regulatory systems. Prerequisite(s): FIN 310.

431 Theory and Structure of Financial Markets 3 hours. The distribution of saving and credit over time and risk categories. The financial services industry; Administration and regulation of global money, security, and derivatives markets. Prerequisite(s): FIN 300.

442 International Finance 3 hours. Financial management within an international context. International monetary system and financial markets, management of foreign investments, working capital management, exchange risks, taxation, and earnings reports. Prerequisite(s): FIN 300 and FIN 310.

444 Small Business Finance 3 hours. Aspects of acquiring funds for small business enterprises. Topics include the trade-off of profitability, management of working capital, and capitalization. Prerequisite(s): FIN 300.

465 Property and Liability Insurance 3 OR 4 hours. Using property and liability insurance to manage risk. Topics may include fire, marine, consequential loss, crime, title, automobile, and workers’ compensation insurance. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): FIN 300; or consent of the instructor.

466 Life and Health Insurance 3 OR 4 hours. Types, uses, and evaluation of liability and health insurance. Economics of the industry; Regulation and taxation. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): FIN 300; or consent of the instructor.

472 Real Estate Finance 3 OR 4 hours. Finance principles applied to real estate; financing of residential and income-producing real estate; real estate development finance; secondary mortgage market; taxation and real estate finance. Same as ECON 472. 3 undergraduate hours. 4 graduate hours. May not be used to satisfy the economics credit requirement for the MA in Economics and PhD in Economics. Elective credit only will be applied toward these degrees. Prerequisite(s): ECON 218 or ECON 220.

473 Introduction to Risk Management 3 hours. Introduction to risk management. Loan and credit management; credit scoring. Risk measurements and reserves, banking and insurance capital requirements, the BASEL accord, tail events, and catastrophic event insurance. Financial contracts and hedging. Same as IDS 473. Prerequisite(s): FIN 300 and IDS 371.
494 Special Topics in Finance 1 TO 4 hours. An intensive study of a selected topic in finance. Topics vary by sections and by term. 1 to 3 undergraduate hours. 2 to 4 graduate hours. May be repeated if topics vary. Students may register for more than one section per term. May be repeated to a maximum of 6 hours for undergraduate students; may be repeated to a maximum of 8 hours for graduate students. Prerequisite(s): Consent of the instructor.

495 Competitive Strategy 4 hours. Multidisciplinary analysis of organization strategy and policy using case method and/or business simulation. Assignments involve extensive library research as well as oral and written reports. Prerequisite(s): Senior standing in the College of Business Administration and completion of all other CBA core courses, or consent of the instructor.

500 Introduction to Corporate Finance 4 hours. Theory of corporate finance: goal of the firm, time value of money, investment decisions (under certainty and uncertainty), net present value, capital markets, and corporate financing decisions. Prerequisite(s): ACTG 500 and credit or concurrent registration in ECON 520 and admission to the MBA program, the MA in Real Estate program, the Master of Health Administration program, or approval of the director of graduate studies.

510 Investments 4 hours. Theory and practice of investment analysis. Topics included are the institutional organization of security markets, and fundamental principles of asset valuation with application to specific securities. Prerequisite(s): FIN 500.

512 Portfolio Analysis 4 hours. Development of portfolio theory; establishment of portfolio objectives; evaluation of portfolio performance; investment objectives for individuals, corporations, banks, pension and mutual funds, and their interrelation with economic environment. Prerequisite(s): FIN 510.

516 Theory and Structure of Options and Futures Markets 4 hours. History and institutional structure of options and futures markets. Uses of futures and options for arbitrage, speculation, and hedging by financial and portfolio managers of domestic and multinational organizations. Analysis of factors which determine futures and options prices. Prerequisite(s): FIN 510.

520 Corporate Finance 4 hours. Advanced topics in corporate finance including capital structure, dividend policy, financial restructuring, bankruptcy, and leasing. Emphasis is on recent developments in corporate finance and financial economics. Prerequisite(s): FIN 500.

530 Money and Banking 4 hours. The functions of money, monetary standards, development and operation of commercial banking and the Federal Reserve System. Theories of the supply and demand for money; effects of monetary changes on economic activity, interest rates, and income. Prerequisite(s): FIN 500.


542 International Finance 4 hours. Financial management within an international context. International monetary system, exchange rates, foreign investments, working capital management, financing trade, taxation, and earnings reports. Prerequisite(s): FIN 510.

544 Entrepreneurial and New Venture Financing 4 hours. The financing of new business. Estimating cash needs and then determining sources to finance them. Course is designed for those wanting to start their own business. Prerequisite(s): FIN 510.

551 Financial Decision Making 1 4 hours. First foundation course for the study of modern financial economics. Two-period individual consumption and portfolio decisions under uncertainty and their implications for the valuation of securities. Prerequisite(s): Consent of the instructor.

571 Empirical Issues in Finance 4 hours. The methodology used in analyses of market efficiency, asset pricing, and capital allocation. Prerequisite(s): FIN 550 and consent of the instructor.

573 Risk Management 4 hours. Introduction to risk management. Risk measurements and reserves, banking and insurance capital requirements, the BASEL accord, tail events, catastrophic event insurance, reinsurance. Financial contracts and hedging. Same as IDS 573. Prerequisite(s): Credit or concurrent registration in IDS 570 and FIN 550.

594 Special Topics in Finance 1 TO 4 hours. An intensive study of a selected topic in finance. Topics vary by sections and by term. May be repeated to a maximum of 12 hours if topics vary. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

596 Independent Study in Finance 1 TO 4 hours. Independent study under the direction of a faculty member. Must be arranged before the start of the semester. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of department head or instructor.

599 PhD Thesis Research 0 TO 16 hours. Independent research on topic approved for doctoral dissertation under supervision of faculty adviser. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

599 PhD Thesis Research 0 TO 16 hours. Independent research on topic approved for doctoral dissertation under supervision of faculty adviser. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.
Topics in Seventeenth-Century French Literature 3 OR 4 hours. Intensive study of Baroque and Classicism, with focus on major genres: theater (Corneille, Moliere, Racine); poetry (La Fontaine); prose (Fascal, de Sade); novel (de LaFayette). 3 undergraduate hours. 4 graduate hours. May be repeated up to 2 times. Students may register in more than one section per term. Prerequisite(s): FR 301 or consent of the instructor.

Topics in Eighteenth-Century French Literature 3 OR 4 hours. Introduction to the literature and philosophy of the Enlightenment through representative authors (Rousseau, Diderot, etc.) and major genres (novel, essay, conte, theatre, etc.). 3 undergraduate hours. 4 graduate hours. May be repeated up to 2 times. Prerequisite(s): FR 301 or consent of the instructor.

Topics in Nineteenth-Century French Literature 3 OR 4 hours. Major genres and works from Romanticism to realism, naturalism, and symbolism will be studied within the context of the social, cultural, and political movements of the century. 3 undergraduate hours. 4 graduate hours. May be repeated up to 2 times. Prerequisite(s): FR 301 or consent of the instructor.

Topics in Twentieth-Century French Literature 3 OR 4 hours. Study of major literary movements (surrealism, existentialism, Nouveau Roman, theater of the absurd) and intensive analysis of works by major authors from Proust to Beckett. 3 undergraduate hours. 4 graduate hours. May be repeated up to 2 times. Prerequisite(s): FR 301 or consent of the instructor.

Francophone Novel 3 OR 4 hours. Intensive analysis of a topic in Francophone literature. Scope includes Quebec, Africa, the Antilles, and French novelists outside of France. 3 undergraduate hours. 4 graduate hours. May be repeated up to 2 times.

Intensive study of works by Twentieth-Century Francophone cinema. 3 OR 4 hours. This course will examine a selection of French and Francophone films chosen around a period, theme, or genre. Topics will vary. 3 undergraduate hours. 4 graduate hour. May be used for credit in the French major only with consent of the director of undergraduate studies. Taught in English. Students who intend to use FR 440 toward the major in French must complete assignments in French. Prerequisite(s): FR 301 or FR 302; or consent of the instructor.

Foundations of Second Language Teaching 3 OR 4 hours. Provides an introduction to second language acquisition research and its implications for communicative language teaching. Emphasis is on creating activities to develop high school students’ communicative abilities in speaking and listening. Same as GER 448 and SPAN 448. 3 undergraduate hours. 4 graduate hours. Taught in English. Prerequisite(s): Junior standing or above; and consent of the instructor and three courses at the 200- and 300-levels.

Teaching Second Language Literacy and Cultural Awareness 3 OR 4 hours. Examines the nature of literacy as a reciprocal relationship between readers, writers, texts, and culture. Students learn the practical and theoretical foundations of classroom teaching of second language reading and writing skills. Same as GER 449 and SPAN 449. 3 undergraduate hours. 4 graduate hours. Taught in English. Prerequisite(s): Junior standing or above; and consent of the instructor.

Advanced Oral and Written French 3 OR 4 hours. Exercises in French pronunciation; oral interpretation of different texts (familiar style and formal discourse); discussion of newspapers, magazine articles; practice in critical writing. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): FR 334 or consent of the instructor.

Topics in French and Francophone Cinema 3 OR 4 hours. Intensive study of contemporary French cinema. 3 OR 4 hours. Prerequisite(s): Same as FR 470. Taught in English. Prerequisite(s): Junior standing or above; and approval of the department.

Interdisciplinary approach to French civilization of the seventh and eighteenth centuries, including history, literature, the beaux-arts, and philosophy. 3 undergraduate hours. 4 graduate hours. Lectures and discussion in French. Prerequisite(s): FR 302 or consent of the instructor.

Interdisciplinary approach to French civilization of the seventeenth and eighteenth centuries, including history, literature, the beaux-arts, and philosophy. 3 undergraduate hours. 4 graduate hours. Lectures and discussion in French. Prerequisite(s): FR 302 or consent of the instructor.

French Civilization II: Seventeenth and Eighteenth Centuries 3 OR 4 hours. An interdisciplinary approach to French civilization of the seventeenth and eighteenth centuries, including history, literature, the beaux-arts, and philosophy. 3 undergraduate hours. 4 graduate hours. Lectures and discussion in French. Prerequisite(s): FR 302 or consent of the instructor.

Topics in French Civilization: Nineteenth and Twentieth Centuries 3 OR 4 hours. An interdisciplinary approach to French civilization, including history, literature, the beaux-arts, and philosophy. 3 undergraduate hours. 4 graduate hours. Lectures and discussion in French. Prerequisite(s): FR 302 or consent of the instructor.

Introduces study of Baroque and Classicism, with focus on major genres: theater (Corneille, Moliere, Racine); poetry (La Fontaine); prose (Fascal, de Sade); novel (de LaFayette). 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Taught in English. Prerequisite(s): French major with senior or graduate standing and consent of the department.

Topics will vary from term to term and may cover such areas as literary theory or culture. Same as SPAN 494 and ITAL 494. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Taught in English. Prerequisite(s): Junior standing or above; and approval of the department.

Independent Study 1 TO 4 hours. Supervised study in an area not covered by regularly scheduled courses under the direction of a faculty member designated by the chairperson of the department. Prerequisite(s): French major with senior or graduate standing and consent of the department.

Theoretical and Research Foundations of Communicative Language Teaching 4 hours. Introduces students to contemporary theory and research on second language acquisition. Emphasis is on understanding the research and examining classroom practice. Same as SPAN 502. Credit is not given for FR 502/SPAN 502 if the student has credit for SPAN 450 or FR 450 or GER 407. Taught in English. Prerequisite(s): Appointment as a teaching assistant. For students outside the department: consent of the instructor.

Educational Practice with Seminar I 6 hours. The first half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, and approval of the department.

Educational Practice with Seminar II 6 hours. The second half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, credit or concurrent registration in FR 470, and approval of the department.
planners, policy makers, and critics. Same as ARCH 412. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Advanced undergraduate or graduate standing or consent of the instructor.

413 French Feminist and Gender Theory 3 OR 4 hours. An introduction to French theories of gender, including feminisms influenced by Lacanian psychoanalysis, political philosophy, and multicultural studies. Same as FR 413. 3 undergraduate hours. 4 graduate hours. May be used for credit in the French major only with consent of the director of undergraduate studies. Taught in English. Students who intend to use French 413 toward the major in French must complete assignments in French. Prerequisite(s): FR 301 or FR 302; or consent of the instructor.

419 Public Health Aspects of Sexuality and Women's Health 3 hours. An overview of human sexuality from a public health view with special emphasis on family planning, sexuality, and behavior effects on women's health. Same as CHSC 419. Prerequisite(s): Graduate standing; or junior standing or above with consent of the instructor.

424 Gender, Crime, and Justice 3 OR 4 hours. An in-depth examination of the etiology of female crime and the involvement of females in the criminal justice system as offenders, victims, and professionals. Same as CRJ 424. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CRJ 101 and CRJ 220; or consent of the instructor.

425 Sociology of Gender 3 OR 4 hours. Variety and change in gender roles; patterns and consequences of gender inequality; gender and sexuality; gender and social institutions such as family, economy. Same as SOC 424. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): 6 hours of upper-division sociology or gender and women's studies courses or consent of the instructor.

439 Gender and Cultural Production 3 OR 4 hours. Issues of gender representation and gender politics examined through the use of theoretical texts or through the study of women authors. Same as GER 439. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time if topics vary. Taught in English. Students who intend to use GER 439/GWS 439 toward a degree offered by the Department of Germanic Studies will do assignments in German. Area: Literature/Culture. Prerequisite(s): GER 212 or consent of the instructor.

441 Introduction to Maternal and Child Health 3 hours. Title V maternal and child health programs; concepts of delivery risks by age; effective interventions and public sector organizations for delivery of MCH services. Same as CHSC 441. Prerequisite(s): Consent of the instructor. Recommended background: Some knowledge of maternal and child health issues.

443 Topics in Gender, Sexuality, and Literature 3 OR 4 hours. Specific study of topics in gender and literature. Content varies. Same as ENGL 443. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 361 or ENGL 362 or ENGL 363 or GWS 101 or GWS 102; and senior standing or above; or consent of the instructor.

444 Topics in Theories of Gender and Sexuality 3 OR 4 hours. Advanced study of topics related to theories of gender and sexuality. Same as ENGL 444. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Prerequisite(s): ENGL 361 or ENGL 362 or ENGL 363 or GWS 101 or GWS 102; and senior standing or above; or consent of the instructor.

450 Women and Mental Health Nursing 3 hours. Theories of female psychology; women's daily lives and mental health; gender differences in mental illness; strategies for improving women's mental health. Same as NUSC 450 and NUWH 450. Prerequisite(s): Consent of the instructor. Students enrolled in the College of Liberal Arts and Sciences must have credit in PSCH 100 and either PSCH 270 or PSCH 315 or GWS 315.

469 Women's Literary Traditions 3 OR 4 hours. An exploration of issues such as the female aesthetic, women's popular literature, factors that enable creativity, and differences of race and class. Same as ENGL 469. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ENGL 361 or ENGL 362 or ENGL 363; and senior standing or above; or consent of instructor.

470 Reading Black Women Writing 3 OR 4 hours. Examines inscriptions of race, gender, class, and sexuality as they shape the literary and critical practices of nineteenth- and twentieth-century black women writers. Same as AAST 470 and ENGL 480. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): AAST 350 or AAST 351 or AAST 355 or AAST 357 or AAST 360, or ENGL 350 or ENGL 351 or ENGL 355 or ENGL 361 or ENGL 363; or consent of the instructor.

472 Women and Film 3 OR 4 hours. Roles and representations of women in classical Hollywood, European art, and independent feminist cinemas. Same as AH 434 and ENGL 472. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ENGL 302 or ENGL 342 or ENGL 361 or ENGL 362 or ENGL 363; and senior standing or above; or consent of instructor.

478 Women in Chinese History 3 OR 4 hours. Focuses on scholarship on women in Chinese society throughout history, dealing with topics such as marriage and family, literacy, career options, women in revolution, and the history of the field. Same as ASST 478 and HST 478. 3 undergraduate hours. 4 graduate hours. Recommended background: Previous course work in Chinese history or women's studies.

484 Topics in the History of Women 3 OR 4 hours. Specific topics are announced each term. Same as HST 484. 3 under-
515 Psychology of Women and Gender 3 hours. Critical examination of psychological theories and research on women and gender, including biological, psychoanalytic, socialization, power, and social constructionist perspectives. Same as PSYCH 515.

525 Social Work with Women 3 hours. Research, policy, and practice approaches to working with women in diverse urban settings; empowerment and diversity perspectives. Same as SOWK 525.

540 Language and Gender 4 hours. Examination of sociolinguistic research and theories on the inter-relationships between language and gender, including gender categories in linguistic systems, gender differences in language use, interaction, and cross-cultural comparisons. Same as LNG 540.

547 Race, Class, and Gender Dimensions of Crime and Justice 4 hours. Theories addressing the intersections of race, class, gender, crime, and justice. Specifically, students examine criminological theories, social construction of race, class, and gender, legal decision making, and implications of this for justice in our society. Same as CRJ 547.

583 Women in Education 4 hours. An overview of girls' and women's educational experiences and placement within the academic structure (as students, professionals, and intellectuals). The impact of gender on the realization of educational, economic, and social opportunities. Same as PS 583.

594 Special Topics in Gender and Women's Studies 1 to 4 hours. Study of a problem, topic, or issue relevant to the interdisciplinary area of gender and women's studies. Content varies. May be repeated to a maximum of 12 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor or one course in gender and women's studies.

596 Independent Study 1 to 4 hours. Topics and plan of study must be approved by the instructor. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

401 Topics in Regional Geography 3 OR 4 hours. Geographical analysis of cultural and environmental systems of a political, economic, or climatic region of the world as defined by the instructor. 3 undergraduate hours. 4 graduate hours. May be repeated to a maximum of 6 hours. Prerequisite(s): One upper-division course in each of the areas of skills, systematic and regional/urban geography.

418 Ethnographic and Qualitative Research Methods 3 OR 4 hours. Practical introduction to the techniques of social scientists for research in natural social settings: participant observation, participant observation, interviewing, use of documentary sources, etc. Same as ANTH 418. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Junior standing or above.

425 Field Techniques in Archaeology 4 hours. Exposure to field methods in archaeology through participation in an actual research project. Students are instructed in field excavation techniques. Usually offered in summer session. Same as ANTH 425. May be repeated to a maximum of 6 hours. Prerequisite(s): ANTH 102 or consent of the instructor. Recommended: Concurrent registration in ANTH 426 or GEOG 426.

426 Laboratory Techniques in Archaeology 4 hours. Exposes students to laboratory methods in archaeology through the analysis of excavated materials. Students are instructed in laboratory techniques. Same as ANTH 426. May be repeated to a maximum of 8 hours. Prerequisite(s): ANTH 102 or consent of the instructor. Recommended: Concurrent registration in ANTH 425 or GEOG 425.

429 Archaeological Methods 3 OR 4 hours. This course will familiarize students with various methodologies used by archaeologists and geo-archaeologists. Course will concentrate on a different method each time it is taught. Same as ANTH 429. 3 undergraduate hours. 4 graduate hours. May be repeated up to 2 times. Students may register for more than one section per term.

431 Advanced Landform Geography 3 OR 4 hours. Genesis of surficial landforms and processes that sculpt them. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): GEOG 131 or GEOL 101 or consent of the instructor.

432 Geomorphology and Archaeology 3 OR 4 hours. Relevance of geomorphic processes and landform development to archaeology; role of geomorphology in archaeological surveys, palaeogeographic reconstruction, and archaeological interpretation. Elements of geoarchaeology. Same as ANTH 421. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): GEOG 131 or EAES 101 or consent of the instructor.

441 Topics in Resource Management and Policy 3 OR 4 hours. Selected topics dealing with environmental problems at local, regional, or global levels. Topics vary. 3 undergraduate hours. 4 graduate hours. May be repeated to a maximum of 6 hours. Prerequisite(s): GEOG 341 or GEOG 361 or consent of the instructor.

442 Environmental Hazards and Risks 3 OR 4 hours. Environmental risks of natural and technological hazards; causes and consequences to people; social theories of risks; coping mechanisms used to reduce risk. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): GEOG 251 or GEOG 441 or consent of the instructor.
444 Management of Solid and Hazardous Wastes 3 hours. Management of solid and hazardous waste, including radioactive waste, landfills, incineration, recycling, composting, source reduction, groundwater and air pollution impacts, control, regulations, styling, health impacts. Same as CME 423 and EHHS 472.

453 Seminar in Cultural Ecology 3 OR 4 hours. Cultural ecology and cultural evolution, emphasizing peasant farming and other subsistence systems. Soil management under shifting and sedentary agriculture. Same as ANTH 453. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ANTH 101 or GEOG 151 or consent of the instructor.

455 Quantitative Methods 3 OR 4 hours. Introductory statistics course in statistical methods for anthropological problem solving. Primary emphasis is on univariate and bivariate statistics, such as means and other descriptive statistics, inference, chi-square, t-tests, and simple regressions. Same as ANTH 455. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): Junior standing or above, and consent of the instructor.

461 Location and Land Use 3 OR 4 hours. Environmental, demographic, and institutional influences on land availability/use at global/local scales; geographies of production/use intensity; market/governmental controls over land users. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): GEOG 361 or consent of the instructor.

464 Geographic Modeling of Transportation Systems 3 OR 4 hours. Discussions of the principles of spatial interaction, emphasizing passenger movements, commodity flows, the practicality of network analysis, and the impact of transportation facilities on land use and regional development. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): GEOG 100 and GEOG 161.

470 Educational Practice with Seminar I 4 hours. The first half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, and approval of the department.

471 Educational Practice with Seminar II 6 hours. The second half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, credit or concurrent registration in GEOG 470, and approval of the department.

475 Thematic Cartography 4 hours. Discussion and projects involving representation of real-world areal patterns; preservation of geodetic, locational, and informational relationships; information generalization and reconstruction; computer software and programs for computer-assisted cartography. Prerequisite(s): GEOG 276 or GEOG 278 or consent of the instructor.

477 Remote Sensing of the Environment 4 hours. Principles and practices of processing and interpretation of remotely sensed imagery including aerial photographs, radar, and multispectral satellite images. Hands-on use of image-processing software. Same as ANTH 477. Extensive computer use required.

478 Mapping with Microcomputers 4 hours. Microcomputer applications including computer principles for mapping, alternative design for coordinate files, kinds of devices for mapping, direct control of devices for mapping, characteristics and limitations of mapping programs. Same as ANTH 484. Prerequisite(s): GEOG 475 or consent of the instructor.

481 Geographic Information Systems I 4 hours. Components and performance properties of geographic information systems. Geographic hierarchies and data structures. Problems and solutions in handling large geographic files. Geocoding. Same as ANTH 481. Prerequisite(s): GEOG 100 and one from GEOG 278, GEOG 386, IDS 100; or consent of the instructor.

482 Geographic Information Systems II 4 hours. Application of raster- (or grid-) based geographic information systems to the spatial analysis of landscapes. Same as ANTH 482.

483 Geographic Information Systems III 4 hours. Problems encountered in the analysis and portrayal of geographic data. Topics include taxonomy, regionalization, trend surface analysis, time series, Markov probabilities, and computer cartographic procedures for displaying output from analytic procedures. Same as ANTH 483. Prerequisite(s): GEOG 482 or ANTH 482 or consent of the instructor.

484 Qualitative Methods in Geographic Research 3 OR 4 hours. Use of qualitative methods in geographic research. Research design choices, data collection and analysis, and writing. Applications in environmental and urban geography. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): GEOG 481 or Geography major or minor or consent of instructor.

485 Computer Cartography 4 hours. The fundamentals of cartography and cartographic design. The use of state-of-the-art, Windows-based computer mapping software for querying and displaying cartographic data contained in GIS databases. Same as ANTH 485.

486 Analysis of Geographic Patterns 4 hours. Analytical methods for evaluating arrangements of points, lines, and subareas across regions. Development of noncentral measures of spatial association as an alternative to correlation analysis. Prerequisite(s): GEOG 482 or consent of the instructor.

491 History and Philosophy of Geography 3 OR 4 hours. The philosophy of geography: its theory and research techniques. Analysis of bibliographic sources. Criticism of papers on assigned topics. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Declared major or minor in Geography, or consent of the instructor.

496 Internship 1 TO 4 hours. Professional field experience with an agency or organization in the private or public sector on projects related to the student’s area of specialization. Same as ANTH 496. May be repeated to a maximum of 8 hours. Only 4 hours of credit may be applied toward the Minor in Geography. Prerequisite(s): Declared major in Anthropology, minor in Geography, or full graduate standing in Anthropology or Geography and consent of the faculty advisor, head of the department, or the director of internship programs.

505 Seminar on the Geography of Colonialism and Neocolonialism 3 hours. Colonialism: historical, political, and development geographies. Colonialism in the evolution of Europe and the Third World. Anti-colonial liberation movements. Theories of neocolonialism, under-development, dependency. May be repeated to a maximum of 6 hours. Prerequisite(s): GEOG 353 or GEOG 401 or consent of the instructor.

510 Seminar in Social Organization 4 hours. Theoretical and substantive issues about how societies are organized. Same as ANTH 510. May be repeated to a maximum of 12 hours.

511 Topics in Urban Geography 3 hours. Critical analysis of selected theories, methods, and problems of urban and regional geography. May be repeated to a maximum of 9 hours. Prerequisite(s): One 400-level course in urban, economic, or transportation geography.

530 Seminar in Physical Geography 3 hours. General topic to be defined by instructor; specific approved topic to be defined, researched, and discussed by student. May be
repeated to a maximum of 6 hours. Prerequisite(s): GEOG 421 or GEOG 431 or consent of the instructor.

541 Seminar on Resource Management and Policy 3 hours. Social policy issues in the resolution of resource management conflicts. Topics will vary. May be repeated to a maximum of 6 hours. Prerequisite(s): GEOG 441 or GEOG 461 or consent of the instructor.

551 Research Seminar on the Ecology of Mapping Behavior 4 hours. Mapping behavior examined cross-culturally, historically, and developmentally. Ecological functions of mapping in macrosocial behavior. Prerequisite(s): Consent of the instructor.

575 Seminar in Cartography 3 hours. Review of recent developments in computer mapping and identification of mapping needs. Research on conceptual and program solutions to computer mapping problems. May be repeated to a maximum of 6 hours. Prerequisite(s): GEOG 475 and GEOG 481, or consent of the instructor.

589 Geographic Information Systems for Planning 4 hours. Applications of Geographic Information Systems to urban planning and policy making. Same as UPP 508. Prerequisite(s): Graduate standing in Urban Planning and Policy or consent of the instructor.

592 Research Proposal Design 1 hour. Research techniques, including problem definition, literature search, and methodological design. Prerequisite(s): GEOG 595.

595 Departmental Seminar 3 hours. Review of contemporary geographic theory in academic research and professional practice. Satisfactory/unsatisfactory grading only. Prerequisite(s): Graduate standing in Geography.

596 Independent Study 1 TO 4 hours. Independent research on approved topic not related to thesis preparation. May be repeated to a maximum of 6 hours. Students may register in more than one section per term. Prerequisite(s): Consent of faculty adviser and the instructor.

598 Master's Thesis Research 0 TO 16 hours. Independent research on a topic approved for a graduate thesis. Satisfactory/unsatisfactory grading only. May be repeated to a maximum of 16 hours. Prerequisite(s): Consent of thesis research adviser.

Germanic Studies (GER)

400 German for Reading Knowledge 3 OR 4 hours. Preparation for the Graduate Proficiency Exam. Basic components of German grammar, sentence structure, and vocabulary. Selected texts in humanities, social sciences, and natural sciences. 3 undergraduate hours. 4 graduate hours. Credit may not be applied toward a degree or minor offered by the Department of Germanic Studies. Does not satisfy the graduation requirement in foreign languages. Prerequisite(s): GER 212 or the equivalent.

401 Advanced Practice in German Language Skills 3 OR 4 hours. Communicative use of German techniques for understanding written and spoken texts, practicing conversation, and writing texts such as essays, compositions, letters, and e-mail. 3 undergraduate hours. 4 graduate hours. May be repeated. Only majors and minors outside the Department of Germanic Studies may repeat this course for a maximum of 6 hours of credit. Area language. Prerequisite(s): GER 212 or the equivalent. Recommended background: Credit or concurrent registration in GER 310.

404 Yiddish for Reading Knowledge 3 OR 4 hours. Preparation for the Graduate Proficiency Exam. Basic components of Yiddish grammar, sentence structure, and vocabulary. Selected texts in the original language will be studied. 3 undergraduate hours. 4 graduate hours. Does not satisfy the graduation requirement in foreign languages. Prerequisite(s): GER 211; or consent of the instructor or graduate standing.

407 Theoretical and Research Foundations of Communicative Language Teaching 3 OR 4 hours. Focuses on theory and practice of communicative language teaching and explores current approaches of task-based instruction, testing, and media-enhanced instruction. 3 undergraduate hours. 4 graduate hours. Taught in English. Pedagogical examples are in German. Ten hours of high school observation required. Area: language. Prerequisite(s): GER 212 or the equivalent.

408 Introduction to Translation Theory 3 OR 4 hours. The study of translation theory and its application to translating German texts of various types into English. Appropriate for students who want to become translators. 3 undergraduate hours. 4 graduate hours. Area: language. Prerequisite(s): GER 212 or the equivalent, or graduate standing.

411 The City as Cultural Focus 3 OR 4 hours. Interdisciplinary study of urban culture with focus on German-speaking countries. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time. Taught in English. No knowledge of German required. Students who intend to use GER 411 toward a degree offered by the Department of Germanic Studies will do assignments in German. Area: literature/culture. Prerequisite(s): One 300-level course in Germanic Studies or consent of the instructor.

421 Germanic Cultural Studies II: Authors, Movements, Periods 3 OR 4 hours. Critical analysis of texts in the biographical, social, cultural, and historical context. 3 undergraduate hours. 4 graduate hours. May be repeated up to 2 times if topics vary. Students who intend to use GER 421 toward a degree offered by the Department of Germanic Studies will do assignments in German. Area: literature/culture. Prerequisite(s): GER 212 or consent of the instructor.

422 Germanic Cultural Studies III: Themes 3 OR 4 hours. Explores themes in German-speaking societies, such as the family, xenophobia, crime, and science, with stress on literary analysis and interpretation. 3 undergraduate hours. 4 graduate hours. May be repeated up to 2 times if topics vary. Students who intend to use GER 422 toward a degree offered by the Department of Germanic Studies will do assignments in German. Area: literature/culture. Prerequisite(s): GER 212 or consent of the instructor.

430 Classical German Philosophy 3 OR 4 hours. Introduction to German philosophy and intellectual history through the critical analysis of major authors and texts. 3 undergraduate hours. 4 graduate hours. Area: literature/culture. Prerequisite(s): One 300-level course in Germanic Studies or consent of the instructor.

437 Contemporary German Literature 3 OR 4 hours. Literature of the German-speaking world since World War II, with emphasis on current issues and recent critical approaches to literature. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time if topics vary. Area: literature/culture. Prerequisite(s): GER 211 or the equivalent, or graduate standing or consent of the instructor.

438 The Faust Legend 3 OR 4 hours. Discusses Goethe’s Faust within the context of European and non-European literatures. Traces the origins, significance, and interpretation of the Faust figure. 3 undergraduate hours. 4 graduate hours. Area: literature/culture. Prerequisite(s): GER 212 or the equivalent, or graduate standing or consent of the instructor.
439 German and Cultural Production 3 OR 4 hours.
Issues of gender representation and gender politics examined through the use of theoretical texts or through the study of women authors. Same as GWS 439. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time if topics vary. Taught in English. Students who intend to use GER 439 toward a degree offered by the Department of Germanic Studies will do assignments in German. Area: literature/culture. Prerequisite(s): GER 212 or consent of the instructor.

448 Foundations of Second Language Teaching 3 OR 4 hours.
Provides an introduction to second language acquisition research and its implications for communicative language teaching. Emphasis is on creating activities to develop high school students’ communicative abilities in speaking and listening. Same as FR 448 and SPAN 448. 3 undergraduate hours. 4 graduate hours. Taught in English. Prerequisite(s): Junior standing or above; and consent of the instructor and three courses at the 200- and 300-levels.

449 Teaching Second Language Literacy and Cultural Awareness 3 OR 4 hours.
Examines the nature of literacy as a reciprocal relationship between readers, writers, texts, and culture. Students learn the practical and theoretical foundations of classroom teaching of second language reading and writing skills. Same as FR 449 and SPAN 449. 3 undergraduate hours. 4 graduate hours. Taught in English. Prerequisite(s): Junior standing or above, and consent of the instructor.

450 Business Operations in German-Speaking Countries 3 OR 4 hours.
The political, cultural, historical, and economic environment in which business operates in the German-speaking countries; the effects of this environment on international business. 3 undergraduate hours. 4 graduate hours. Knowledge of German not required.

461 German Abroad 0 TO 17 hours.
Takes in a German-speaking country. Lectures, seminars, and practical work in German language, literature, and civilization. May be repeated to a maximum of 34 hours. Prerequisite(s): GER 104 or the equivalent, 2.75 overall grade point average, a 3.00 grade point average in German Studies, and approval of the department.

470 Exploring the Field of Germanic Studies 3 OR 4 hours.
Team-taught. Research in film studies, gender studies, Jewish culture, minorities, literary studies, intellectual history, applied linguistics in German Studies. Each unit taught by a different faculty member from Department of Germanic Studies. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Undergraduate students must obtain approval of the department.

480 Hegel Studies 3 OR 4 hours.
Studies in the philosophy of Hegel, including principal texts (e.g., Phenomenology), or problems (e.g., critique of metaphysics), or comparative studies (e.g., Hegel’s critique of Kant). 3 undergraduate hours. 4 graduate hours. May be repeated if topics vary. Taught in English. Area: literature/culture. Prerequisite(s): GER 430 or consent of the instructor. Recommended background: PHIL 224 or PHIL 425.

492 Internship in International Business 0 TO 12 hours.
Student placement in an international organization or firm in a German-speaking country or its U.S. subsidiary or division. Satisfactory/Unsatisfactory grading only. May be repeated with approval. Approval to repeat course granted by the department. Prerequisite(s): GER 211 and consent of the instructor and a GPA of 2.00. Recommended background: Concurrent registration in GER 493 or registration in GER 493 in the semester immediately following.

493 Internship Seminar: Business 1 TO 4 hours.
Academic component of the internship experience. Studies in the field of the internship and further investigation of related topics. May be repeated with approval. Approval to repeat course granted by the department. A maximum of 3 hours of credit may be applied toward an undergraduate degree offered by the Department of German Studies. and a maximum of 4 hours of credit may be applied toward a graduate degree offered by the Department of German Studies. Prerequisite(s): GER 211 and credit or concurrent registration in GER 492 or consent of the instructor and a grade point average of 2.00.

494 Educational Practice with Seminar I 6 hours.
The first half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, and approval of the department.

495 Educational Practice with Seminar II 6 hours.
The second half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, credit, or concurrent registration in GER 494, and approval of the department.

513 Germanic Culture from the Enlightenment to the 1848 Revolution 4 hours.
Representative works and authors studied in a cultural context. May be repeated if topics vary.

514 Germanic Culture from the Industrial Revolution to the Present 4 hours.
Representative works and authors are studied in a cultural context. May be repeated if topics vary.

515 Film and Media Culture 4 hours.
Explores the theories, origins, and historical and other visual media. Emphasis will be given to the status of media texts in their cultural contexts, as well as to their function as components of modern social institutions. Taught in English. Students will be asked to watch films outside of class.

531 Seminar in Special Topics 4 hours.
In-depth study of a theme, genre, or other element in Germanic literature and culture not confined to a single historical period. Topics vary. May be repeated to a maximum of 12 hours if topics vary.

572 The Role of Reading in Second Language Acquisition 4 hours.
Analyzes current theoretical and research directions in text comprehension processes as well as reading as a source of input for second language acquisition. Taught in English.

593 Internship Seminar: Academic Training 4 hours.
Training in instruction of literature and culture courses at the college level. Students will be involved in a faculty-taught culture/literature course. Restricted to graduate students in Germanic studies.

596 Independent Study for Graduate Students 1 TO 4 hours.
Independent study in the field of Germanic studies. Prerequisite(s): Consent of the instructor.

598 Master’s Thesis Research 0 TO 16 hours.
Independent research under faculty supervision on a topic approved by the Graduate Program Committee. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of supervising faculty member and committee approval.

599 PhD Thesis Research 0 TO 16 hours.
Independent research for the PhD. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Approval of the department and consent of the instructor.
Graduate College (GC)

401 Scientific Integrity and Responsible Research
Research 0 hours. Designed to meet NH requirements for formal training in the responsible conduct of research. Ethical and legal issues in the conduct of research; University of Illinois at Chicago research standards, regulations, and procedures. Satisfactory/Unsatisfactory grading only. Meets during the first seven weeks of the term on the west side of campus, and on the east side of campus during the last seven weeks. 
Prerequisite(s): Graduate standing.

470 Essentials for Animal Research 1 hour. Will acquaint the students with the regulations, sources of information, humane principles, and ethical considerations involving the appropriate use of animals for research and teaching purposes. Satisfactory/Unsatisfactory grading only.

471 Experimental Animal Techniques 2 hours. Noninvasive and invasive techniques commonly used in laboratory animals are performed with emphasis placed upon the proper use of anesthetic, analgesics, and aspetic techniques. Satisfactory/Unsatisfactory grading only. Animals used in instruction.
Prerequisite(s): GC 470.

473 Seminar in Comparative Medicine 1 TO 2 hours. Selected fields of interest and research in comparative medicine will be presented in the areas of comparative biology, model development, and experimental techniques. Satisfactory/Unsatisfactory grading only. Prerequisite(s): GC 471 or consent of the instructor.

491 Graduate Study Abroad 0 TO 16 hours. Lectures, seminars, and independent travel/study abroad in conjunction with an approved graduate program. May be repeated to a maximum of 32 hours.
Prerequisite(s): Graduate standing and approval of the Graduate College.

Graduate College—Life Sciences (GCLS)

501 Biochemistry 3 hours. Fundamental properties of biomacromolecules, the thermodynamics underlying basic biochemical processes and the properties of enzymes, including the kinetics of operation, and regulation, illustrated with important examples. Restricted to students enrolled in a graduate program offered through the Colleges of Medicine or Pharmacy or the departments of Bioengineering or Biological Sciences or consent of the instructor.

502 Molecular Biology 3 hours. Core molecular biology course covering basic principles of gene expression, genome replication, and molecular interactions important to biological processes in prokaryotes and eukaryotes. Restricted to students enrolled in a graduate program offered through the Colleges of Medicine or Pharmacy or the departments of Bioengineering or Biological Sciences or consent of the instructor.

503 Cell Biology and Integrative Physiology 4 hours. Advanced course on fundamental aspects of cell biology; basic concepts will be integrated with key examples of human physiology which span gene, protein, cell, tissue, organ, and whole body function. Credit is not given for GCLS 503 if the student has credit in BCHE 561 or ANAT 585 or IMM 585 or PHVB 585. Restricted to students enrolled in a graduate program offered through the Colleges of Medicine or Pharmacy or the departments of Bioengineering or Biological Sciences or consent of the instructor.

504 Research Methods I 1 TO 2 hours. Lectures, demonstrations, and discussions concerned with principles and practical aspects of modern quantitative biochemical, molecular biological, physiological, and biophysical methodology such as separation techniques and studies of biomembranes. May be repeated. Students may register for more than one section per term. Restricted to students enrolled in a graduate program offered through the Colleges of Medicine or Pharmacy or the departments of Bioengineering or Biological Sciences or consent of the instructor.

505 Research Methods II 1 TO 3 hours. Lectures, demonstrations, and discussions concerned with principles and practical aspects of modern quantitative biochemical, molecular biological, physiological, and biophysical methodology such as bioimaging and biochemical analysis. May be repeated. Students may register for more than one section per term. Restricted to students enrolled in a graduate program offered through the Colleges of Medicine or Pharmacy or the departments of Bioengineering or Biological Sciences or consent of the instructor.

506 GEMS Research Rotation 2 TO 5 hours. Research rotation course in which first-year students from the GEMS program will undertake research projects in laboratories affiliated with this program. Satisfactory/Unsatisfactory grading only. May be repeated. Animals used in instruction. Prerequisite(s): Open only to PhD degree students.

510 Integrative Biology 3 hours. Advanced-level, intensive course addressing fundamental topics of developmental biology, immunology, and cancer biology, with concentration on thematic issues that integrate these subjects.
Prerequisite(s): GCLS 501 and GCLS 502 and GCLS 503; or demonstrated proficiency of the material covered in these courses. Restricted to students enrolled in a graduate program offered through the Colleges of Medicine or Pharmacy or the departments of Bioengineering or Biological Sciences or consent of the instructor.

511 Molecular Genetics 3 hours. Core molecular genetics course covering classical and molecular principles of microbial and Mendelian genetics. Systems covered include bacteria, bacteriophage, animal viruses, yeast, Drosophila, mouse, and human. Prerequisite(s): GCLS 501 and GCLS 502 and GCLS 503; or demonstrated proficiency of the material covered in these courses. Restricted to students enrolled in a graduate program offered through the Colleges of Medicine or Pharmacy or the departments of Bioengineering or Biological Sciences or consent of the instructor.

515 Receptor Pharmacology and Cell Signaling 3 hours. Advanced course on cell-surface and nuclear receptors and mechanisms of signaling through receptors. Provides an overview of receptor theory, hands-on data analysis, and lectures and discussions on various signaling mechanisms. Credit is not given for GCLS 515 if the student has credit in PCOL 505 or PHVB 505.
Prerequisite(s): GCLS 501 or approval of the department. Restricted to students enrolled in a graduate program offered through the Colleges of Medicine or Pharmacy or the departments of Bioengineering or Biological Sciences or consent of the instructor.

594 Special Topics in Life Sciences 1 TO 4 hours. Systematic study of advanced selected topics in life sciences from an interdisciplinary approach. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

Health Policy and Administration (HPA)

400 Principles of Management in Public Health 3 hours. A detailed discussion of the conceptual and theoretical foundations to the principles of management with an emphasis on public health and healthcare settings. Prerequisite(s): Enrollment restricted to public health students; other graduate, professional, and advanced undergraduate students admitted by consent as space permits. To obtain consent, see the Registrar.
402 Social Ethics and Public Health 3 hours. Application of ideas from philosophy, law, political science, and economics to the ethical basis of public health policies and programs.

403 U.S. Healthcare System 3 hours. Overview of the U.S. healthcare system, including its evolution, utilization patterns, providers—human, institutional, and organizational—financing, regulating, evaluating, and reforming.

405 Leadership in Public Health Practice 3 hours. Utilizing public health core functions, this course explores leadership style and practice through case studies and techniques which enhance leadership development. Same as CHSC 405. Prerequisite(s): CHSC 400 and consent of the instructor.

410 Health Organizational Leadership 3 hours. Examines the roles, responsibilities, and impact of leaders of organizations in the health industry. Critical structures and techniques of effective organizational leaders are taught.

417 Quality Management in Health Services 3 hours. Surveys development of quality management, theoretical basics, and diverse perspectives of quality management and regulation. Presents relevant research and management methodologies.

420 Introduction to Health Services Research 2 hours. Introduction to health services research using classic studies and current trends which examine access, cost, quality, and organization of healthcare. Prerequisite(s): HPA 400.

430 Introduction to Public Health Policy Analysis 3 hours. Identifies and discusses health status as a function of public policy; policymaking to improve the public’s health; current health policy topics and methodology.

431 Law and Public Health 3 hours. Surveys basic concepts and content in major areas of health law; explains the sources of legal authority, and develops familiarity with legal language and thinking.

432 Public Health Advocacy 3 hours. Examination of the courts, government agencies, legislatures, and public opinion, and an analysis of their decision making; planning an advocacy campaign using “strategic analysis.”

434 Law and the Healthcare System 3 hours. Survey of legal topics important to the management of healthcare organizations, including relationships among the parties involved in the delivery of healthcare and the law of business organizations. Prerequisite(s): Graduate or professional standing and approval of the department.

437 Healthcare Data 3 hours. Review of data types in a healthcare information system. How data is transformed into information and then again transformed into knowledge through integrated computer systems. Same as BHS 437. Taught online only. A UIC netid is required. Prerequisite(s): Graduate standing and consent of the instructor.

441 Strategic Management of Healthcare Organizations 4 hours. Introduction to strategic competitive analysis for healthcare organizations. Topics include healthcare competition, entrepreneurship, technology and innovation, multi-constituent environment, and human resources. Prerequisite(s): Graduate or professional standing and approval of the department.

444 Healthcare Budgeting and Strategic Planning 3 hours. Budgeting systems in healthcare; budgeting techniques; flexible budgeting, cost behavior and forecasting, revenue and expense analysis; strategic planning in healthcare agencies; continuous quality improvement.

451 Healthcare Finance 3 hours. Examines practical aspects of finance in healthcare and recent developments in financial management of healthcare organizations, and applications of financial management techniques to specific problems facing healthcare managers. Prerequisite(s): Graduate or professional standing and approval of the department.

460 Introduction to the Economics of Health and Healthcare 2 hours. Introduces principles of economic analysis with examples from public health and medical care. Examines how consumers and companies decide what to buy or sell, why markets determine a product’s price, and when public intervention improves welfare.

463 Managerial Health Economics 3 hours. Uses managerial economics to study healthcare system: demand for medical services; role of health insurance; productivity/cost measurement; labor markets and competition. Prerequisite(s): HPA 400 or consent of the instructor.

465 Health Information and Decision Support Systems 4 hours. Introduction to computer-assisted management information and decision systems in healthcare organizations: analysis and design of databases; data and information flow; reports; and uses microcomputers. This is an online course.

494 Introductory Special Topics in Health Policy and Administration 1 TO 4 hours. Survey of key ethical issues involved in conducting research with human subjects, including informed consent, confidentiality, access and order. Same as MHPH 512. Taught online only. A UIC netid is required. Prerequisite(s): Approval of the department. Students must be enrolled in the Master of Science in Public Health program.

510 Healthcare Information Systems 4 hours. Examination, through case studies, group and class discussions, and problem-based learning, of the effective utilization of information technology applications currently in place and on the horizon in healthcare organizations. Same as BHS 510. Taught online only. A UIC netid is required. Prerequisite(s): Graduate standing and consent of the instructor.

511 Organization Theory Applied to Health Programs 3 hours. Classical and modern organization theories applied to health programs. Includes organization structure and goals, management functions and processes, and managerial controls and evaluation. Prerequisite(s): HPA 400 or consent of the instructor.

512 Ethics in Clinical Research 1 hour. Survey of key ethical issues involved in conducting research with human subjects, including informed consent, confidentiality, access and equity. Same as MHPH 512. Taught online only. Students must be enrolled in the Master of Science in Public Health program.

516 Health Personnel Management 3 hours. Health personnel policies and programs, human resources requirements, recruitment, development, performance appraisal, salary and wage administration, and management/labor relations in the health industry. Prerequisite(s): HPA 400 and consent of the instructor.

520 Management of Healthcare Communication Systems 4 hours. Examination and management of data communications in and between healthcare facilities including examination of issues, standards, technologies, and system configurations. Same as BHS 515. Taught online only. A UIC netid is required. Prerequisite(s): HPA 510 or BHS 510; and graduate standing and consent of the instructor.
522
Health Evaluation
Methods 3 hours.
Applications of science research methods and theory to the evaluation of health interventions. Uses quasi-experimental designs to evaluate program effectiveness. Students design their own studies. Prerequisite(s): BSTT 401 and HPA 400 or consent of the instructor.

525
Management of Population Health Risks 3 hours.
Examines the roles that healthcare delivery organizations can play, and methodologies used, in developing programs specific to the needs of the community they serve. Prerequisite(s): HPA 403 and HPA 410 and HPA 495.

527
Critical Issues in Long-Term Care Policy 3 hours.
Long-term care organization, financing, delivery utilization and policy, emphasizing affordability, access and quality in a managed care environment. Same as CHSC 527. Prerequisite(s): CHSC 400 and CHSC 425; or consent of the instructor.

531
Health Information Systems Analysis and Design 4 hours.
A project course applying systems analysis and design theory to healthcare systems evaluation, modeling, and implementation. Same as BHS 520. Taught online only. A UIC netid is required. Prerequisite(s): HPA 510 or HPA 510; and graduate standing and consent of the instructor.

534
Research Design and Grant Writing 2 hours.
Introduction to the skills necessary to plan a research project and write a research grant proposal using a systematic approach. Same as MHPE 534. Previously listed as MHPE 431. Prerequisite(s): Graduate or professional standing; and approval of the department.

535
Translating Research into Practice 3 hours.
Current theory and practical reality related to the adoption and use of new scientific findings in patient care. The influence of research on public policy. Same as MHPE 535. Extensive computer use required. Prerequisite(s): Graduate or professional standing; and approval of the department.

540
Social and Organizational Issues in Health Informatics 4 hours.
Examines the impact of information systems on the healthcare organization and applies theory through case study analysis. Same as BHS 525. Taught only online. A UIC netid is required. Prerequisite(s): HBS 510 or HPA 510; and BHS 515 or BHS 520 or HBS 530 or HPA 520 or HPA 531 or HPA 550; or consent of the instructor.

550
Topics in Health Informatics 4 hours.
Current theories and methods in health informatics. Same as BHS 530. Taught online only. A UIC netid is required. Prerequisite(s): HBS 510 or HBS 515 or BSA 520, or HPA 540 or HBS 525; and graduate standing and consent of the instructor.

551
Marketing Health Programs 3 hours.
Concepts of marketing as a management tool/application of marketing to healthcare—the marketing process, marketing strategies, and strategies for accomplishing marketing objectives. Prerequisite(s): HPA 400 or MKTG 563 or consent of the instructor.

556
U.S. Mental Health Policy 2 hours.
Public policies which have supported the U.S. mental health service system from 1946 to the present. Theory, development, and evaluation of mental health policy in the U.S. Prerequisite(s): HPA 400 and HPA 430 and either EPID 400 or BSTT 400.

557
Measurement in Health Services Research 3 hours.
Presents measurement, reliability and validity theory, and assessment using correlation, internal consistency, factor analysis, and others. Application in developing, analyzing, and reporting behavioral and/or organizational measures. Prerequisite(s): BSTT 400 and BSTT 401; or consent of the instructor.

563
Web-Based Public Health Information Systems 4 hours.
Examination of Web-based applications in public health practice and factors in the design of Web-based public health education and database systems. This is an online course. Prerequisite(s): HPA 465; and consent of the instructor. Unless otherwise permitted, limited to students in the public health informatics track of HPA.

564
Geographic Information System Application in Public Health 3 hours.
Examination of GIS applications in Public Health and the process of designing a GIS-based public health investigation. Same as EOHS 564. This is an online course. Prerequisite(s): BSTT 400 and HPA 465 and consent of the instructor.

565
Datamining Applications in Public Health 3 hours.
Presents the key public health information system sources, describes the process of datamining, and introduces the student to a sample of datamining techniques. Same as EOHS 565. Extensive computer use required. Prerequisite(s): BSTT 400.

573
Principles of Economic Evaluations of Healthcare Interventions 3 hours.
Principles, models, and practical methods for the economic evaluation of healthcare services with an emphasis on pharmaceutical care. Same as PMAD 573. Previously listed as PMAD 571. Prerequisite(s): Graduate standing; and consent of the instructor.

590
Grant Writing 1 hour.
Students will learn how to write a grant application through the guidance of a mentoring committee. They will formulate a research proposal which will be presented to the panel of researchers who will critique the proposed study.

594
Advanced Special Topics in Health Policy and Administration 1 TO 4 hours.
Advanced topics in health administration, policy analysis, healthcare financing, cost-effectiveness evaluation. Topics vary by semester. Prerequisite(s): Consent of the instructor.

595
Oral Pathology and advanced courses in Histology. Prerequisite(s): Joseph’s “Comparative Physical Basis of Pathology” 2 hours. Subject matter allied to general pathology but going deeper into physical chemistry and physiological principles, as set forth in N.R. Joseph’s “Comparative Physical Biology.” Same as PATH 507. Prerequisite(s): HSTL 452 or PATH 421 and PATH 422.
514 Oral Biology Seminar 1 hour. Invited speakers present the progress of current research work in their field of interest related to oral tissues. Same as OMDS 527. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

515 Electron Microscopy in Dentistry 1 hour. Principles, theory, and practice of transmission and scanning electron microscopy, and energy dispersive X-ray microanalysis. Processing, sectioning, staining, and examination of tissues. Same as OMDS 520. Prerequisite(s): Consent of the instructor.

History (HIST) 400 Topics in Ancient History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 3 hours of history.

401 Topics in Greek History 3 OR 4 hours. Specific topics are announced each term. Same as CL 401. 3 undergraduate hours. 4 graduate hours. May be repeated. Prerequisite(s): 3 hours of history or classics.

402 Topics in Roman History 3 OR 4 hours. Specific topics are announced each term. Same as CL 402. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 3 hours of history or classics.

403 Culture and Sexuality: Cultural History of Same-Sex Relations 3 OR 4 hours. Lesbian/gay studies; issues in the history of (homo)sexuality; cultural and historical analysis of same-sexuality in several periods, including our own. Same as GWS 403. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Junior standing or consent of the instructor.

404 Roman Law and the Civil Law Tradition 3 OR 4 hours. Roman law and its relationship to values and social structure; social analysis through law; continental law tradition. Same as CL 404, and CRJ 404. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CRJ 200 or CL 203 or HIST 203 or consent of the instructor.

406 Topics in Medieval History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 3 hours of history, or junior standing or above, or consent of the instructor.

409 Topics in Early Modern European History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 3 hours of history.

410 Topics in Modern European History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 3 hours of history.

415 American Indian Ethnohistory 3 OR 4 hours. Introduction to ethnohistory, an interdisciplinary approach to researching, conceptualizing, and writing American Indian history. The course is organized topically and centers on classic and current monographs and articles. Same as NAST 415. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Junior standing or above and consent of the instructor. Recommended background: Courses in cultural anthropology, American Indian anthropology, American Indian literature.

418 Topics in German History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 3 hours of European history or consent of the instructor.

420 Teaching the Social Sciences 3 OR 4 hours. This course focuses on acquiring and practicing the skills for teaching the social sciences at the secondary level within the context of history. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): 9 hours of credit in the social sciences and approval of the instructor.

421 Topics in British and Irish History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 6 hours of history or consent of the instructor.

424 Topics in French History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): One 200-level course in French or European history or consent of the instructor.

429 Topics in Italian History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 3 hours of history.

433 Topics in Eastern European History 3 OR 4 hours. Specific topics are announced each term. Same as SLAV 433. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 3 hours of European history or consent of the instructor.

435 Topics in Russian History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 3 hours of European history or consent of the instructor.

444 History of Islam in the African World 3 OR 4 hours. A comprehensive study of the history of Islam and its role among the people of African descent in sub-Saharan Africa and the United States. Same as AAST 445. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Consent of the instructor.

451 Topics in Colonial American History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 3 hours of U.S. history or consent of the instructor.

452 Topics in Revolutionary and Early National United States History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 3 hours of history.

453 Topics in Nineteenth-Century United States History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 3 hours of history.

454 Topics in Twentieth-Century United States History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 3 hours of U.S. history or consent of the instructor.

455 Topics in Southern History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in
more than one section per term. **Prerequisite(s):** 3 hours of history.

456 Topics in the History of Communications 3 OR 4 hours. This course introduces students to major developments in the history of communications, with a focus on the political and cultural dimension of technologies. **Same as COMM 456.** 3 undergraduate hours, 4 graduate hours. **Prerequisite(s):** Consent of the instructor. **Recommended background:** At least one history course at the 100-level.

461 Topics in Latin American History 3 OR 4 hours. Specific topics are announced each term. **Same as LALS 461.** 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** 3 hours of history, Latin American and Latino studies, or consent of the instructor.

472 Issues and Events in Twentieth-Century China 3 OR 4 hours. Covers the events, places, people, political movements, ideologies, and issues that shaped twentieth-century China, and considers different approaches to the writing of that history. **Same as ASST 472.** 3 undergraduate hours, 4 graduate hours. **Recommended background:** Previous course work in Chinese history or the 100- to 200-level.

473 Topics in East Asian History 3 OR 4 hours. Specific topics are announced each term. **Same as ASST 473.** 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** 3 hours of East Asian history or consent of the instructor.

475 Educational Practice with Seminar I 6 hours. The first half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. **Prerequisite(s):** Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, and approval of the department.

476 Educational Practice with Seminar II 6 hours. The second half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. **Prerequisite(s):** Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, credit or concurrent registration in HST 475, and approval of the department.

477 Topics in Middle Eastern History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** 3 hours of history.

478 Women in Chinese History 3 OR 4 hours. Focuses on scholarship on women in Chinese society throughout history, dealing with topics such as marriage and family, literary career options, women in revolution, and the historiography of the field. **Same as ASST 478 and GWS 478.** 3 undergraduate hours, 4 graduate hours. **Recommended background:** Previous course work in Chinese history or women’s studies.

479 Culture and Colonialism in South Asia 3 OR 4 hours. Examines the emergence of colonial cultures of domination and resistance on the Indian subcontinent from the 18th century to 1947. **Same as ANTH 479 and ASST 479.** 3 undergraduate hours, 4 graduate hours.

480 Topics in Economic History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** 3 hours of history or consent of the instructor.

481 Topics in Social History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** 3 hours of history.

482 Topics in Migration History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** 3 hours of history.

483 Topics in the History of Public Policy 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** 3 hours of history.

484 Topics in the History of Women 3 OR 4 hours. Specific topics are announced each term. **Same as GWS 484.** 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** 3 hours of history.

485 Topics in African-American History 3 OR 4 hours. African-American history for students with significant background in the field. Topics vary. **Same as AAST 481.** 3 undergraduate hours, 4 graduate hours. May be repeated if topics vary. Students may register in more than one section per term. **Prerequisite(s):** AAST 247 or AAST 248 or HST 104 or HST 247 or HST 248 or consent of the instructor.

486 Topics in the History of Science 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** 3 credit hours of history.

487 Topics in the History of Sexuality 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** 3 hours of history or consent of the instructor.

488 Topics in Urban History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** 3 hours of history.

489 Topics in Military History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** 3 hours of history.

490 Topics in Diplomatic History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** 3 hours of history.

491 Topics in Constitutional History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** 3 hours of history.

492 Topics in Intellectual History 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** 3 hours of history.

493 Topics in Historiography 3 OR 4 hours. Specific topics are announced each term. 3 undergraduate hours, 4 graduate hours. May be repeated. Students may register in
19 GradCourseDescr.qxd  7/13/06  1:50 PM  Page 236

UIC

Course Descriptions

more than one section per term.  
Prerequisite(s): 3 hours of history.

494  
Topics in Political History  
3 OR 4 hours.  
Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): 3 hours of history.

495  
Topics in Religious History  
3 OR 4 hours.  
Specific topics are announced each term. Same as RELS 495. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): 3 hours of history or consent of the instructor.

496  
Topics in Race, Ethnic and Minority History  
3 OR 4 hours.  
Specific topics are announced each term. Same as AAST 496. 3 undergraduate hours. 4 graduate hours. May be repeated.  
Prerequisite(s): 3 hours of history or consent of the instructor.

497  
Topics in Cultural History  
3 OR 4 hours.  
Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): 3 hours of history or consent of the instructor.

498  
Topics in Quantitative Methods  
3 OR 4 hours.  
Specific topics are announced each term. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): 3 hours of history or consent of the instructor.

500  
Colloquium on the Teaching of History  
1 TO 4 hours.  
Reading in topics. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

501  
Introduction to Graduate Study in History  
4 hours.  
Introduction to history as a discipline and profession. Approach is comparative and by topic. Required for graduate students in the MA and PhD in History programs.  
Prerequisite(s): Consent of the instructor.

502  
Seminar on Ancient History  
4 hours.  
Research in topics. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

503  
Colloquium on World History  
4 hours.  
Graduate introduction to theories and historiography of the new world history.  
Prerequisite(s): Open only to PhD degree students, and approval of the department.

508  
Seminar on Medieval History  
4 hours.  
Research in topics. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

511  
Colloquium on European History  
4 hours.  
Reading in topics. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

512  
Seminar on European History  
4 hours.  
Research in topics. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

521  
Colloquium on British History  
4 hours.  
Reading in topics. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

522  
Seminar on British History  
4 hours.  
Research in topics. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

523  
Seminar on Russian History  
4 hours.  
Research in topics. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

541  
Colloquium on African History  
4 hours.  
Readings on select topics in African History. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

542  
Seminar on African History  
4 hours.  
Research in topics. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

551  
Colloquium on American History  
4 hours.  
Reading in topics. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

552  
Seminar on American History  
4 hours.  
Research in topics. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

561  
Colloquium on Latin American History  
4 hours.  
Topics on themes in Latin American history. Specific topics are announced each term. Same as LALS 561. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

562  
Seminar on Latin American History  
4 hours.  
Research in topics. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

580  
Chicago Consortium in Ancient History  
0 TO 16 hours.  
Holding course for graduate students taking approved coursework at other universities through the Chicago Consortium in Ancient History. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Admission to a graduate program and approval of the director of graduate studies.

591  
Preliminary Examination and Dissertation Prospectus  

Preparation 1 TO 8 hours.  
Under the supervision of a faculty mentor, the student will prepare for the preliminary examination and prepare the dissertation prospectus required by the department. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 8 hours.  
Prerequisite(s): Approval of the department or completion of all didactic course work in the PhD in History program.

592  
Colloquium on Approaches to History  
4 hours.  
Reading in topics. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

596  
Independent Study  
1 TO 4 hours.  
Independent study in selected areas in history. May be repeated. Students may register in more than one section per term.  
Prerequisite(s): Consent of the instructor.

599  
PhD Thesis Research  
0 TO 16 hours.  
Thesis research for the PhD in History. Satisfactory/Unsatisfactory grading only. May be repeated.  
Prerequisite(s): Preliminary examination.

Honors College Courses (HON)  

401  
Advanced Honors Seminar  
3 hours.  
Student, faculty, and invited guests act as partners in the in-depth exploration of a focused topic. This interaction is fostered through common readings, written assignments, and open discussions. May be repeated to a maximum of 6 hours. Students may register for more than one section per term.  
Prerequisite(s): Sophomore standing or above and consent of the instructor. Graduate students may obtain instructor consent.  
Recommended background: HON 201.
### Human Nutrition (HN)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HN 410</td>
<td>Nutrition—Physiological Aspects</td>
<td>3</td>
<td>HN 300 and HN 420; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 412</td>
<td>Minerals in Human Nutrition</td>
<td>2</td>
<td>HN 321; or credit or concurrent registration in HN 420; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 413</td>
<td>Research Methods in Human Nutrition</td>
<td>3</td>
<td>HN 310; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 420</td>
<td>Evaluation of Nutritional Status</td>
<td>3</td>
<td>HN 421; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 422</td>
<td>Advanced Field Practicum</td>
<td>2</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 423</td>
<td>Dietetics/Nutrition Instructional Practicum</td>
<td>2</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 424</td>
<td>Special Topics in Human Nutrition</td>
<td>3</td>
<td>HN 410 or HN 420; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 425</td>
<td>Seminar in Human Nutrition</td>
<td>1</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 427</td>
<td>Field Study</td>
<td>2</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 428</td>
<td>Professional Practice</td>
<td>6</td>
<td>HN 423; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 429</td>
<td>Clinical Nutrition III</td>
<td>5</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 430</td>
<td>Clinical Nutrition II</td>
<td>2</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 431</td>
<td>Field Study I</td>
<td>2</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 432</td>
<td>Field Study II</td>
<td>2</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 433</td>
<td>Professional Practice</td>
<td>6</td>
<td>HN 423; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 435</td>
<td>Clinical Nutrition III</td>
<td>5</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 438</td>
<td>Clinical Nutrition II</td>
<td>2</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 439</td>
<td>Field Study II</td>
<td>2</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 440</td>
<td>Professional Practice</td>
<td>6</td>
<td>HN 423; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 441</td>
<td>Clinical Nutrition III</td>
<td>5</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 442</td>
<td>Field Study II</td>
<td>2</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 443</td>
<td>Professional Practice</td>
<td>6</td>
<td>HN 423; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 444</td>
<td>Clinical Nutrition III</td>
<td>5</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 445</td>
<td>Field Study II</td>
<td>2</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 446</td>
<td>Professional Practice</td>
<td>6</td>
<td>HN 423; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 447</td>
<td>Clinical Nutrition III</td>
<td>5</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 448</td>
<td>Field Study II</td>
<td>2</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 449</td>
<td>Professional Practice</td>
<td>6</td>
<td>HN 423; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 450</td>
<td>Clinical Nutrition III</td>
<td>5</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 451</td>
<td>Field Study II</td>
<td>2</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 452</td>
<td>Professional Practice</td>
<td>6</td>
<td>HN 423; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 453</td>
<td>Clinical Nutrition III</td>
<td>5</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 454</td>
<td>Field Study II</td>
<td>2</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 455</td>
<td>Professional Practice</td>
<td>6</td>
<td>HN 423; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 456</td>
<td>Clinical Nutrition III</td>
<td>5</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
<tr>
<td>HN 457</td>
<td>Field Study II</td>
<td>2</td>
<td>HN 410; or consent of the instructor.</td>
</tr>
</tbody>
</table>

### Notes
- Unsatisfactory grading only. May be repeated with approval.
- Approval to repeat course granted by the department.
- Prerequisite(s): HN 410; or consent of the instructor.
412 Dynamic Systems
Analysis I 3 OR 4 hours. Classical control theory, concept of feedback, laplace transform, transfer functions, control system characteristics, root locus, frequency response, compensator design. Same as ME 412. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ME 308.

446 Quality Control and Reliability 3 OR 4 hours. Principles of statistical quality control, including control by variable and by attribute; construction and use of control charts for variables; fraction defectives and number of defects; and use of standard plans, reliability, and life cycle testing. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IE 342.

461 Safety Engineering 3 OR 4 hours. Accident losses; standards and codes; hazards control; accident investigations; mechanical injuries; heat, pressure, and electrical hazards; fires and explosions; toxic materials and radiation; vibration and noise. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IE 342.

463 Plant Layout and Materials Handling 3 OR 4 hours. Facilities design functions, computer-aided plant layout, facility location, warehouse layout, minimization, deterministic and probabilistic conveyor models, 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IE 342.

464 Virtual Automation 3 OR 4 hours. Fundamentals of manufacturing and automation modeling using CAD/CAM and computer-integrated manufacturing methods; concepts of virtual manufacturing; industrial robots and automated factory models within virtual environments. Same as ME 464. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IE 201; and CS 107 or CS 108.

465 Manufacturing Information Systems 0 TO 4 hours. Design and implementation of supervisory control and data acquisition systems; manufacturing systems controller and communication networks. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Senior or graduate standing, or consent of the instructor; and familiarity with computer programming.

466 Production Planning and Inventory Control 3 OR 4 hours. Principles of demand forecasting, production planning, master scheduling, critical path scheduling, job sequencing, design and control of deterministic and stochastic inventory systems, material requirement planning, 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IE 345 and IE 471.

467 Industrial Systems Simulation 3 OR 4 hours. The solution of industrial problems by means of computer simulation. Simulation strategies. Simulation perspectives. In depth study of some specific simulation program languages, with projects. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CS 107 or CS 108.

468 Virtual Manufacturing 3 OR 4 hours. Virtual reality applications in manufacturing systems design, manufacturing applications of networked virtual reality, virtual reality modeling of occupational safety engineering. Same as ME 468. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CS 107 or CS 108.

471 Operations Research I 3 OR 4 hours. Introduction to operations research, formulation of linear programming problems, simplex methods, duality theory, sensitivity analysis, network models, and integer linear programming. 3 undergraduate hours. 4 graduate hours. No graduate credit for industrial engineering majors. Prerequisite(s): MATH 210.

472 Operations Research II 3 OR 4 hours. Nonlinear programming problems, unconstrained optimization search techniques, Kuhn-Tucker theorems, quadratic programming, separable programming, Markov chain, queuing theory, and dynamic programming. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IE 342 and IE 471 or graduate standing.

494 Special Topics in Industrial Engineering 3 OR 4 hours. Particular topics vary from term to term depending on the interests of the students and the specialties of the instructor. 3 undergraduate hours. 4 graduate hours. May be repeated. Prerequisite(s): Consent of the instructor.

511 Mechatronics II 4 hours. Microcontrollers used in electro-mechanical systems for measurement and control purposes, interface hardware, real-time software and development tools, applications in robotic motion control and factory automation. Same as ME 511. Prerequisite(s): ME 411 and consent of the instructor.

542 Advanced Computational Methods for Product and Process Design 4 hours. Deterministic and statistical methods for modeling and optimizing engineering systems, in the broad context of product design, manufacturing process development, and designing for life cycle issues. Same as ME 542. Prerequisite(s): Programming language experience.

552 Applied Stochastic Processes 4 hours. Stationary point processes; Markov renewal theory; semi-Markov processes; regenerative processes; computational methods and applications to queues, inventories, dams, and reliability. Prerequisite(s): IE 342.

562 Supervisory Control of Discrete Event Systems 4 hours. Discrete event systems; languages and automata, supervisory control, timed models, supervisory control applications. Extensive computer use required. Prerequisite(s): IE 471 or equivalent.

565 Expert Systems in Manufacturing 4 hours. Industrial uses of expert systems; applicability to industrial processes; availability of commercial expert systems; design and implementation of expert systems; knowledge engineering, research uses of expert systems. Prerequisite(s): CS 102 or CS 107 or the equivalent.

567 Statistical Analysis of Simulation Outputs 4 hours. Principles and techniques of analyzing the outputs of stochastic simulated models, including determination of run lengths, reduction of variance, time-series methods, and experimental design. Prerequisite(s): IE 467.

569 Advanced Virtual Manufacturing 4 hours. Manufacturing systems design optimization using virtual environments, optimization of manufacturing decision support using virtual reality interfaces, analysis and evaluation of virtual environments. Same as ME 569. Prerequisite(s): Consent of the instructor.

571 Statistical Quality Control and Assurance 4 hours. The importance of quality in products and services, quality surveillance, Deming’s management method, Ishikawa’s seven tools, control charts, acceptance sampling, quality improvement using directed experiments. Same as BDS 571. Prerequisite(s): At least one term of statistics.

575 Integer and Combinatorial Optimization 4 hours. Modeling, computational complexity, polyhedral theory, valid inequalities, duality and relaxation, branch-and-bound algorithms, cutting plane algorithms, heuristic algorithms, and real-world applications. Prerequisite(s): IE 471.

576 Nonlinear Optimization 4 hours. Convex analysis, line search techniques, unconstrained and constrained optimization, optimality conditions, duality, convex and nonconvex optimization, large-scale optimization, and real-world applications. Prerequisite(s): IE 471 or the equivalent.

594 Current Topics in Industrial Engineering 4 hours. Particular topics vary from term to term depending on the interests of the students and the specialties of the instructor. May be repeated. Prerequisite(s): Consent of the instructor.

596 Seminar on Industrial Engineering Research 1 hour. Advances in industrial engineering research will be discussed in a seminar setting. Students will be expected to make presentations in various areas, as well as invited
faculty speakers. Satisfactory/ Unsatisfactory grading only.
Prerequisite(s): Graduate standing in industrial engineering.

Independent Study 1 TO 4 hours. Individual study under close supervision of a faculty member. May be repeated to a maximum of 4 hours. Students may register in more than one section per term.
Prerequisite(s): Consent of the instructor.

MS Thesis Research 0 TO 16 hours. Individual research in specialized problems under close faculty supervision. Satisfactory/ Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

PhD Thesis Research 0 TO 16 hours. Individual research on specialized problems under close faculty supervision. Satisfactory/ Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

Information and Decision Sciences (IDS)

Advanced Business Programming Using Visual Tools 0 TO 4 hours. Visual extended business language capabilities, including creating and using controls, menus and dialogs, objects and instances, mouse events, graphics, file-system controls, 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 201 or a programming course in mathematics or computer science, or consent of the instructor.

Business Object Programming Using Java 0 TO 4 hours. Basic concepts in object-oriented programming such as objects, classes, class inheritance and interfaces, data abstraction and encapsulation, polymorphism, and dynamic binding. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 201 or the equivalent.

Information Security 3 OR 4 hours. Examine the field of information security to prepare students for their future roles as business decision makers. Presents a balance of the managerial and technical aspects of information security. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 100 or the equivalent.

Business Systems Analysis and Design 3 OR 4 hours. Theory of analysis, design, and development of information systems; information management and database management systems; data management and analysis; case studies in systems implementation and evaluation. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 201.

Business Systems Design Project 3 OR 4 hours. Selected issues in the design, development, and evaluation of computer-based business information systems: forms design, general software systems, user interfaces, research systems, quality control, and documentation standards. Includes project at an outside company or university office. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 201 and IDS 405 or the equivalent courses or consent of the instructor. Business administration students must have declared a major.

Business Database Technology 3 OR 4 hours. Computer software techniques used in business with emphasis on information management and database management systems. Data management and analysis. Major types of database management systems, query languages. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 201.

Distributed Business Systems 3 OR 4 hours. Organizational aspects and underlying concepts of distributed business systems, decentralization versus centralization issues, costs of distributed computing, and performance evaluation measures. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Credit or concurrent registration in IDS 201.

Internet Technology and Management 3 hours. The technologies of World Wide Web development. Topics include: TCP/IP, HTTP, HTML, HTML authoring, XML, Perl, ASP programming, J2EE, Web servers, database servers, business application servers and Internet. Credit is not given for IDS 413 if the student has credit for IDS 424. Extensive computer use required. Prerequisite(s): IDS 201 and IDS 410.

Business Systems Simulation 3 OR 4 hours. Simulation analysis of the operations of a system from the perspective of the entire company; optimal decisions are generated for the controllers of the systems. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Credit or concurrent registration in IDS 201 or credit or concurrent registration in IDS 331; and IDS 355; and MATH 205 or the equivalent.

Knowledge Management Systems 3 OR 4 hours. Computer-based methods for decision support. It aims at providing exposure and insights into a range of approaches and tools for decision aiding, and how they can be utilized in supporting various managerial decision processes. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 410 or consent of the instructor.

Optimization Models and Methods 3 OR 4 hours. Linear, nonlinear, dynamic programming, combinatorial methods. Use of spreadsheet and other software tools. Duality, sensitivity analysis. Models for business operations and planning, computer systems, transportation, and finance. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 355; and MATH 205 or the equivalent. Business administration students must have declared a major.

Stochastic Processes and Methods 3 OR 4 hours. Stochastic processes and other applications of probability theory. Use of spreadsheet and other software tools for analysis, simulation, and decision theory. Models for business operations and planning, computer systems, transportation, and finance. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 355 and MATH 205.

Survey Sampling: Theory and Methods 3 OR 4 hours. Planning and analyzing surveys. Topics include simple random sampling, stratified sampling, systematic sampling, ratio estimation, and cluster sampling. Case studies with applications to real situations. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 371.

Statistical Software for Business Applications 3 OR 4 hours. Statistical software in business applications and data mining. SAS and other packages such as SPSS, MatLab, Maple, Splus, B345, SCA. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 371 or consent of the instructor.

Multivariate Analysis 3 OR 4 hours. Introduction to the structure and analysis of multivariate data. Emphasis on the multivariate normal model. Regression: tests concerning multivariate means, classification; discriminant analysis, principal components. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 371; and MATH 310 or MATH 320.
472 Business Data Mining 3 OR 4 hours. Searching for relationships between variables in databases. Decision trees, cluster analysis, logistic regression, path analysis. Applications to marketing, quality assurance, operations management, human resources. 3 undergraduate hours. 4 graduate hours. Credit is not given for IDS 472 if the student has credit for IDS 572. Prerequisite(s): IDS 371 or the equivalent.

473 Introduction to Risk Management 3 hours. Introduction to risk management. Loan and credit management, credit scoring, Risk measurements and reserves; banking and insurance capital requirements, the BASEL accord, tail events, and catastrophic event insurance. Financial contracts and hedging. Same as FIN 473. Prerequisite(s): FIN 300 and IDS 371.

474 Quality and Productivity Improvement Using Statistical Methods 3 OR 4 hours. Directed experimentation for quality and productivity improvement, quality surveillance, design and analysis of two-level factorial experiments and multi-level experiments, and data transformation. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 371 or consent of the instructor.

475 Database Accounting Systems 3 OR 4 hours. Concepts and principles of designing database systems to perform accounting functions, applications of microcomputer accounting software packages systems design tools, and computerized transaction cycles. Same as ACTG 475. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): ACTG 111 and IDS 100.

476 Business Forecasting Using Time Series Methods 3 OR 4 hours. Autoregressive, moving average, and seasonal models for times series analysis and business forecasting. Forecasting using multivariable transfer function models is also included. Same as ECON 450. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 371 or ECON 346 or consent of the instructor.

478 Regression Analysis 3 OR 4 hours. Data collection and exploration; model building; variable least squares; residual analysis; variable selection; multicollinearity; ridge regression; non-linear regression; nonparametric regression. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 371.

494 Topics in Information and Decision Sciences 3 OR 4 hours. Topics vary; selected readings; case analysis. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time if topics vary. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

495 Competitive Strategy 4 hours. Multidisciplinary analysis of organizational strategy and policy using case method and/or business simulation. Assignments involve extensive library research and oral and written reports. Prerequisite(s): Senior standing in the College of Business Administration and completion of all other QSA core courses, or consent of the instructor.

499 Independent Study in Information and Decision Sciences 1 TO 3 hours. Intensive study of selected topics determined in consultation with the instructor and department head. May be repeated to a maximum of 9 hours. Students may register in more than one section per term. Prerequisite(s): Major in Information and Decision Sciences and consent of the instructor.

500 Information Systems in Organizations 4 hours. Use of information technology in business; planning, management, and strategic use of information technology including the role of enterprise-wide systems, the Internet, and electronic commerce. Prerequisite(s): Admission to the MBA Program.

504 Introduction to Electronic Commerce 4 hours. Addresses issues on electronic commerce for businesses and consumers, considering topics such as competition, distribution, infrastructure on the Internet, shopping, and product characteristics.

505 Business Information Systems Analysis and Design 4 hours. Analysis, design and development of information systems. Management concerns in systems design, development, and evaluation. A student who has taken IDS 405 must see an adviser to determine whether another graduate course from IDS, MATH, or CS must be substituted for IDS 505. Prerequisite(s): IDS 500; or consent of the instructor.

506 Survey of Healthcare and Information Technology 4 hours. Impact, use, and trends of information technology in healthcare. Healthcare systems technology and stakeholders. Analysis of strategic, economic, operational, ethical, privacy, and security considerations. Prerequisite(s): Introductory information systems course is required. Recommended background: Advanced information system courses such as databases and system analysis.

507 Advanced Systems Analysis and Design Project 4 hours. Principles and concepts of analysis, design, and development of information systems including project management. Includes a project at an outside company or university office. Prerequisite(s): Consent of the instructor and completion of three MS in MIS courses.

508 E-commerce Project 4 hours. Electronic commerce project initiated by local small and medium enterprises, teaching students with technical or entrepreneurial skills/interests, supervised by faculty on board of directors. Prerequisite(s): IDS 504 or MGMT 558 or MKTG 558; and consent of the instructor.

509 Business Process Analysis and Modeling 4 hours. Principles and concepts for the analysis and design of business processes and for the development of information systems that support such processes. Prerequisite(s): IDS 401 or consent of the instructor.

510 Organizational Data Resources 4 hours. Data as a competitive resource. Understanding, organizing, and utilizing data in enterprises. Data resource development and management. Leveraging data assets. Exploiting the power of data. Understanding regulatory requirements. A student who has taken IDS 410 must see an adviser to determine whether another graduate course from IDS, MATH, or CS must be substituted for IDS 510. Prerequisite(s): IDS 500.

511 Query Processing in Database Systems 4 hours. Query processing in deductive databases and in distributed/parallel databases systems. Same as CS 580. Prerequisite(s): CS 480.

512 Information Systems Project and Program Management 4 hours. Theory and practice of managing IS projects based on a life cycle management model. Technology, organizational behavior, team dynamics, and economic analysis in the context of larger organizational strategies. Project plans, budgets, and schedules. Extensive computer use required. Prerequisite(s): Introductory information systems course. Recommended background: Advanced information system courses such as databases and system analysis.

513 Enterprise Components and Web Services 4 hours. Exposes students to advances in the technical aspects of electronic business. The key emphasis is on developing Web-based electronic business applications. Extensive computer use required.

514 Management of Information Systems 4 hours. Administration, control, and management of computer-based information systems, projects, and relationships with the organization. Scheduling of operations; management of computer professionals; planning and control of the systems activity. Prerequisite(s): IDS 505 or IDS 510.

515 Information Systems Strategy and Policy 4 hours. Examines how businesses can leverage IT and digital technologies to maximize business performance. Covers IS strategy.
formulation, strategy implementation, e-business transformation, interorganizational and multi-organizational strategies.

**Prerequisite(s):** IDS 505 or IDS 510; or consent of the instructor.

### 516 Data Warehousing and Decision Support 4 hours.

Analysis, design, and development of data warehousing. Related methods and tools in the provision of decision support and business analytics. intelligence.

**Prerequisite(s):** IDS 505 or IDS 510 or consent of the instructor.

### 517 Enterprise Application Infrastructure 4 hours.

The course explores the choices available for building an enterprise applications infrastructure. Topics such as advanced applications design, development, tools, methodologies, and technologies will be covered. Extensive computer use required.

**Prerequisite(s):** IDS 201 or IDS 410 and IDS 410 or the equivalent.

### 518 Electronic Marketing 4 hours.

Overview of the electronic marketing value chain. Internet and Web technologies, system design, payment systems, business requirements for e-marketing, design, and ethical issues. Same as MKTG 518. **Prerequisite(s):** MKTG 500 or MBA 506 or consent of the instructor.

### 519 Topics in Information Systems 4 hours.

Selected topics in information systems, information management, and information technology. Content varies. Topics will be announced. May be repeated if topics vary. **Prerequisite(s):** IDS 505 or IDS 510; and consent of the instructor.

### 520 Distributed Processing and Telecommunication Systems 4 hours.

Topics include components of telecommunications and distributed information systems, data communication devices, computer networks, configuration management, and distributed databases. **Prerequisite(s):** IDS 505 or IDS 510.

### 521 Advanced Database Management 4 hours.

Data analysis for database design; logical data modeling, transaction modeling; implementation models; physical database design; database tuning and performance evaluation; database decomposition; distributed database; database security. **Prerequisite(s):** IDS 505 or IDS 510.

### 522 Audit and Control of Information Systems 4 hours.

Modeling and analysis of information systems application in organizations; measurement of effectiveness; strategies for implementation and updating; interface with other management control systems. **Prerequisite(s):** IDS 505 or IDS 510.

### 526 Computer Performance Evaluation and Modeling 4 hours.

Probabilistic, simulation, and statistical techniques for modeling computer systems with a view to evaluating their performance. Models of multi-programming systems, multi-access systems, input/output systems, priority queues, and paging systems. A student who has taken IDS 426 must see an advisor to determine whether another graduate course from IDS, NATH, or CS must be substituted for IDS 526. **Prerequisite(s):** IDS 532; and IDS 505 or IDS 510.

### 529 Seminar on Management Information Systems 4 hours.

Special research topics in management information systems. Topics vary from term to term depending on the interests of the instructor and students. May be repeated if topics vary. **Prerequisite(s):** IDS 505 or IDS 510.

### 532 Introduction to Operations Management 4 hours.

The management of operations for the production and delivery of goods and services. Topics include the management of projects, production, supply chain, inventory, and quality. Credit is not given for IDS 532 if the student has credit in MBA 507 and MBA 509. **Prerequisite(s):** Admission to the MBA Program.

### 551 Operations Management in the Service Sector 4 hours.

Comparison of service and manufacturing operations; analysis of effects of capacity, quality, and service firm life cycle on operations. **Prerequisite(s):** Credit or concurrent registration in IDS 532 or the consent of the instructor.

### 552 Supply Chain Management 4 hours.

Structure of inventory decision and operating procedures; single event and continuous systems for both single and multiple products; order quantity and periodic review models; demand forecasting. **Prerequisite(s):** Credit or concurrent registration in IDS 532 or the consent of the instructor.

### 553 Production Process Management and Control 4 hours.

Project scheduling and resource allocation; capacity planning; aggregate planning; scheduling and dispatching; plant layout; material requirement planning; production flow and line balancing. **Prerequisite(s):** IDS 532.

### 570 Statistics for Management 4 hours.

Survey of statistical methods with applications for business and management. **Prerequisite(s):** Admission to any business graduate program or consent of the instructor.

### 571 Statistical Quality Control and Assurance 4 hours.

The importance of quality in products and services, quality surveillance, Deming’s management method, Ishikawa’s seven tools, control charts, acceptance sampling, quality improvement using directed experiments. **Prerequisite(s):** At least one term of statistics.

### 572 Data Mining for Business 4 hours.

Introduction to data mining for business. Applications to marketing, credit scoring, quality assurance, operations management, and human resources management. Credit is not given for IDS 572 if the student has credit for IDS 472. **Prerequisite(s):** IDS 532.

### 573 Risk Management 4 hours.

Introduction to risk management. Risk measurements and reserves; banking and insurance capital requirements; the Basel accord, tail events, catastrophic event insurance, reinsurancen. Financial contracts and hedging. **Same as FIN 573. Prerequisite(s):** Credit or concurrent registration in IDS 570 and FIN 500.

### 577 Research Methodology I 4 hours.

Use of statistics and computers in research. Data collection and organization, survey sampling, questionnaire design, experimental design. **Prerequisite(s):** IDS 532 or the equivalent and admission to the PhD program in Business Administration.

### 578 Research Methodology II 4 hours.

Data analysis, including estimation, hypothesis testing, nonparametric methods, analysis of variance, regression analysis, economic forecasting, and time series. **Prerequisite(s):** IDS 577 or the equivalent.

### 582 Business Research and Forecasting I 4 hours.

The role of research in business; forecasting methods and techniques, including models and their applications. **Same as ECON 537. Prerequisite(s):** ECON 534 and at least one statistics course with regression analysis at the 300-level or above.

### 583 Business Research and Forecasting II 4 hours.

The role of research in business; forecasting methods and techniques, including multivariate time series models and their applications. **Same as ECON 538. Prerequisite(s):** IDS 476 or IDS 582 or ECON 537.

### 594 Special Topics in Information and Decision Sciences 4 hours.

Intensive study of a selected topic. Content varies. Topics are announced. **Prerequisite(s):** Consent of the instructor.

### 595 Seminar in Information and Decision Sciences 1 to 4 hours.

Topics vary from term to term depending on the interests of the instructor. May be taken for up to four credit hours depending on the outline of the seminar as determined by the instructor. Satisfactory/unsatisfactory grading only. May be repeated to a maximum of 8 hours. Students may register for more than one section per term. **Prerequisite(s):** Admission to the PhD program in Business Administration or the PhD program in Management Information Systems.
596 Independent Study in Information and Decision Sciences 1 TO 4 hours. Independent study under the direction of a faculty member. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

598 PhD Thesis Research 0 TO 16 hours. Research on topic of the doctoral dissertation. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

Interdisciplinary Public Health Sciences (IPHS)

494 Introductory Special Topics—Interdepartmental 1 TO 4 hours. Introductory special topics in public health. Course content will vary from semester to semester. May be repeated. Students may register in more than one section per term.

501 Public Health Leadership Seminar I 3 hours. Doctoral seminar in advanced public health leadership topics, primarily for DrPH degree students. Prerequisite(s): Enrollment in the DrPH program or consent of the instructor.

502 Public Health Leadership Seminar II 3 hours. Doctoral seminar in advanced public health leadership topics. Primarily for DrPH degree students. Prerequisite(s): Enrollment in the DrPH program or consent of the instructor.

503 Public Health Integrative Seminar I 3 hours. Doctoral seminar in advanced public health leadership topics, primarily for DrPH degree students. Prerequisite(s): Consent of the instructor. Recommended background: Enrollment in the DrPH of PhD degree program.

504 Public Health Integrative Seminar II 3 hours. Doctoral integrative seminar in advanced public health topics, primarily for DrPH degree students. Prerequisite(s): IPHS 503 or equivalent experience and consent of the instructor. Recommended background: Enrollment in the DrPH or PhD in Public Health degree program.

530 Practicum in Mental Health Diagnosis 4 TO 8 hours. Review of mental health diagnostic process. Students in psychosocial epidemiology participate with medical students in a psychiatry clerkship. Prerequisite(s): CHSC 460 and consent of the instructor.

594 Advanced Special Topics—Interdepartmental 1 TO 4 hours. Advanced special topics in public health. Course content will vary from semester to semester. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

595 Seminar in Interdisciplinary Public Health Sciences 1 TO 3 hours. Analysis of current research in public health. Course content will vary from semester to semester. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

596 Independent Study in Public Health Sciences 1 TO 4 hours. Selected aspects of specific public health problems; independent study under close supervision of faculty. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of instructor who has supervised at least one course in the area of the independent study.

598 Research in Public Health Sciences—MS 0 TO 16 hours. Individual research in public health directed by a faculty member. Directed toward the thesis requirements for the Master of Science degree. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

599 Research in Public Health Sciences—PhD 0 TO 16 hours. Individual research in public health directed by a faculty member. Directed toward the dissertation for the Doctor of Philosophy degree. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

Interdisciplinary Studies in the Arts (ISA)

400 Advanced Topics in Interdisciplinary Arts 3 OR 4 hours. Exploration of advanced topics in interdisciplinary arts which include architecture, art and design, art history, music, and theatre. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time.

500 Topics in Interdisciplinary Studies in the Arts 4 hours. Provides the opportunity for students to explore interdisciplinary methods in research in specific areas of interest. May be repeated to a maximum of 8 hours. Course can also be used as a continuing education module in the visual and performing arts as well as preservation studies, museology, architectural and art history. Prerequisite(s): Consent of the instructor.

Italian (ITAL)

411 Literary Forms in Early Renaissance 3 OR 4 hours. The development of epic poetry (Pulci, Boccaccio, Ariosto) within the literary, political, and social context (Machiavelli and Castiglione). 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ITAL 310 or consent of the instructor.

412 Literary Forms in Late Renaissance and Baroque 3 OR 4 hours. Representative literary works of the genres of the late sixteenth and seventeenth centuries: Epic poem of Tasso and poetry of Marino. The birth of the Commedia dell’Arte form. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ITAL 310 or consent of the instructor.

421 Modern Italian Literature II 3 OR 4 hours. From Romanticism to Decadentism: emphasis on the work of Leopardi and Manzoni; analysis of poems by Carducci, Pascoli, D’Annunzio, Gozzano. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ITAL 311 or consent of the instructor.

422 Contemporary Italian Literature 3 OR 4 hours. The novel from Verismo to Umberto Eco: readings from Verga, Svevo, Moravia, Calvino. Hermeneutic poetry: emphasis on Ungaretti, Montale, Sereni, Luz. Theater: From Pirandello to Fo. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ITAL 322 or consent of the instructor.

450 Divina Commedia I 3 OR 4 hours. An in-depth study of the Divine Comedy against the philosophical and theological background of the Middle Ages. Covers Inferno and half of Purgatorio. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ITAL 310 or consent of the instructor.

451 Divina Commedia II 3 OR 4 hours. An in-depth study of the Divine Comedy against the philosophical and theological background of the Middle Ages. Covers Paradiso and half of Purgatorio. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ITAL 310 or consent of the instructor.

461 Educational Practice with Seminar I 6 hours. The first half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, and approval of the department.

462 Educational Practice with Seminar II 6 hours. The second half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department.
Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, credit or concurrent registration in ITAL 401, and approval of the department.

494 Special Topics 3 OR 4 hours.
Topics will vary from term to term and may cover such areas as literary theory or culture. Same as FR 494 and SPAN 494. Undergraduate. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Taught in English.
Prerequisite(s): Junior standing or above; and approval of the department.

Jewish Studies (JST)

478 The Bible as Literature 3 OR 4 hours.
Literary analysis of the English Bible (including the Apocrypha) in its historical and religious contexts; study of the King James Version and successive revisions of it. Same as ENGL 478 and RELS 478. Undergraduate. 4 graduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in ENGL 240; and grade of C or better in ENGL 242 or likelihood of approval by the department.

423 Andean Prehistory 3 OR 4 hours.
An overview of the cultural evolution of the Andean region from the arrival of the first inhabitants to the development of the Inca empire. Same as ANTH 423. Undergraduate. 4 graduate hours. Prerequisite(s): Anthro 228 or ANTH 269 or consent of the instructor.

427 Studies in Language Policy and Cultural Identity 3 OR 4 hours.
Examines the development, articulation, and effects of language policies on identity formation and culture. Focuses on the United States and the Spanish language, although other countries and languages are included. Same as SPAN 427. Undergraduate. 4 graduate hours. Taught in English. Prerequisite(s): Junior standing or above. Reading and writing knowledge of Spanish.

461 Topics in Latin American History 3 OR 4 hours.
Specific topics are announced each term. Same as HIST 461. Undergraduate. 4 graduate hours. Prerequisite(s): 3 hours of history, Latin American and Latino studies, or consent of the instructor.

475 Indians of the Andes and the Amazon 3 OR 4 hours.
Intensive research in theoretical and ethnographic problems in South American Indian social structures and cultures. Special attention will be given Levi-Strauss’ ideas on the formulation of cultural theory in South America. Same as ANTH 475. Undergraduate. 4 graduate hours. Prerequisite(s): Anthro 213 or consent of the instructor.

491 Interdisciplinary Seminar in Latin American Studies 3 OR 4 hours.
Specific topics as announced each semester. In-depth study of selected topics, such as process of state formation, education, populism, the family, democratization, industrialization, and ideological currents. 3 undergraduate hours. 4 graduate hours. May be repeated if topics vary.
Prerequisite(s): Any two 200-level Latin American and Latino Studies courses or consent of the instructor.

495 Interdisciplinary Seminar in Latino Studies 3 OR 4 hours.
In-depth study of Latino communities and current issues from an interdisciplinary perspective, with emphasis on the learning and use of investigative methodologies. 3 undergraduate hours. 4 graduate hours. May be repeated if topics vary. Prerequisite(s): Any two 200-level Latin American and Latino Studies courses or consent of the instructor.

499 Advanced Independent Study 1 TO 4 hours.
Individual advanced reading or research project in Latin American or U.S. Latino studies with instructor’s consent and supervision. May be repeated to a maximum of 8 hours. Students may register in more than one section per term.
Prerequisite(s): Consent of the instructor.

Liberal Arts and Sciences (LAS)

494 Topics in Cultural Studies 3 OR 4 hours.
An interdisciplinary approach to current cultural debate. Topics will vary. 3 undergraduate hours. 4 graduate hours. May be repeated if topics vary. Taught at the Field Museum.

495 The Newberry Library Undergraduate Seminar 6 hours.
Seminar with a topic related to the holdings of the Newberry Library. Classes held in Newberry Library. Topics vary. May be repeated if topics vary. Previously listed as LAS 595. Students are required to conduct research at the Newberry Library beyond designated class hours. Pretour of the Newberry is recommended. Prerequisite(s): Consent of UIC’s Newberry Library seminar coordinator.

Linguistics (LING)

402 Trial Interaction 3 OR 4 hours.
Language use, culture, and law in the trial process. Analysis of qualitative methods applied to legal processes and change. Same as CRJ 402. Undergraduate. 3 graduate hours. 4 graduate hours. Prerequisite(s): CRJ 261 and CRJ 350; or consent of the instructor.

405 Introduction to General Linguistics 3 OR 4 hours.
Introduction to the theories and methods of the phonological, morphological, and syntactic analysis of language. The historical development of languages. Language use. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Junior standing.
415 Linguistic
Structures I 3 OR 4 hours.
Introduction to key concepts in the
field, including descriptive and
perscriptive grammars, competence
and performance, and
human language as a system;
articulatory phonetics; phonology;
morphology, 3 undergraduate
hours. 4 graduate hours.

425 Linguistic
Structures II 3 OR 4 hours.
Fundamentals of semantics and
syntax within the broad frame-
works of generative and functional
linguistics, including key concepts
such as sense reference, utter-
ance, sentence, form, and func-
tion, 3 undergraduate hours. 4
graduate hours.

459 Topics in
Linguistics 3 OR 4 hours.
Topics vary. 3 undergraduate
hours. 4 graduate hours. May be
repeated up to 2 times. Students
may register in more than one
section per term.
Prerequisite(s): Consent of the
instructor.

474 Cognitive Psychology
of Language 3 hours.
Provides students with a survey of
methods, theory, and research in
language and discourse process-
ing. Same as COMM 454 and
PSGH 454. Prerequisite(s):
Graduate standing or consent of
the instructor.

480 Sociolinguistics 3 OR 4 hours.
Variations in language that corre-
late with variation in societies and
smaller social groups; interactions
of languages and societies. Same
as ANTH 480. 3 undergraduate
hours. 4 graduate hours.
Prerequisite(s): LING 405 or
junior standing and consent of
the instructor.

483 Methodology of
TESOL 3 OR 4 hours.
Methods of teaching listening,
speaking, reading, and writing to
speakers of English as a second
or foreign language. Same as
CE 483. 3 undergraduate hours. 4
graduate hours. Prerequisite(s):
Junior standing and consent of
the instructor.

496 Independent
Study 1 TO 4 hours.
Students are assigned to this
course at the discretion of the
department. Independent study in
an area of linguistics not normally
covered by regular course offer-
ings. Satisfactory/Unsatisfactory
grading only. May be repeated.
Students may register in more
than one section per term. A maxi-
mum of 6 hours is allowed for
undergraduate students, and 8
hours of credit for graduate stu-
dents. Prerequisite(s): 9 hours
of linguistics and approval of the
head of the department.

506 Cross-Cultural
Communication 4 hours.
Analysis of different theoretical
approaches to cross-cultural com-
munication (sociolinguistic, attribu-
tional), contrastive analysis of
Western and non-Western cultural
systems (interactional etiquette,
discourse rules). Same as
COMM 506.

531 Grammar for TESOL 4 hours.
Survey of major grammatical
structures and patterns as they
relate to TESOL instruction.

540 Language and
Gender 4 hours.
Examination of sociolinguistic
research and theories on the inter-
relationships between language
and gender, including gender cat-
egories in linguistic systems, gen-
ders differences in language use,
interaction, and cross-cultural
comparisons. Same as
GWS 540.

551 Research Practicum in
Sociolinguistics 4 hours.
Strategies and methods for study-
ing language use in communities:
participant-observation, interview-
ing, elicitation, using public-
domain data, note taking vs. tape
recording, and issues of transcrip-
tion and ethics. May be repeated
to a maximum of 12 hours.
Prerequisite(s): LING 405 or
LING 480, or consent of the
instructor.

553 Research Practicum in
Discourse Analysis 4 hours.
Discourse analysis addresses
issues of intentional communica-
tion, inference, the structure of
texts or talk-in-interaction, and
the interactive construction of social
actions or identities in discourse.
Same as ENGL 553. May be
repeated to a maximum of 12 hours.

556 Second Language
Learning 4 hours.
An introduction to research find-
ings and methods in second lan-
guage learning. Same as SPAN
556. Prerequisite(s): Consent of
the instructor.

559 Seminar in
Linguistics 4 hours.
Advanced study in linguistics.
Topics vary. May be repeated to
a maximum of 12 hours. Students
may register in more than one
section per term.
Prerequisite(s): Consent of the
instructor.

582 Qualitative Methods in
Communication 4 hours.
Qualitative methods course ana-
yzing language and culture pat-
terns. Same as COMM 580.
Prerequisite(s): COMM 501 or
consent of the instructor.

583 Materials and
Curriculum Development in
TESOL 4 hours.
Evaluation, adaptation, and devel-
opment of curricula, syllabi, and
materials for TESOL.
Prerequisite(s): LING 483.

586 Classroom Testing
for TESOL 4 hours.
Theory and practice in the creation
and evaluation of classroom tests
for TESOL.

594 Internship in
TESOL 1 TO 12 hours.
Observation, tutoring, and super-
vised teaching for teachers of
English as a second or foreign lan-
guage. Satisfactory/Unsatisfactory
grading only. May be repeated to
a maximum of 13 hours. Students
register for 1 to 12 hours.
Prerequisite(s): LING 583 and
consent of the instructor.

596 Independent Study in
Linguistics 1 TO 6 hours.
Students are assigned to this
course at the discretion of the
department. Independent study and
research on a topic other than that
approved for a graduate thesis.
Satisfactory/Unsatisfactory grading
only. May be repeated with approval.
Approval to repeat course granted
by the department. A maximum of 4
hours of credit may be applied
between this course and the MA in
Linguistics degree.
Prerequisite(s): Consent of the
instructor and the director of gradu-
ate studies. Open only to degree can-
didates.

597 Research in
Linguistics 0 TO 16 hours.
Independent research in linguistics.
Satisfactory/Unsatisfactory grading
only. May be repeated with approval.
Approval to repeat course granted
by the department. A maximum of 4
hours of credit may be applied
between this course and the MA in
Linguistics degree.
Prerequisite(s): Consent of the
instructor and the head of the
department. A maximum of 12
hours. Students may register in
more than one section per term.
Prerequisite(s): Consent of the
thesis supervisor and approval of the
head of the department. Open
only to degree candidates.

598 Master’s Thesis
Research 0 TO 16 hours.
Students engaged in thesis
research and writing are assigned
to this course at the discretion of
the department. Independent
research on a topic approved for
a graduate thesis. Satisfactory/
Unsatisfactory grading only. May
be repeated to a maximum of 12
hours. Students may register in
more than one section per term.
Prerequisite(s): Consent of the
thesis supervisor and approval of the
head of the department. Open
to only to degree candidates.

Lithuanian (LITH)

410 Structure of
Lithuanian 3 OR 4 hours.
Synchronic analysis of the struc-
ture of Lithuanian; emphasis on
discourse analysis of oral and
written texts. 3 undergraduate
hours. 4 graduate hours.
Prerequisite(s): LITH 405 or
LITH 406 or 16 hours of Lithuanian or
the equivalent.

425 Translation of Lithuanian
Texts 3 OR 4 hours.
Problems of translating Lithuanian
texts; workshop in translating
Lithuanian works into English. 3
undergraduate hours. 4 graduate
hours. Prerequisite(s): LITH 302 or
consent of the instructor.

499 Independent
Study 1 TO 4 hours.
Investigation of special problems
under the general direction of a
staff member. May be repeated
to a maximum of 8 hours. Graduate
students may register for more
than one section per term; under-
graduates may only register for
one section per term.
Prerequisite(s): Senior or grad-
uate standing, consent of the
instructor and the head of the
department.
510 History of Lithuanian Language 4 hours. Development of Lithuanian from its Indo-European origins to the formation of the standard language; the aspects of Lithuanian literary language and its lexical, syntactical, and stylistic problems.

515 Lithuanian Linguistics and Poetics 4 hours. Linguistic and stylistic analysis of Lithuanian texts based on contemporary theories of style.

520 Topics in Historical Lithuanian Linguistics 4 hours. Covers major topics and trends in historical Lithuanian linguistics: linguistic history, sociolinguistic history, history of grammars, and dictionaries. May also cover historical sites of various linguistic schools. May be repeated to a maximum of 12 hours. Taught in Lithuanian. Prerequisite(s): Consent of the instructor.

545 Lithuanian Renaissance and Baroque Literature 4 hours. Lithuanian prose, poetry, and historical works of the sixteenth, seventeenth, and eighteenth centuries.

560 Studies in Lithuanian Realism 4 hours. Study of a topic, author, or movement. Content varies. May be repeated to a maximum of 12 hours.

565 Studies in Twentieth-Century Lithuanian Literature 4 hours. Study of a topic, author, or movement. Content varies. May be repeated to a maximum of 12 hours.

570 Studies in Lithuanian Literary Criticism 4 hours. Function of literary criticism in all epochs of Lithuanian literature. May be repeated to a maximum of 12 hours.

596 Independent Study 1 TO 4 hours. Investigation of special problems under the general direction of a staff member. May be repeated to a maximum of 8 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor and the head of the department.

Management (MGMT) 445 Organizational Analysis and Practice 3 hours. Emphasis on organizational theories and models to analyze and improve functioning and performance of organizations. Structure, technology, environmental adaptation, and managerial control systems. Prerequisite(s): MGMT 340 and junior standing.

447 Organizations 3 OR 4 hours. Characteristics of business, government, and not-for-profit organizations; approaches used to study organizations; theoretical and empirical analysis of organizational processes. Same as SOC 447. 3 undergraduate hours, 4 graduate hours. Prerequisite(s): 6 hours of upper-division sociology, management, or political science; or consent of the instructor.

452 Organizational Behavior 3 hours. Emphasis on understanding and managing people at work. Analysis of individual, group, and organization topics, including leadership, motivation, attitudes, group dynamics, and organizational culture. Prerequisite(s): Junior standing and MGMT 340.

453 Human Resource Management 3 hours. Examination of the activities involved in attracting, retaining, and motivating employees. Topics include planning, selection, compensation, performance appraisal, succession, and legal issues. Prerequisite(s): MGMT 340 and MGMT 350 and junior standing.


460 Business, Society, and the Global Economy 3 hours. Managing in a free enterprise system, market, regulatory, ethical, and cultural norms. Internationalization of business; urban problems of business; landmark and contemporary case analyses. Prerequisite(s): MGMT 340 and MGMT 350.

463 Negotiation and Conflict Resolution 3 hours. Strategies and techniques for successful agreement negotiation and business conflict resolution. Includes applications to classic situations such as collective bargaining, interpersonal relations, and stakeholder concerns. Prerequisite(s): MGMT 340.

465 Compensation and Reward Systems 3 hours. Examination of compensation and reward systems designed to enhance employee motivation and performance. Topics include pay structure design, incentive systems, and benefits. Prerequisite(s): MGMT 453 and MGMT 454.

466 Managerial Effectiveness Through Diversity 3 hours. Management of diverse work forces. Discrimination, affirmative action, career development, socialization, and social change policies; historical, psychological, sociological, legal, and managerial viewpoints. Prerequisite(s): MGMT 340.

467 Impact of Technological Change 3 hours. Examines the impact of technological change upon the business environment and the managerial process. Emphasis on alternative futures and the planning necessary to attain desired ends. Prerequisite(s): MGMT 340 and MGMT 350.

470 Career Planning and Development 3 hours. Individual and organizational perspectives in career planning. Self-direction, networking, support facilities, and corporate management systems are considered. Prerequisite(s): MGMT 340 or the equivalent and junior standing.

471 Management and Organizational Development 3 hours. Strategies for promoting the creativity, flexibility, and productivity of the organization and its management personnel. Readings and case studies from the public and private sectors. Prerequisite(s): MGMT 340 and MGMT 452, or consent of the instructor.

480 Transportation Systems Management 3 hours. Provides a fundamental knowledge of problems and practices encountered in the management of transportation systems. Includes impact of public policy; capital facilities; industry structure; costs; operations pricing and environmental relationships. Prerequisite(s): MGMT 340 and MGMT 350, or consent of the instructor.

481 Managerial Logistics 3 hours. Management of activities governing flow of materials and products through stages of production and distribution. Includes design of logistical systems and use of mathematical techniques. Prerequisite(s): IDS 355 or consent of the instructor.


494 Special Topics in Management 3 hours. Exploration of areas not covered in existing course offerings or study of selected topics in greater depth. Subject matter will vary from semester to semester. Prerequisite(s): Senior standing and 9 hours of 400-level management courses, or consent of the instructor.

495 Competitive Strategy 4 hours. Multidisciplinary analysis of organization strategy and policy, using case method and/or business simulation. Assignments involve extensive library research and oral and written reports. Prerequisite(s): Senior standing in the College of Business Administration and completion of all other CBA core courses, or consent of the instructor.
UIC

Management (MGMT)

Marketing (MKTG)

Course Descriptions

499 Independent Study in Management 1 TO 3 hours. Independent study of an approved topic in management. Student must prepare a written report under the guidance of the instructor. May be repeated to a maximum of 6 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the department head.

530 Family Business Management 4 hours. Special issues facing family-owned and closely-held firms. Emphasis on behavioral, operational, and strategic issues, family dynamics, and interpersonal issues in professional settings; succession planning. Prerequisite(s): Admission to the MBA Program. Recommended background: MGMT 502 or MKTG 502.

540 Organizational Analysis and Practice 4 hours. Organizational analysis and applications based on key organization theories, structure, technology, environmental adaptation, management functions and controls, formal and informal organization. Prerequisite(s): Admission to the MBA or MS in Accounting program.

541 Organizational Behavior 4 hours. The organization as a social system. Topics include leadership, interpersonal effectiveness, group behavior, managing change, conflict management, motivation and behavior, and interpersonal communications. Credit is not given for MGMT 541 if the student has credit for MBA 505. Prerequisite(s): Admission to MBA or MS in Accounting program.

553 Human Resource Management 4 hours. Human resource management programs and policies. Staffing, training, and development; historical evolution of personnel policies, modern labor force and technological trends; supervision, salary administration, human resource research and utilization. Prerequisite(s): MGMT 541 or consent of the instructor.

557 International Management 4 hours. Management practices and problems in major nations. Legal and cultural factors affecting managerial policies and decisions; organization planning and manpower utilization; comparative management systems and ideologies. Prerequisite(s): MGMT 541.

564 Negotiations 4 hours. Strategies and techniques for successful agreement negotiation and business conflict resolution. Includes applications to classic situations such as collective bargaining, interpersonal relations, and stakeholder concerns. Credit is not given for MGMT 564 if the student has credit for MGMT 504. Special topics: Negotiations. Prerequisite(s): MGMT 541.

568 Compensation Administration 4 hours. Compensation theory policies and practices, including job analysis and evaluation, compensation surveys, wage and salary structures, merit and incentive compensation employee benefits and pension plans. Prerequisite(s): MGMT 553.

570 Social and Legal Environment of the Firm 4 hours. Exploration of current ethical, social, political, technological, economic, and global issues as they relate to business and management in setting goals, making decisions, and creating policy. Prerequisite(s): ECON 520.

573 Research Methods in Organizational Behavior and Human Resource 4 hours. Methodologies and industrial design appropriate for research in human resource and relations management, and organizational behavior. Students are expected to complete a theoretically based research paper. Prerequisite(s): PhD student status or consent of instructor.

575 Seminar: Topics in Personnel Practices and Relations 4 hours. Relationships among work environment, compensation, unions, and workers performance. Emphasis on legislation affecting employee selection, rewards, and the quality of work life. Prerequisite(s): PhD student status or consent of instructor.

576 Behavioral Science Applications in Human Resource Management 4 hours. Applies concepts, structures, theories, and methods of organizational behavior to develop techniques useful for research and practice at the microlevel of human resource management. Prerequisite(s): PhD student status or consent of the instructor.

579 Contemporary American and International Management 4 hours. Student teams evaluate case studies, present findings and recommendations for business strategies and research corporations of visiting executives, prepare presentations, and critique lectures.

581 Administrative Structure and Organizational Design 4 hours. An advanced exploration of theories of administrative structure and organizational design. Course topics include: conceptual models; macro, middle, and microlevel variables and principles and strategies of organizational change and development. Prerequisite(s): MGMT 541.

582 Management of Innovation and Change 4 hours. Analysis of the role of organization structure and management processes in fostering innovation. Emphasis on issues in research and development, flexible manufacturing, government policy, and technology transfer. Prerequisite(s): MGMT 541.

587 Seminar: Topics in Organizational Behavior and Human Resources 4 hours. Topics of current research interest in human resource systems and organizational behavior. Focuses on current issues in published literature and unpublished research. Prerequisite(s): PhD student status or consent of the instructor.

588 Seminar: Topics in Strategic Management 4 hours. Selected topics and current problems in organizational strategy. Research and fieldwork in strategic application. Theory and concepts to problems in strategic management. Prerequisite(s): Admission to the PhD in Business Administration Program.

589 Seminar: Topics in Human Resource Management 4 hours. Recent literature including parameters of the field, system designs and applications, information systems, and studies of work systems, quality of work life, productivity, and career management. Prerequisite(s): PhD student status or consent of the instructor.

590 Strategic Management 4 hours. Study of strategies and policies that influence the long-term survival, growth, and character of business firms; strategy formulation and implementation in domestic and international organizations. Prerequisite(s): Enrollment in the final year of the MBA program.

591 Research Apprenticeship 2 TO 4 hours. Directed training in conducting research in specific areas of management and in developing skills related to the research. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

594 Special Topics in Management 1 TO 4 hours. An intensive study of a selected topic in management. Topics vary by section and by term. May be repeated to a maximum of 12 hours if topics vary. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

596 Independent Study in Management 1 TO 4 hours. Independent study under direction of a faculty member. May be repeated. Students may register in more than one section per term.

599 PhD Thesis Research 0 TO 16 hours. Independent research on topic approved for the doctoral dissertation. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the head of the department.

452 Principles of Retailing 3 hours. The theory and practice of making retailing decisions regarding pricing, product, place and promotion, and the development of strategy based on market competition and trends. Prerequisite(s): MKTG 360.
460 Marketing Analytics 3 hours. Introduction to data-centered analysis for critical aspects of marketing, such as sales forecasting, profitability analysis, market segmentation, promotion budgeting, and database marketing. Prerequisite(s): MKTG 360 and IDS 270.

461 Consumer Market Behavior 3 hours. Understanding consumer decision processes; steps in decision making, including need recognition, perception, cognition and attitude formation; effect of environmental social, psychological, and individual difference factors on consumer decision making. Prerequisite(s): MKTG 360 or consent of the instructor.

462 Marketing Research 3 hours. An investigation of the gathering, analyses, and interpretation of information used in solving marketing problems. Both qualitative and quantitative methods are employed in developing an analytical framework. Prerequisite(s): MKTG 360 and IDS 270.

463 Marketing Channels and E-commerce 3 hours. Develop an integrated distribution system; relationship to firm's marketing structure (logistics); evaluation of decisions on sources, plant and warehouse location, domestic and international outlets. Analysis by marketing channels and e-commerce role in distribution. Prerequisite(s): MKTG 360. Business administration students must have declared a major or have received consent of the instructor.

465 Strategic Marketing Planning and Management 3 hours. Development of marketing plans for strategic and tactical programs to achieve the firm's marketing objectives. Prerequisite(s): 15 hours of marketing.

466 Comparative Marketing Systems 3 hours. Treats the topic of domestic marketing systems in other countries, their structures and processes, in a framework of comparative cultural, political, economic, and social systems. Prerequisite(s): MKTG 360 or consent of the instructor. Business administration students must have declared a major.

469 Global Marketing 3 hours. The strategic and tactical marketing of goods and services to countries beyond domestic or current markets. Distinct economic, sociocultural, and political-legal-regulatory environments are considered. Prerequisite(s): MKTG 360 and BA 200, or consent of the instructor.

471 Services Marketing 3 hours. An exploration of the special challenges of services marketing, including analyzing and developing solutions for new services, services quality, design and delivery of services, and services recovery. Prerequisite(s): MKTG 360.

473 The Personal Selling Effort in Marketing 3 hours. Analysis of selling strategies and tactics in different situations; problems of managing sales force. Cultural differences in selling techniques as well as ethical concerns will be discussed. Prerequisite(s): MKTG 461 or consent of the instructor.

474 Advertising and Sales Promotion 3 hours. The management, planning, creation, evaluation, and use of advertising and sales promotion. Evaluation and critique of an ad campaign. Prerequisite(s): MKTG 461 or consent of the instructor.

475 Product Management 3 hours. Development and review of new and existing products and services during their life cycles; the evolution of products and services from a creative idea to their withdrawal from the market. Prerequisite(s): MKTG 462 or consent of the instructor.

476 Business-to-Business (B2B) Marketing 3 hours. Unique concepts and strategies applied when businesses market to other organizations and institutions. Derived demand, systems selling, bid pricing, national account programs, and using distributors. Prerequisite(s): MKTG 360.

494 Special Topics in Marketing 3 hours. Intensive study of selected problems. Reading assignments from scholarly and professional journals; emphasis on covering relatively few areas in great depth.

499 Independent Study in Marketing 3 hours. Topic and research methodology is to be determined by consultation with the instructor. May be repeated to a maximum of 12 hours. Students may register in more than one section per term. Prerequisite(s): Major in marketing. Consent of the head of the department and the instructor must be obtained prior to registration.

500 Introduction to Marketing 4 hours. Client/consumer behavior and the way institutions respond to such behavior through the planning, pricing, promotion, and distribution of goods and services. Credit is not given for MKTG 500 if the student has credit for MBA 506. Prerequisite(s): Graduate standing in the College of Business Administration or consent of the instructor.

518 Electronic Marketing 4 hours. Overview of the electronic marketing value chain. Internet and Web technologies, system design, payment systems, business requirements for e-marketing, design, and ethical issues. Same as IDS 518. Prerequisite(s): MKTG 500 or MBA 506 or consent of the instructor.

521 Advanced Business-to-Business (B2B) Marketing 4 hours. Buyer behavior, market segmentation, derived demand, national account programs, system selling, bidding pricing, industrial promotion mix, mass communications, and management of sales force. Prerequisite(s): MKTG 500.
581 Seminars in Consumer Behavior 4 hours. Theories and concepts relevant to consumer behavior; the decision making process for both profit and nonprofit goods and services. Prerequisite(s): Admission to the PhD in Business Administration program.

583 Seminar in Marketing Theory 4 hours. Emphasis on marketing literature evolution and development of marketing practices that reflect/infuse the basic literature. Attention devoted to how other fields have contributed to marketing thought. Prerequisite(s): Admission to the PhD in Business Administration program.

584 Product Innovation and Development 4 hours. An in-depth investigation of the factors affecting the new product strategy of the firm and its management of product innovation. Prerequisite(s): Admission to the PhD in Business Administration program.

585 Seminar: Topics in Quantitative Models in Marketing 4 hours. Formulation of conceptual and quantitative models which relate marketing activities and behaviors to other behaviors or sales or profits. Examines methods which researchers have used to test hypothesized marketing models. Prerequisite(s): Admission to the PhD in Business Administration program.

586 Advanced International Marketing 4 hours. Concepts and problems pertaining to export marketing with emphasis on multinational businesses. Includes product modification, differential pricing, national social and commercial policies, promotion, and logistical issues. Prerequisite(s): Admission to the PhD in Business Administration program.

587 Advanced Marketing Research 4 hours. Multidimensional scaling, conjoint analysis including hybrid analysis, choice models including multinomial logit and probit models, selectively models. Prerequisite(s): Admission to the PhD in Business Administration program.

588 Marketing Communications 4 hours. The firm’s use of the elements of the promotion mix: advertising, personal selling, sales promotion, public relations and the use of detailed information for effective communication with its markets. Prerequisite(s): Admission to the PhD in Business Administration program and consent of the instructor.

589 Services Marketing 4 hours. Distinctive aspects of services marketing examined from both a conceptual and managerial perspective with focus on the research, questions and results in services marketing. Prerequisite(s): Admission to the PhD in Business Administration program.

594 Special Topics in Marketing 4 hours. An intensive study of a selected topic in marketing. Topics vary. Students should contact the instructor to find out what topics will be covered. Prerequisite(s): MKTG 500.

596 Independent Study in Marketing 1 TO 4 hours. Independent study under the direction of a faculty member. May be repeated. Students may register in more than one section per term. Prerequisite(s): Enrollment by petition to the director of the MBA program.

598 Phd Thesis Research 0 TO 16 hours. Independent research on topics approved for the doctoral dissertation. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

599 Master of Business Administration (MBA) 500 Corporate Strategy 2 hours. Analysis of major strategic decisions affecting the long-term performance of a firm and its ability to sustain competitive advantage. Meets eight weeks of the semester. Prerequisite(s): Admission to the MBA Program.

570 Enterprise Decision Making 4 hours. Provides content and frameworks to integrate prior course work to address business problems from a cross-functional and enterprise perspective. Prerequisite(s): Completion of all other core courses in the MBA program. This course should be taken during the final semester in the program.

590 Professional Topics 2 TO 4 hours. A series of skills workshops designed to develop critical managerial skills and to explore timely management issues not directly related to core business functional areas. May be repeated to a maximum of 6 hours if topics vary. Students may register in more than one section per term. Prerequisite(s): Admission to the MBA program.

591 Study Abroad—Master of Business Administration Program 0 TO 16 hours. Lectures, seminars, and independent travel/study abroad in conjunction with the MBA program. May be repeated to a maximum of 24 hours. Prerequisite(s): Admission to the MBA program and consent of the director.

592 Master of Business Administration Project 8 hours. Multidisciplinary/team project at an outside company or university office. A written report and an oral presentation of the project is required. Prerequisite(s): Admission to the MBA program and consent of the MBA program director.

594 Special Topics—Master of Business Administration Program 1 TO 4 hours. An intensive study of a selected business topic not available in current course offerings. Subject matter may vary by section and semester. May be repeated to a maximum of 16 hours if topics vary. Students may register in more than one section per term. Prerequisite(s): Admission to the MBA program.

596 Independent Study 0 TO 8 hours. Independent study under the direction of a faculty member. May be repeated. Students may register in more than one section per term. Prerequisite(s): Enrollment by petition to the director of the MBA program.

502 Concepts for Pediatric/Perinatal Nursing 2 hours. Students analyze theories and research related to the patient/family sphere of influence in order to design care for pedi­atric or perinatal patients and families. Prerequisite(s): NUSC 500 and credit or concurrent registration in NUCM 520.

504 Concepts for Pediatric/Perinatal Nursing 2 hours. Students analyze theories and research related to pedi­atric or perinatal nursing personnel and organizational spheres of influ­ence. Prerequisite(s): NUSC 502 and credit or concurrent reg­istration in NUCM 521.

507 Biological Basis for Women’s Health and Perinatal Nursing I 2 hours. Focuses on the anatomy and physiology of reproductive func­tion, pregnancy, parturition, the puerperium, and menopause as the biological basis for women’s health and perinatal nursing. Same as NUNH 507. Prerequisite(s): Consent of the instructor.

508 Biological Basis for Women’s Health and Perinatal Nursing II 2 hours. The anatomy, physiology, and genetics of conception, embryonic development, and fetal and neonatal growth and development as the biological basis for women’s health and perinatal nursing. Prerequisite(s): NUCM 507 or NUNH 507 or consent of the instructor.

510 Advanced Nursing Care of the Well Infant, Child, and Adolescent 3 hours. Emphasizes prevention, health promotion and maintenance for all childhood age groups through teaching, counseling, guidance, and support of children and their families. Prerequisite(s): Consent of the instructor.

Prerequisite(s): Enrollment by petition to the director of the MBA program.

502 Concepts for Pediatric/Perinatal Nursing (NUMC)
511 Primary Care Management of Acute/Chronic Conditions in Childhood 3 hours. Emphasizes decision making and management of acute episodic illnesses and stable chronic illnesses commonly encountered in pediatric ambulatory healthcare settings. Prerequisite(s): Credit or concurrent registration in NUMC 507 or credit or concurrent registration in NUMC 507, and credit or concurrent registration in NUSC 532, or consent of the instructor.

512 Practicum in Advanced Pediatric Primary Care I 1 TO 4 hours. Emphasizes clinical experiences in prevention, health promotion, and maintenance through teaching, counseling, guidance, and support of children and their families. May be repeated. Prerequisite(s): Credit or concurrent registration in NUMC 510 and credit or concurrent registration in NUSC 532, or consent of the instructor.

513 Practicum in Advanced Pediatric Primary Care II 1 TO 4 hours. Emphasizes clinical experiences and management of acute episodic and stable chronic illnesses commonly encountered in pediatric ambulatory healthcare settings. May be repeated. Prerequisite(s): Credit or concurrent registration in NUMC 512 or consent of the instructor.

514 Practicum in Advanced Pediatric Primary Care III 1 TO 4 hours. Emphasizes clinical experiences that integrate prevention, health promotion and maintenance, and clinical management of acute episodic and stable chronic illnesses commonly encountered in pediatric ambulatory healthcare settings. May be repeated. Prerequisite(s): Credit or concurrent registration NUMC 513 or consent of the instructor.

515 Advanced Parent-Infant Nursing 3 hours. Examines the process of parenting in low-risk and at-risk populations, and health status and behavior of the neonate. Prerequisite(s): NUMC 508 or consent of the instructor.

517 Healthcare of Women I 4 hours. Healthcare of women through the life span with an emphasis on health promotion and disease prevention, fertility control, and pregnancy care. Same as NUWH 517. Prerequisite(s): Credit or concurrent registration in NUMC 507 or credit or concurrent registration in NUWH 517, or consent of the instructor.

518 Healthcare of Women II 4 hours. Healthcare of women through the life span with an emphasis on gynecologic and primary care. Same as NUWH 519. Prerequisite(s): NUMC 518 or NUWH 517, or consent of the instructor.

519 Healthcare of Women III 4 hours. Healthcare of women through the life span with an emphasis on gynecologic and primary care. Same as NUWH 519. Prerequisite(s): NUMC 518 or NUWH 517, or consent of the instructor.

520 Pediatric and Perinatal Clinical Nurse Specialist Practicum I 3 hours. The application of advanced knowledge of theory and research to care for pediatric and perinatal patients and families who require the care of a clinical nurse specialist. Prerequisite(s): NUSC 500 and NUSC 531 and NUSC 532 and NUMC 515 and credit or concurrent registration in NUMC 502.

521 Pediatric and Perinatal Clinical Nurse Specialist Practicum II 4 hours. The application of theory and research related to pediatric and perinatal nursing personnel and the healthcare organization; systematic assessment for problem identification and outcome evaluation. Prerequisite(s): NUMC 520 and NUSC 504.

522 Pediatric and Perinatal Clinical Nurse Specialist Practicum III 5 hours. The application of theory and research for expansion of professional role competencies related to pediatric and perinatal nursing personnel and the healthcare organization. Prerequisite(s): Credit or concurrent registration in NUMC 521.

524 Dimensions of Midwifery and Women’s Health Practice 3 hours. Examines the complex functions and roles of women’s healthcare providers. Prerequisite(s): NUMC 519 and NUMC 525 and NUSC 526 and NUSC 529.

525 Practicum: Healthcare of Women I 1 TO 8 hours. Clinical experiences to develop nurse-midwifery and nurse practitioner competencies in the healthcare of women. May be repeated. Prerequisite(s): NUMC 517 and NUSC 531 and NUSC 532.

526 Practicum: Birth and the Newborn 1 TO 8 hours. Clinical experiences to develop beginning competence in the nurse-midwifery care of women and their newborns during parturition. May be repeated. Prerequisite(s): NUMC 518 and NUSC 531 and NUSC 532.

545 Programming Language Design 3 OR 4 hours. Definition, design, and implementation of programming languages. Syntactic and semantic description; variable bindings, control and data structures, parsing, code generation, optimization; exception handling; data abstraction. Same as CS 476. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): MCS 360 or CS 340.

421 Combinatorics 3 OR 4 hours. The pigeonhole principle, permutations and combinations, generating permutations and combinations, binomial coefficients, inclusion-exclusion principle, recurrence relations and generating functions, special counting sequences, Polya theory of counting. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MCS 261 or grade of C or better in CS 202; and grade of C or better in MATH 310 or grade of C or better in MATH 320 or grade of C or better in MATH 330.

423 Graph Theory 3 OR 4 hours. Basic concepts of graph theory, including Eulerian and hamiltonian cycles, trees, colorings, connectivity, shortest paths, minimum spanning trees, network flows, bipartite matching, planar graphs. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MCS 261 or grade of C or better in CS 202; and grade of C or better in MATH 310 or grade of C or better in MATH 320 or grade of C or better in MATH 330.

425 Codes and Cryptography 3 OR 4 hours. Mathematics of communications theory, basic information theory necessary to understand both coding theory and cryptography, basic ideas and highlights for both coding theory and cryptography, including public-key cryp-tosystems. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MCS 261 or grade of C or better in CS 202; and grade of C or better in MATH 310 or grade of C or better in MATH 320 or grade of C or better in MATH 330.

441 Theory of Computation I 3 OR 4 hours. Introduction to formal languages; relations between grammars and
451 Object-Oriented Programming in C++ 3 OR 4 hours. C++ as an object-oriented language, classes and member functions, access control, class scope, constructors, destructors, overloading, conversions, streams, derived classes, polymorphism through virtual functions, templates, class libraries. 3 undergraduate hours. 4 graduate hours. Credit is not given for MCS 451 if the student has credit for CS 474. Extensive computer use required. Prerequisite(s): Grade of C or better in MCS 360 or the equivalent or consent of the instructor.

471 Numerical Analysis 3 OR 4 hours. Introduction to numerical analysis; floating point arithmetic, computational linear algebra, iterative solution to nonlinear equations, interpolation, numerical integration, numerical solution of ODEs, computer subroutine packages. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MCS 275 or grade of C or better in CS 102 or grade of C or better in CS 108; or consent of instructor.

472 Introduction to Industrial Math and Computation 3 OR 4 hours. Technical writing and oral presentations in preparation for industrial projects. Topics include quality control, operations research, cost benefit analysis, differential equations, using scientific software. Extensive computer use required. Prerequisite(s): Grade of C or better in MCS 471 or consent of the instructor. Recommended background: Designed for students with a desire to explore mathematics via practical fieldwork.

481 Computational Geometry 3 OR 4 hours. Algorithmic problems on sets of points, rectangles, intervals, arcs, chords, polygons. Counting, reporting, location, intersection, pairing; static and dynamic data structures. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MCS 401 or consent of the instructor.
591 Advanced Topics in Combinatorial Theory 4 hours.
Some of the following topics: combinatorial enumeration, designs, graph theory, matroid theory, combinatorial matrix theory, Ramsey theory. Contents vary from year to year. May be repeated. Prerequisite(s): MCS 423.

592 Advanced Topics in Error-Correcting Codes 4 hours.
Topics of current interest in coding theory including codes which are of practical value and which shed light on various mathematical areas. Prerequisite(s): MCS 531 or consent of the instructor.

593 Graduate Student Seminar 1 hour.
For graduate students who wish to receive credit for participating in a learning seminar whose weekly time commitment is not sufficient for a reading course. This seminar must be sponsored by a faculty member. Prerequisite: Approval of the department.

594 Graduate Seminar 1 hour.
Current developments in research with presentations by faculty, students, and visitors. Prerequisite: Approval of the department.

595 Independent Study 1 TO 4 hours.
Reading course supervised by a faculty member. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.

596 MASI Master's Project 2 TO 4 hours.
Specialized project under close faculty supervision to satisfy the project requirement for the MS in Mathematics and Information Science for Industry degree. Prerequisite: Approval of the department.

597 MASI Master's Thesis 0 TO 16 hours.
Research work under the supervision of a faculty member leading to the completion of a master's thesis. Satisfaction of Unsatisfactory grading only. Prerequisite(s): Approval of the department.

598 Thesis Research 0 TO 16 hours.
Research work under the supervision of a faculty member leading to the completion of a doctoral thesis. Satisfaction of Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.

Mathematics (MATH)

410 Advanced Calculus I 3 OR 4 hours.
Functions of several variables, differentials, theorems of partial differentiation, Calculus of vector fields, line and surface integrals, conservative fields, Stokes’ and divergence theorems, Cartesian tensors. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MATH 210.

411 Advanced Calculus II 3 OR 4 hours.
Implicit and inverse function theorems, transformations, Jacobians. Point-set theory. Sequences, infinite series, convergence tests, uniform convergence. Improper integrals, gamma and beta functions, Laplace transform. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MATH 210.

414 Analysis II 3 OR 4 hours.
Sequences and series of functions. Uniform convergence, Taylor’s theorem. Topology of metric spaces, with emphasis on the real numbers. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MATH 340.

417 Complex Analysis with Applications 3 OR 4 hours.
Complex numbers, analytic functions, complex integration, Taylor and Laurent series, residue calculus, branch cuts, conformal mapping, argument principle, Rouche’s theorem, Poisson integral formula, analytic continuation. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MATH 210.

419 Models in Applied Mathematics 3 OR 4 hours.
Introduction to mathematical modeling, scaling, graphical methods, optimization, computer simulation, stability, differential equation models, elementary numerical methods, applications in biology, chemistry, engineering, and physics. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MATH 220 and grade of C or better in MATH 260.

425 Linear Algebra II 3 OR 4 hours.
Canonical forms of a linear transformation, inner product spaces, spectral theorem, principal axis theorem, quadratic forms, special topics such as linear programming, 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MATH 260.

430 Formal Logic I 3 OR 4 hours.
First order logic, syntax and semantics, completeness-incompleteness. 3 undergraduate hours. 4 graduate hours. Credit is not given for MATH 430 if the student has credit for PHIL 416. Prerequisite(s): Grade of C or better in CS 202 or grade of C or better in MATH 267 or grade of C or better in MATH 215.

431 Abstract Algebra II 3 OR 4 hours.
Further topics in abstract algebra: Sylow Theorems, Galois Theory, finitely generated modules over a principal ideal domain. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MATH 320 and grade of C or better in MATH 330.

435 Foundations of Number Theory 3 OR 4 hours.
Primes, divisibility, congruences, Chinese remainder theorem, primitive roots, quadratic residues, quadratic reciprocity, and Jacoby symbols. The Euclidean algorithm and strategies of computer programming. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MATH 215.

436 Number Theory for Applications 3 OR 4 hours.
Primality testing methods of Lehmer, Rumsely, Cohen-Lenstra, Atkin. Factorization methods of Gauss, Pollard, Shank, Lenstra, and quadratic sieve. Computer algorithms involving libraries and nested subroutines. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MATH 435.

442 Differential Geometry of Curves and Surfaces 3 OR 4 hours.
Frenet formulas, isoperimetric inequality, local theory of surfaces, Gaussian and mean curvature, geodesics, parallelism, and the Guass-Bonnet theorem. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MATH 320.

445 Introduction to Topology I 3 OR 4 hours.
Elements of metric spaces and topological spaces, including product and quotient spaces, compactness, connectedness, and completeness. Examples from Euclidean space and function spaces. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MATH 315.

446 Introduction to Topology II 3 OR 4 hours.
Topics in topology chosen from the following: advanced point set topology, piecewise linear topology, fundamental group and knots, differential topology, applications to physics and biology. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MATH 445.

480 Applied Differential Equations 3 OR 4 hours.
Linear first-order systems. Numerical methods. Nonlinear differential equations and stability. Introduction to partial differential equations. Sturm-Liouville theory. Boundary-value problems and Green’s functions. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MATH 220.

481 Applied Partial Differential Equations 3 OR 4 hours.
Initial value and boundary value problems for second order linear equations. Eigenfunction expansions and Sturm-Liouville theory. Green’s functions. Fourier transform. Characteristics. Laplace transform. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MATH 220.

494 Special Topics in Mathematics 3 OR 4 hours.
Course content is announced prior to each term in which it is given. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.
Course Descriptions

496 Independent Study 1 TO 4 hours. Reading course supervised by a faculty member. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the instructor and the department.

502 Metamathematics I 4 hours. First order logic, completeness theorem, and model theory. Same as PHIL 562. Prerequisite(s): MATH 430 or consent of the instructor.

503 Metamathematics II 4 hours. Incompleteness theorems, elementary recursion theory and proof theory, first and second order arithmetic. Same as PHIL 563. Prerequisite(s): MATH 502 or PHIL 562.

504 Set Theory I 4 hours. Naive and axiomatic set theory. Independence of the continuum hypothesis and the axiom of choice. Same as PHIL 565. Prerequisite(s): MATH 430 or MATH 502 or PHIL 562.

506 Model Theory I 4 hours. Introduction to stability theory: categoricity, stability, forking, finite equivalence relation theory, indiscernibles, orthogonality. Same as PHIL 567. Prerequisite(s): MATH 502 or PHIL 562.

507 Model Theory II 4 hours. Intermediate stability theory: dependence, prime models, isomorphism, regular types, dimension, weight. Same as PHIL 568. Prerequisite(s): MATH 506 or PHIL 567.

509 Universal Algebra I 4 hours. Algebraic systems, homomorphisms, congruences, subalgebras, direct and subdirect products. Equational classes, free algebras, Birkhoff's theorem. Malcev conditions, congruence distributive equational classes. Prerequisite(s): MATH 330 and MATH 445.

510 Universal Algebra II 4 hours. Discriminator and directly representable varieties, ultraproducts and quasivarieties, finitely based equational theories, commutator and center. Prerequisite(s): MATH 509.

512 Advanced Topics in Logic 4 hours. Advanced topics in modern logic; e.g., descriptive set theory, model theory of fields, theory of hierarchies, stable groups. Same as PHIL 569. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.

513 Advanced Topics in Universal Algebra and Lattice Theory 4 hours. Special topics. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.

514 Number Theory I 4 hours. Introduction to classical, algebraic, and analytic number theory. Euclid's algorithm, unique factorization, quadratic reciprocity, and Gauss sums, quadratic forms, real approximations, arithmetic functions, Diophantine equations.

515 Number Theory II 4 hours. Introduction to classical, algebraic, and analytic number theory. Algebraic number fields, units, ideals, and P-adic theory. Riemann Zeta function, Dirichlet's theorem, prime number theory. Prerequisite(s): MATH 514.

516 Second Course in Abstract Algebra I 4 hours. Structure of groups, Sylow theorems, solvable groups, structure of rings, polynomial rings, projective and injective modules, finitely generated modules over a PID. Prerequisite(s): MATH 330 and MATH 425.

517 Second Course in Abstract Algebra II 4 hours. Rings and algebras, polynomial rings in several variables, power series rings, tensor products, field extensions, Galois theory, Wedderburn theorems. Prerequisite(s): MATH 516.

518 Representation Theory 4 hours. Major areas of representation theory, including structure of group algebras, Wedderburn theorems, characters and orthogonality relations, idempotents and blocks. Prerequisite(s): MATH 517.

519 Algebraic Groups 4 hours. Classical groups as examples, necessary results from algebraic geometry, structure and classification of semisimple algebraic groups. Prerequisite(s): MATH 517.

531 Advanced Topics in Algebra 4 hours. Research level topics, such as groups and geometries, equivalences of module categories, representations of Lie-type groups. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.

532 Real Analysis I 4 hours. Introduction to real analysis. Lebesgue measure and integration, differentiation, L-p classes, abstract integration. Prerequisite(s): MATH 411 or MATH 414 or the equivalent.

533 Real Analysis II 4 hours. Continuation of MATH 532. Prerequisite(s): MATH 417.

535 Complex Analysis I 4 hours. Analytic functions as mappings. Cauchy theory, Power Series, Partial fractions, Infinite products. Prerequisite(s): MATH 411 or MATH 427.

536 Complex Analysis II 4 hours. Normal families, Riemann mapping theorem, Analytic continuation, Harmonic and subharmonic functions, Picard theorem, selected topics. Prerequisite(s): MATH 535.

537 Introduction to Harmonic Analysis I 4 hours. Fourier transform on L(p) spaces, Wiener's Tauberian theorem, Hilbert transform, PaleyWiener theory. Prerequisite(s): MATH 533 and MATH 417 or MATH 535.

539 Functional Analysis I 4 hours. Topological vector spaces, Hilbert spaces, Hahn-Banach theorem, open mapping, uniform boundedness principle, linear operators in a Banach space, compact operators. Prerequisite(s): MATH 533.

541 Partial Differential Equations I 4 hours. Theory of distributions, fundamental solutions of the heat equation, wave equation, and Laplace equation. Harmonic functions. Cauchy problem for the wave equation. Prerequisite(s): MATH 417.


546 Advanced Topics in Analysis 4 hours. Subject may vary from semester to semester. Topics include partial differential equations, several complex variables, harmonic analysis and ergodic theory. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.

547 Algebraic Topology I 4 hours. The fundamental group and its applications, covering spaces, classification of compact surfaces, introduction to homology, development of singular homology theory, applications of homology. Prerequisite(s): MATH 330 and MATH 445.

548 Algebraic Topology II 4 hours. Cohomology theory, universal coefficient theorems, cohomology products and their applications, orientation and duality for manifolds, homotopy groups and fibrations, the Hurewicz theorem, selected topics. Prerequisite(s): MATH 547.

549 Differentiable Manifolds I 4 hours. Smooth manifolds and maps, tangent and normal bundles, Sard's theorem and transversality, embedding, differential forms, Stoke's theorem, degree theory, vector fields. Prerequisite(s): MATH 445.

550 Differentiable Manifolds II 4 hours. Vector bundles and classifying spaces, Lie groups and Lie algebras, tensors, Hodge theory, Poncaré duality. Topics from elliptic operators, Morse theory, cohomology theory, deRham theory, characteristic classes. Prerequisite(s): MATH 549.

551 Riemannian Geometry 4 hours. Riemannian metrics and Levi-Civita connections, geodesics and completeness, curvature, first and second variation of arc length, comparison theorems. Prerequisite(s): MATH 442 and MATH 549.

552 Algebraic Geometry I 4 hours. Basic commutative algebra, affine and projective varieties, regular and rational maps, function fields, dimension and smoothness, projective curves, schemes, sheaves, and cohomology positive characteristic.
553
Algebraic Geometry II 4 hours. Divisors and linear systems, differ­entials, Riemann-Roch theorem for curves, elliptic curves, geometry of curves and surfaces. Prerequisite(s): MATH 552.

554
Complex Manifolds I 4 hours. Holomorphic functions in several variables, Riemann surfaces, Sheaf theory, vector bundles, Stein mani­folds, Cartan theorem A and B, Grauert direct image theorem. Prerequisite(s): MATH 517 and MATH 535.

555
Complex Manifolds II 4 hours. Dolbeault Cohomology, Serre dual­ity, Hodge theory, Kastara vanishing and embedding theorem, Lefschetz theorem, Complex Tori, Kahler manifolds. Prerequisite(s): MATH 517 and MATH 535.

568
Topics in Algebraic Topology 4 hours. Homotopy groups and fibrations. The Serre spectral sequence and its applications. Classifying spaces of classical groups. Characteristic classes of vector bundles. May be repeated. Students may register in more than one section per term. Prerequisite(s): MATH 548 or consent of the instructor.

569
Advanced Topics in Geometric and Differential Topology 4 hours. Topics from areas such as index theory, Lefschetz theory, cyclic theory, KK theory, non-commutative geometry, 3-manifold topology, hyperbolic manifolds, geometric group theory, and knot theory. Prerequisite(s): Approval of the department.

570
Advanced Topics in Differential Geometry 4 hours. Subject may vary from semester to semester. Topics may include eigen­values in Riemannian geometry, curvature and homology, partial differential relations, harmonic mappings between Riemannian mani­folds, hyperbolic geometry, arrangement of hyperplanes. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.

571
Advanced Topics in Algebraic Geometry 4 hours. Various topics such as algebraic curves, surfaces, higher dimen­sional geometry, singularities theory, moduli problems, vector bundles, intersection theory, arithmetical algebraic geometry, and topologies of algebraic varieties. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.

574
Applied Optimal Control 4 hours. Introduction to optimal control theory, calculus of variations, maximum principle, dynamic programming, feedback control, linear systems with quadratic criteria, singular control, optimal filtering, stochastic control. Prerequisite(s): MATH 411 or MATH 427 or consent of the instructor.

575
Integral Equations and Applications 4 hours. Fredholm and Volterra equations, Fredholm determinants, separable and symmetric kernels, Neumann series, transform methods, Wiener-Hopf method, Cauchy kernels, non-linear equations, perturbation methods. Prerequisite(s): MATH 411 and MATH 417 and MATH 481; or consent of instructor.

576
Boundary Value Problems 4 hours. Distributions, Green’s functions, alternative theorem, regular and singular Sturm-Liouville problems, spectral theory, potential theory, method of images, complex variable methods, equations of evolution. Prerequisite(s): MATH 320 and MATH 417 and MATH 481; or consent of instructor.

577
Advanced Applied Partial Differential Equations 4 hours. Quasilinear and nonlinear first order PDE’s, shock solutions, second order equations, cylinder and sphere problems, Wave, Laplace and diffusion equations, maximum principles, nonlinear wave motion. Prerequisite(s): MATH 410 and MATH 417 and MATH 481.

578
Asymptotic Methods 4 hours. Asymptotic series, Laplace’s method, stationary phase, steepest descent method, Stokes phenomena, uniform expansions, multi-dimensional Laplace integrals, Euler-Maclaurin formula, irregular singular points, WKBJ method. Prerequisite(s): MATH 417 and MATH 481; or consent of instructor.

579
Singular Perturbations 4 hours. Algebraic and transcendental equations, regular perturbation expansions of differential equations, matched asymptotic expansions, boundary layer theory, Poincare-Lindstedt, multiple scales, bifurcation theory, homogenization. Prerequisite(s): MATH 481 or consent of the instructor.

580
Mathematics of Fluid Mechanics 4 hours. Development of concepts and techniques used in mathematical models of fluid motions. Euler and Navier Stokes equations, Vorticity and vortex motion. Waves and instabilities. Viscous fluids and boundary layers. Asymptotic methods. Prerequisite(s): Grade of C or better in MATH 410 and grade of C or better in MATH 417 and grade of C or better in MATH 481.

581
Special Topics in Fluid Mechanics 4 hours. Geophysical fluids with applications to oceanography and meteorology, astrophysical fluids, magnetohydro­dynamics and plasmas. Prerequisite(s): Grade of C or better in MATH 580.

582
Wave Propagation and Scattering I 4 hours. Solutions of wave equations in multiple dimensions, vector, and dyadic waves; separable and nonseparable problems. Representations: Green’s function integrals, complex integrals, spectral representations. Approximate solutions. Prerequisite(s): MATH 417 and MATH 481; or consent of instructor.

583
Wave Propagation and Scattering II 4 hours. Solutions of reduced wave equations for scattering of scalar, vector, and dyadic waves; separable and non-separable problems. Representations: Green’s function integrals, complex integrals. Various approximations. Prerequisite(s): MATH 582.

584
Applied Stochastic Models 4 hours. Applications of stochastic models in chemistry, physics, biology, queueing, filtering, and stochastic control, diffusion approximations, Brownian motion, stochastic calculus, stochastically perturbed dynamical systems, first passage times. Prerequisite(s): MATH 417 and MATH 481 and STAT 401; or consent of the instructor.

586
Computational Finance 4 hours. Introduction to the mathematics of financial derivatives, options, asset price random walks, Black-Scholes model, partial differential techniques for option valuation, binomial models, numerical methods, exotic options, interest-rate derivatives. Prerequisite(s): Grade of C or better in MATH 220 and grade of C or better in STAT 381; or consent of the instructor.

589
Teaching and Presentation of Mathematics 2 hours. Strategies and techniques for effective teaching in college and for mathematical consulting. Observation and evaluation, classroom management, presenting mathematics in multidisciplinary research teams. Required for teaching assistants in MSCS. No grad­uation credit awarded for students enrolled in the Master of Science in the Teaching of Mathematics degree program.

590
Advanced Topics in Applied Mathematics 4 hours. Topics from areas such as: elastic scattering, nonlinear problems in chemist­ry and physics, mathematical biology, stochastic optimal control, geophysical fluid dynamics, stability theory, queueing theory. Prerequisite(s): Approval of the department.

591
Seminar on Mathematics Curricula 4 hours. Examination of research and reports on mathematics curricula. Analysis of research in teaching and learning mathematics. Developments in using technology in mathematics teaching. Prerequisite(s): Enrollment in the Doctor of Arts pro­gram in mathematics or consent of the instructor.

592
Seminar on Mathematics: Philosophy and Methodology 4 hours. Problems related to teaching and learning mathematics. Analysis of work of Piaget, Gagne, Bruner, Ausabel, Freudenthal, and others and their relation to mathematics teaching. Prerequisite(s): Enrollment in the Doctor of Arts pro­gram in mathematics or consent of instructor.
Graduate Courses

Graduate Study Seminar 1 hour. For graduate students who wish to receive credit for participating in a learning seminar whose weekly time commitment is not sufficient for a reading course. This seminar must be sponsored by a faculty member. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.

Mathematics Teaching (MTHT)

400 Methods of Teaching Secondary Mathematics I 3 OR 4 hours. Philosophies, issues, techniques, and styles of teaching high school mathematics. Implications of psychological models. Mathematics in the evolving curriculum. Preparation of lessons. 3 undergraduate hours. 4 graduate hours. To be taken in the year prior to student teaching. Prerequisite(s): Grade of C or better in MTHT 410, enrollment in BS or MS in the Teaching of Mathematics program, and completion of the core courses in the degree program in which the student is enrolled. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.

401 Methods of Teaching Secondary Mathematics II 3 OR 4 hours. Philosophies, issues, techniques, and styles of teaching high school mathematics. Preparation of diverse lessons. Supervised teaching experience. 3 undergraduate hours. 4 graduate hours. To be taken in year prior to student teaching. Prerequisite(s): Grade of C or better in MTHT 410, enrollment in BS or MS in the Teaching of Mathematics program, and completion of the core courses in the degree program in which the student is enrolled. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.

460 Concepts in Elementary School Mathematics I 3 OR 4 hours. Advanced analysis of concept development and teaching methods. Sorting, classifying, counting, number tracks, addition, subtraction, group, place value, length, area, and alternative teaching strategies. 3 undergraduate hours. 4 graduate hours. For elementary school teachers. Prerequisite(s): Graduate standing and admission to the MS in the Teaching of Mathematics program or consent of the instructor.

460 Geometric Measurement and Numerical Methods 3 OR 4 hours. Classical problems of length, area, and volume, including numerical trigonometry are explored using a scientific calculator. 3 undergraduate hours. 4 graduate hours. Do not purchase a calculator for the course until after the first day of class. Prerequisite(s): Admission to the MS in the Teaching of Mathematics program or consent of the instructor.

465 Teaching Algebra for Understanding 3 OR 4 hours. Manipulatives and other representations of mathematical concepts used for teaching algebra to middle grade students. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Admission to the MS in the Teaching of Mathematics program (Option for Elementary School Teachers) or consent of the instructor.

466 Introduction to Calculus and the Graphing Calculator 4 hours. Problem solving using derivatives, differentials, and their applications followed by integrals and their applications. Maximum/minimum problems solved directly by graphical methods. Prerequisite(s): Admission to the Mathematics Education Concentrators Program or consent of the instructor.

467 Introduction to Number Theory with Application 4 hours. Classical topics of elementary number theory and how they pertain to teaching the upper grades. Primes, GCF, LCM, divisibility, floor and ceiling functions, Gaussian Residue, lattices. Prerequisite(s): Admission to the Mathematics Education Concentrators Program or consent of the instructor.
Course Descriptions

468 Geometry with Applications for Middle Grade Teachers 4 hours. Plane and solid figures and their properties. Polygons and polyhedra. Euler’s formula. Volume versus surface area. Spacial visualization; two-dimensional representations of three-dimensional figures. Prerequisite(s): Admission to the Mathematics Education Concentrators Program or consent of the instructor.

470 Teaching Mathematics with Science: An Activity Approach I 3 OR 4 hours. Introduction to basic variables (length, area, volume, mass, time) and the Scientific Method (picture, table, graph, questions). Extensive use of TMS project curriculum. 3 undergraduate hours. 4 graduate hours. For elementary school teachers. Prerequisite(s): Admission to the MS in the Teaching of Mathematics program (Option for Elementary School Teachers) or consent of the instructor.

480 Microcomputers in Elementary School Mathematics I 3 OR 4 hours. Introduction to microcomputers and their use in elementary school mathematics. Basic microcomputer functions, educational software programs, pedagogical and curricular implications, and implementation questions. 3 undergraduate hours. 4 graduate hours. For elementary school teachers. Prerequisite(s): Admission to the MS in the Teaching of Mathematics program (Option for Elementary School Teachers) or consent of the instructor.

490 Topics in Teaching Secondary Mathematics 1 TO 5 hours. Course content is announced prior to each term in which it is given. May be repeated. Students may register in more than one section per term. Prerequisite(s): Prerequisites may vary according to topic.

491 Topics in Teaching Elementary/Junior High School Mathematics 1 TO 5 hours. Course content is announced prior to each term in which it is given. May be repeated. Students may register in more than one section per term. Prerequisite(s): Prerequisites may vary according to topic.

496 Independent Study 1 TO 4 hours. Reading course supervised by a faculty member. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the instructor and the department.

575 Principles of Probability and Statistics 4 hours. Probability, descriptive and inferential statistics, implications for teaching. Emphasis on collection and analysis of data, classroom activities and software. For elementary school teachers. Prerequisite(s): Admission to the MS in the Teaching of Mathematics program (Option for Elementary School Teachers) or approval of the department.

589 Practicum in Teaching Elementary School Mathematics 4 hours. Culling experience for students in the MS in the Teaching of Mathematics (Option for Elementary School Teachers). Major project is required. Supervised weekly seminars. Prerequisite(s): Admission to the MS in the Teaching of Mathematics program (Option for Elementary School Teachers) and consent of the instructor.

590 Topics in Teaching Secondary Mathematics 1 TO 5 hours. Course content is announced prior to each term in which it is given. May be repeated. Students may register in more than one section per term. Prerequisite(s): Prerequisite may vary according to topic.

591 Topics in Teaching Elementary/Junior High School Mathematics 1 TO 5 hours. Course content is announced prior to each term in which it is given. May be repeated. Students may register in more than one section per term. Prerequisite(s): Prerequisite may vary according to topic.

592 Topics in Advanced Mathematics for Teachers 1 TO 5 hours. Course content is announced prior to each term in which it is given. May be repeated. Students may register in more than one section per term. For students in the MS in the Teaching of Mathematics program. Prerequisite(s): Prerequisite may vary according to topic.

596 Independent Study 1 TO 4 hours. Reading course supervised by a faculty member. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the instructor and the department.

Mechanical Engineering (ME)

401 Applied Stress Analysis I 3 OR 4 hours. Complex bending and torsion; buckled flexural members; energy methods in design, theories of failure; undergraduate hours. 4 graduate hours. Prerequisite(s): ME 303.

408 Intermediate Vibration Theory 3 OR 4 hours. Free and forced vibrations of multidegree of freedom linear systems. Lagrangian dynamics, matrix, approximate, and numerical methods. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ME 308.

409 Advanced Kinematics 1 3 OR 4 hours. Kinematic synthesis of planar linkages. Higher-order, precision point and approximate synthesis. Unified treatment of position, function, and path-angle problems. Consideration of branching and rotatability. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ME 320.

410 Automation and Robotics Applications 3 OR 4 hours. Basic pneumatic and hydraulic systems. Design of sequential control circuits and ladder diagrams. Robot kinematics and dynamics. Robot design, trajectory planning. Applications and demonstrations. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ME 210.

411 Mechatronics I 0 TO 4 hours. Elements of mechatronic systems, sensors, actuators, microcontrollers, modeling, hardware in the loop simulations, real-time software, Electro mechanical systems laboratory experiments. Same as IE 411. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): Senior standing or above; or approval of the department.

412 Dynamic Systems Analysis I 3 OR 4 hours. Classical control theory, concept of feedback, laplace transform, transfer functions, control system characteristics, root locus, frequency response, compensator design. Same as IE 412. 3 undergraduate hours. 4 graduate hours.
Course Descriptions

20 GradCourseDescr.qxd  7/13/06  1:43 PM  Page 256

UIC

Mechanical Engineering

422 Heating, Ventilation, and Air Conditioning 3 OR 4 hours.
Refrigeration systems and heat pumps, mass transfer in humidification, solar heat transfer in buildings, heating and cooling loads, air-conditioning computer project. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ME 321.

423 Heat Exchangers 3 OR 4 hours.
Classification of heat transfer and pressure drop analysis, flow distribution, transient performance, surface selection and geometrical properties, codes and standards. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ME 321.

424 Energy Management Solutions for Industry: Theory and Practice 3 OR 4 hours.
Emphasis on real-world applications including understanding utility billing and identifying costs; identifying and quantifying energy savings opportunities at industrial facilities; determining investment payback scenario and considerations. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Fieldwork required. Extensive use of Microsoft Excel. Prerequisite(s): Junior standing or above.

425 Second Law Analysis in Energy Engineering 3 OR 4 hours.
Fundamentals: lost available work. Entropy generation minimization, optimal thermal design of heat transfer augmentation devices, thermal energy storage, cryogenics, heat exchangers, thermal insulation, solar collectors. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ME 321.

426 Applied Combustion 3 OR 4 hours.
Topics in combustion, providing both a theoretical and applied understanding of combustion processes as they relate to furnaces, internal and external combustion engines, pollutant formation. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ME 321.

427 Solar Engineering 3 OR 4 hours.
Applications: solar geometry and intensities; applied heat transfer topics; flat plate and concentrating collectors; energy storage; analysis of heating and cooling systems. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ME 321 or consent of the instructor.

445 Interdisciplinary Product Development 2 4 hours.
Cross-functional teams (with students from AD 420 and MKTG 594) research and develop new product concepts. Focus on solutions to the opportunities identified in ME 444 to functional prototypes. Yearlong (with ME 444- project course. Prerequisite(s): ME 444; and senior standing or above; and consent of the instructor.

447 Introduction to Computer-Aided Design 0 TO 4 hours.
Conventional and computer-assisted methods in design. Geometry manipulation. Computer-aided modeling with curves, surfaces, and solids. Design with finite-element analysis. Pro/Engineer and Pro/Mechanica. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): MATH 220 and ME 250.

449 Microdevices and Micromachining Technology 0 TO 5 hours.
Microfabrication techniques for microsensors, microstructures, and microdevices. Selected examples of physical/chemical sensors and actuators. Simulation experiments. Laboratory. Same as ECE 449. 4 undergraduate hours. 5 graduate hours. Prerequisite(s): ME 321.

450 Air Pollution Engineering 4 hours.
Environmental aspects of combustion processes, pollutant formation. Control of pollutants and particulates. Air quality control. Fundamentals of combustion. Same as CHE 450. Prerequisite(s): ME 321 or consent of the instructor.

454 Virtual Manufacturing Systems Design 4 hours.
Fundamentals of manufacturing and automation modeling using CAD/CAM and computer-integrated manufacturing methodologies; concepts of virtual manufacturing, industrial robots and automated factory models within virtual environments. Same as IE 464. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): ME 321 or consent of the instructor.

464 Virtual Manufacturing 3 OR 4 hours.
Virtual reality applications in manufacturing systems design, manufacturing applications of networked
virtual reality, virtual reality modeling of occupational safety engineering. 

Same as E 468. 3 undergraduate hours; 4 graduate hours.

Prerequisite(s): CS 107 or CS 108.

494 Special Topics in Mechanical Engineering 3 OR 4 hours. Particular topics vary from term to term depending on the interests of the students and the specialties of the instructor. 3 undergraduate hours. 4 graduate hours. May be repeated. Prerequisite(s): Consent of the instructor.

501 Advanced Thermodynamics 4 hours. Thermodynamic laws of closed and open systems; energy destruction; property relations, single phase systems, Gibbs-Duhem relations, multi-phase systems, equilibrium; engineering applications.

Prerequisite(s): ME 325.

502 Applied Stress Analysis II 4 hours. Concepts from theory of elasticity, stress raisers such as notches and holes, mechanical behavior of materials, including yielding and fractures, thick-walled cylinders and rotating disks, thermal stresses, and plastic behavior. Prerequisite(s): ME 401.


508 Engineering Acoustics 4 hours. Fundamentals of acoustic energy generation, radiation, and transmission (both aerodynamically and structurally). Theoretical, experimental, and numerical techniques. Applications spanning from 1-D plane waves to more complex 3-D phenomena, propagation, emission, and absorption of radiation.


535 Theory of Vibration II 4 hours. Harmonic vibrations; vibrations of a string; vibrations of a beam; vibrations of a membrane; periodic systems; forced waves; nonlinear vibrations. Same as ME 533. Prerequisite(s): ME 433 or ME 408 or the equivalent.

536 Chemically Reacting Flows 4 hours. Nonequilibrium states; chemical thermodynamics and kinetics. Multi-component continuum equations for flow of nonequilibrium fluids. Inversed nonequilibrium flows. Boundary layer flows with surface and gas-phase reactions. Frozen and equilibrium criteria. Waves in relaxing media. Prerequisite(s): ME 516; and ME 514 or ME 522.

540 Design, Modeling, and Fabrication of Microsystems 4 hours. MEMS design approach, materials and mechanical properties, scaling laws, transduction methods, microfabrication techniques, modeling and simulation strategies, designs, domain-specific details—structures, fluids, dissipation, and system issues. Prerequisite(s): Consent of the instructor.

541 Microelectronic Fabrication Techniques 4 hours. Current fabrication techniques of microelectronic technology; plasma and CVD processes; etching techniques; ion implantation; surface analytical methods. Same as ECE 541. Prerequisite(s): ECE 347 or ECE 449.

542 Advanced Computational Methods for Product and Process Design 4 hours. Deterministic and statistical methods for modeling and optimizing engineering systems, in the broad context of product design, manufacturing process development, and designing for life cycle...
issues. Same as IE 542.
Prerequisite(s): Programming language experience.

547 Advanced Concepts in Computer-Aided Engineering 4 hours.
Useful concepts in motion simulation of complex rigid multibody systems. Interactive computer solutions. Recursive formulation of kinematical and dynamical equations of open and constrained multibody systems. Prerequisite(s): ME 413 and ME 447.

548 Advanced Computer-Aided Manufacturing 4 hours.
Analysis and design of computer-integrated systems for process planning, production planning, and control of discrete part manufacturing activities. Prerequisite(s): Consent of the instructor.

569 Advanced Virtual Manufacturing 4 hours.
Manufacturing systems design optimization using virtual environments; optimization of manufacturing decision support using virtual reality interfaces, analysis and evaluation of virtual environments. Same as IE 569. Prerequisite(s): Consent of the instructor.

594 Current Topics in Mechanical Engineering 4 hours.
Particular topics vary from term to term depending on the interests of the students and the specialties of the instructor. May be repeated. Prerequisite(s): Consent of the instructor.

595 Seminar in Mechanical Engineering Research 1 hour.
Advanced in mechanical engineering research will be discussed in a seminar setting. Students will be expected to make presentations in various areas as well as invited faculty members. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Graduate standing in mechanical engineering.

596 Independent Study 1 TO 4 hours.
Individual study under close supervision of a faculty member. May be repeated to a maximum of 4 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

598 MS Thesis Research 0 TO 16 hours.
Individual research in specialized problems under close faculty supervision. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

599 PhD Thesis Research 0 TO 16 hours.
Individual research on specialized problems under close faculty supervision. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

Medical Biotechnology (MBT)

500 DNA and Proteins 3 hours.
DNA replication, transcription, translation, and posttranslational modifications; Genome structure, Viruses, Bioinformatics, and microarrays. Protein structure, Enzyme mechanisms, Biochemical pathways, and regulation of biochemical pathways. Recommended background: Basic undergraduate general and organic chemistry, biology, physics, and math.

501 Cell Biology and Human Physiology 3 hours.
Cellular organization and cell organelles, lipid membranes, the cytoskeleton, and cell interactions signaling and cycle control. Growth factors and neurochemistry. Mechanical and electrical phenomena, Synaptic transmission, Sensory and motor neurophysiology. Recommended background: Basic undergraduate general and organic chemistry, biology, physics, and math.

502 Immunotechnology, Microbiology, and Cellular Therapy 3 hours.
Covers antibody production principles, clinical uses of antibodies, fermentation and biomanagement and protein production principles, cellular and stem cell therapies, bioterrorism control, containment and eradication. Prerequisite(s): MBT 500 and MBT 501.

503 Pharmacology, Toxicology, and Clinical Trials 3 hours.

522 Applied Medical Biotechnology 2 hours.
The principles and methodologies used in commercial lab assays will be analyzed and their strengths and weaknesses discussed. An array of hospital/clinical techniques will be reviewed via lecture/demonstration in typical application venue. Prerequisite(s): MBT 500 and MBT 501.

523 Biotechnology Engineering 2 hours.
Engineering aspects of large-scale cell culture: methodologies, types of production equipment, process sensing and control, harvesting, separation and purification. Sterilization, aseptic processing, filling and finishing steps. GMP/GC, Field trips required. Prerequisite(s): Completion of the first year of the MS in Medical Biotechnology program.

591 Departmental Seminar in Medical Biotechnology 1 TO 4 hours.
Lecture series by invited speaker or advanced students with lectures on topics of current or developing interest in medical biotechnology. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Approval of the department.

595 Student Seminar in Medical Biotechnology 2 hours.
Students write and present literature research/review papers on topics directly related to medical biotechnology. Satisfactory/Unsatisfactory grading only. May be repeated. Extensive computer use required. Coupled with departmental seminar.

596 Independent Study in Medical Biotechnology 1 TO 4 hours.
Independent and individual study of a topic in medical biotechnology. Usually involves extensive literature research culminating in a review paper or hypothesis/conclusion argument paper. May be repeated to a maximum of 4 hours if topics vary. Students may register in more than one section per term. Prerequisite(s): Completion of the first year of the MS in Medical Biotechnology program, approval of the department, and approval of a faculty mentor. The student also should have completed core or elective courses in the degree sequence that introduce the topic of independent study or have verifiable outside knowledge.

597 Master’s Project Research 0 TO 16 hours.
A project-based internship at a biotechnology company or a research laboratory at the College of Medicine in Rockford. Students will gain on-the-job experience in designing and conducting experiments, evaluating results, and
reporting to supervisors. Satisfactory/Unsatisfactory grading only. May be repeated.

Prerequisite(s): Student should have approval of the graduate committee to commence research and the agreement of faculty and industrial mentors along with a written agreement for research activity from the host company.

598 Master’s Thesis Research 0 TO 16 hours. Master’s thesis research conducted at the College of Medicine in Rockford under faculty supervision. Satisfactory/Unsatisfactory grading only. May be repeated.

Prerequisite(s): Completion of the first year of the program and consent of the instructor.

Medical Education (MHPE)

433 Principles of Evidence-Based Healthcare 2 hours. Qualitative and quantitative assessment of human subject clinical research: locating, evaluating, comparing scientific papers as bases for healthcare education and practice. Same as HHS 433.

Prerequisite(s): Graduate or professional standing and approval of the department.

Same as BHS 433.

Prerequisite(s): Consent of the instructor.

450 Instruction and Assessment for Health Professionals 4 hours. Methods and issues of effective instruction and assessment in health professions education are presented, including how effective instruction and assessment support student learning and faculty decisions. Prerequisite(s): Consent of the instructor.

501 Current Issues in Health Professions Education 4 hours. Examines how historical, social, policy, and organizational factors influence education in the health professions. Prerequisite(s): Graduate or professional standing and consent of the instructor.

502 Instruction and Assessment for Health Professionals 4 hours. Methods and issues of effective instruction and assessment in health professions education are presented, including how effective instruction and assessment support student learning and faculty decisions. Prerequisite(s): Consent of the instructor.

503 Curriculum Planning and Program Evaluation for Health Professionals 4 hours. Methods and issues in planning and evaluating educational programs in the health professions are presented, including how institutional and social forces affect planning and evaluation. Prerequisite(s): Approval of the department.

504 Organization and Management of Health Professions Education Programs 4 hours. Problems, issues, and practices of leadership in health professions education. Students analyze their approaches to solving educational management problems, review pertinent models for organizational development in academic settings, develop an awareness of personal leadership styles, and consider strategies for managing selected educational problems.

512 Ethics in Clinical Research 1 hour. Survey of key ethical issues involved in conducting research with human subjects, including informed consent, confidentiality, access, and equity. Same as HPA 512. Extensive computer use required. Requires completion of an online course in human subjects research to be supplemented by classroom discussion of the topics raised in that course and others.

Prerequisite(s): Consent of the instructor.

494 Special Topics in Medical Humanities 1 TO 4 hours. Presents special topics in selected aspects of medical humanities for health professionals. May be repeated with approval. Students may register in more than one section per term. Approval to repeat course granted by the department.

Prerequisite(s): Approval of the department. Students must be enrolled in the Master of Science in Public Health program.

534 Research Design and Grant Writing 2 hours. Introduction to the skills necessary to plan a research project and write a research grant proposal using a systematic approach. Same as HPS 534. Previously listed as HPE 451.

Prerequisite(s): Graduate or professional standing and approval of the department.

535 Translating Research into Practice 3 hours. Current theory and practical reality related to the adoption and use of new scientific findings in patient care. The influence of research on public policy. Same as HPA 535. Extensive computer use required.

Prerequisite(s): Graduate or professional standing and approval of the department.

596 Independent Study 1 TO 4 hours. Selected problems or issues in health professions education are investigated under the direction of a faculty member of the student’s choice.

597 Project Research 0 TO 6 hours. Selected problems or issues in health professions education are investigated under the direction of a faculty member of the student’s choice.

598 Thesis Research 0 TO 16 hours. Selected problems or issues in health professions education are investigated under the direction of a committee of the student’s choice.

598 Thesis Research 0 TO 16 hours. Selected problems or issues in health professions education are investigated under the direction of a committee of the student’s choice.

Medical Humanities (MHUM)

494 Special Topics in Medical Humanities 1 TO 4 hours. Presents special topics in selected aspects of medical humanities for health professionals. May be repeated with approval. Students may register in more than one section per term. Approval to repeat course granted by the department.

Prerequisite(s): Prerequisites may vary by section, depending upon topic.

496 Independent Study 1 TO 4 hours. Students may engage with any of the faculty to do independent study on some aspect of communication, history, literature, philosophy, or ethics as it relates to healthcare.

Medical Laboratory Sciences (MLS)

527 Clinical Laboratory Method Evaluation 3 hours. Development and comparison of clinical laboratory methods: also statistical methods of evaluating sensitivity, specificity, precision, accuracy, predictive value, and cost effectiveness. Same as PATH 527.

Prerequisite(s): Consent of the instructor.

560 Blood Groups: Systems and Serology 3 hours. Focus on human blood group systems; biochemistry, inheritance, serologic activity, clinical significance, and disease association. Fundamentals of immunology, molecular biology, and genetics. Extensive computer use required. Taught only online. A UIC netid is required.

Prerequisite(s): General knowledge of immunohematology and consent of the instructor.

561 Clinical Immunohematology and Transfusion 3 hours. Transfusion medicine practice and therapy. The human circulatory system, effects of hemorrhagic shock, component therapy, hemopoeitic transplantation, complications of transfusion, standards, regulations, and compliance. Extensive computer use required. Taught only online. A UIC netid is required.

Prerequisite(s): MLS 560 and consent of the instructor.

562 Principles and Methods in Immunohematology and Transfusion 3 hours. Theoretical and practical concepts used in blood procurement and product manufacturing. Blood donor suitability, collection, testing, component preparation, labeling, storage, quality management systems. Extensive computer use required. Lecture-discussion taught only online. A UIC netid is required. Students who require a clinical rotation component register for 4 hours and participate in both laboratory and lecture-discussion; all others register for 3 hours and participate in lecture-discussion only.
Prerequisite(s): Credit or concurrent registration in MLS 560 and consent of the instructor.
563 Principles and Methods in Immunohematology II 0 TO 4 hours. Theoretical and practical concepts used in the organization and management of blood centers and transfusion services. Introduction to laboratory financial management, cost accounting, coding, staffing, ethics, and legal issues. Extensive computer use required. Lecture-discussion taught only online. A UIC netid is required. Students who require a clinical rotation component register for 4 hours and participate in both clinical practice and lecture-discussion; all other register for 3 hours and participate in lecture-discussion only. Prerequisite(s): MLS 562 and credit or concurrent registration in MLS 561 and consent of the instructor.

564 Current Trends in Immunohematology 1 hour. Advanced studies of current trends; assigned topics in current literature read, evaluated, and discussed. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 2 hours. Extensive computer use required. Taught only online. A UIC netid is required. Prerequisite(s): General knowledge of immunohematology and consent of the instructor.

594 Special Topics in Medical Laboratory Sciences 1 TO 3 hours. Current theories and methods in medical laboratory sciences. Seminar, literature search, directed study, and discussion format. Topic areas include clinical chemistry, clinical microbiology, clinical immunology, immunohematology, and hematology. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

596 Independent Study 1 TO 4 hours. For graduate students who wish to pursue independent study not related to their project/thesis research. May be repeated. Students may register in more than one section per term.

597 Project Research in Medical Laboratory Sciences 0 TO 5 hours. Independent investigation that endorses the responsibilities of professionals to contribute to their field. Students investigate a topic/problem in their field, write an article, and deliver an oral presentation. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

598 Research in Medical Laboratory Sciences 0 TO 16 hours. Independent research in one area of medical laboratory sciences directed by a faculty member. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Foundation courses in research methods such as AHS 510, and statistics, or consent of the instructor.

Medical-Surgical Nursing (NUMS)

530 Nursing Management of Acutely Ill Patients I 3 hours. Advanced practice in medical-surgical nursing. Emphasizes pathophysiology, etiologies, clinical evaluation, and management of adults with common health problems in acute care. Prerequisite(s): Credit or concurrent registration in NUSC 530 and credit or concurrent registration in NUSC 531 and credit or concurrent registration in NUSC 552.

532 Nursing Management of Acutely Ill Patients II 3 hours. Concentration on advanced medical-surgical nursing caring pathophysiology, etiologies, clinical evaluation, and management of acutely ill adults. Prerequisite(s): NUMS 530. Requires concurrent registration in NUSC 553.

533 Acute Care Clinical Nurse Specialist Practicum I 3 TO 5 hours. First in a series of three practicum courses emphasizing the core competencies of the acute care clinical nurse specialist. May be repeated. Prerequisite(s): NUMS 530.

534 Acute Care Nurse Practitioner Practicum I 4 TO 6 hours. Practicum emphasizing the clinical evaluation, symptom management, education, and case management of adults with common health problems in acute care. May be repeated. Prerequisite(s): Credit or concurrent registration in NUMS 530.

535 Acute Care Clinical Nurse Specialist Practicum II 3 TO 5 hours. Second in a series of three practicum courses emphasizing the core competencies of the acute care clinical nurse specialist. May be repeated. Prerequisite(s): NUMS 533.

536 Acute Care Nurse Practitioner Practicum II 4 TO 6 hours. Practicum emphasizing the clinical evaluation, symptom management, education and case management of acutely ill adults. May be repeated. Prerequisite(s): Credit or concurrent registration in NUMS 532 and credit or concurrent registration in NUMS 534.

537 Acute Care Clinical Nurse Specialist Practicum III 3 TO 6 hours. Third in a series of three practicum courses emphasizing the core competencies of the acute care clinical nurse specialist. May be repeated. Prerequisite(s): NUMS 535.

538 Acute Care Nurse Practitioner Practicum III 4 TO 6 hours. Practicum emphasizing the comprehensive clinical evaluation and management of adults with complex health problems in acute care. May be repeated. Prerequisite(s): NUMS 536.

540 Pathophysiological Basis of Disease 3 hours. Provides a foundation for clinical therapeutics through an understanding of mechanisms of disease. Basic concepts of pathological processes at the cellular and molecular and systems level are examined with application of clinical disease in adults. Prerequisite(s): NUSC 530; or the equivalent or consent of the instructor.

544 Management of Adult Health Problems Practicum 4 hours. Preparation for advanced practice evaluation and management of adult, episodic, and chronic care of adult health problems in the primary care setting. Prerequisite(s): NUSC 530 and NUMS 530 and NUMS 560 and NUMS 540 and NUSC 532 and NUMS 534.

545 Biometrics and Applied Statistics 4 hours. Application of recent procedures in statistical analysis. Emphasis is on design of experiments and regression analysis; use of BMDP software on Mainframe/VAX computers. Prerequisite(s): NUSC 550 or the equivalent or consent of the instructor.

546 Multivariate Analysis for Health Sciences 3 hours. Practical applications of multivariate techniques in health sciences. Minimal involvement in mathematics provided; one has basic understanding of multivariate analysis. Prerequisite(s): NUMS 545.

548 Management of Chronic and Complex Adult Health Problems Practicum 4 hours. Preparation for advanced practice evaluation and management of chronic and complex care of adult health problems. Prerequisite(s): NUMS 544.

549 Laboratory Techniques for Nursing Research 3 hours. Techniques in laboratory research for nursing science. Basic physiological and biochemical methods and equipment, animal models, human subjects, safe laboratory practice, development from conceptualization through execution. Animals used in instruction. Prerequisite(s): NUSC 530.

550 Common Geriatric Health Problems 3 hours. Advanced practice in geriatric nursing. Emphasizes pathophysiology, etiologies, clinical evaluation, and management of common and uncomplicated problems for older adults. Prerequisite(s): NUSC 530 and NUSC 551 and NUSC 532.

552 Management of Complex Geriatric Health Problems 3 hours. Advanced practice in geriatric nursing. Emphasizes pathophysiology, etiologies, clinical evaluation, and management of complex health problems in older adults. Prerequisite(s): Credit or concurrent registration in NUMS 553 or credit or concurrent registration in NUMS 554.

553 GCNS Practicum I: Common Geriatric Health Problems 3 TO 5 hours. First in a series of three practicum courses emphasizing clinical practice, education, research, and consultation related to care of older adults with common health problems. May be repeated. Prerequisite(s): NUMS 550.
554  GNP Practicum I: Management of Common Health Problems  4 hours.  Practicum emphasizing clinical evaluation, health promotion, differential diagnosis, symptom management, education, and case management of older adults with common uncomplicated health problems.  Prerequisite(s): NUMS 550.

555  GCNS Practicum II: Complex Geriatric Health Problems  0 TO 5 hours.  Second in a series of three practicum courses emphasizing clinical practice, education, research, and consultation related to the care of older adults with acute and chronic conditions.  Students register for 3 to 5 credit hours.  May be repeated.  Prerequisite(s): NUMS 550 and NUMS 553.

556  GNP Practicum II: Older Adults with Complex Health Problems  4 hours.  Practicum emphasizing clinical evaluation, differential diagnosis, symptom management, education, and case management of older adults with complex health problems.  Prerequisite(s): NUMS 544 or NUMS 554.

557  GCNS Practicum III: Integrative Practice  3 TO 6 hours.  Third in a series of three practicum courses emphasizing clinical practice, education, research, and consultation related to care of older adults.  May be repeated.  Prerequisite(s): NUMS 555.

558  GNP Practicum III: Integrative Practice  4 hours.  Practicum emphasizing clinical evaluation, health promotion, differential diagnosis, and comprehensive case management of older adults with common and complicated health problems.  Prerequisite(s): NUMS 556.

560  Primary Care of Adults  3 hours.  Focuses on wellness care as well as acute, episodic, and chronic care of older adolescent and adult health problems.  Prerequisite(s): Credit or concurrent registration in NUSC 530 and credit or concurrent registration in NUSC 531 and credit or concurrent registration in NUSC 532 and credit or concurrent registration in NUMS 540.

562  Quality of Life Issues in Research and Clinical Practice  3 hours.  Quality of life: construct definition, ethical issues in clinical practice of nurses and other health professionals, measurement and research regarding various illness and age groups.  Prerequisite(s): Consent of the instructor.

570  Common Adult and Geriatric Health Problems  3 hours.  Advanced practice in adult and geriatric.  Emphasizes clinical evaluation and management of common and uncomplicated problems in adults and older adults.  Prerequisite(s): Credit or concurrent registration in NUMS 560.

Medicinal Chemistry (MDCH)

412  Pharmaceutical Applications of Genomics and Bioinformatics  2 hours.  Introduction to genomics and bioinformatics for advanced pharmacy students.  Principles of gene expression, DNA sequencing in bacterial and human genomes, with emphasis on diagnostic and therapeutic applications.  Same as PMMP 412.  Prerequisite(s): PHAR 331 or consent of the instructor.  For graduate students: one or two semesters of basic molecular biology and/or biochemistry with a grade of B or better.

507  Drug Discovery, Design, and Development  3 hours.  Overview of drug development process from target identification and screening through clinical trials and FDA evaluation.  Same as BPS 507 and PMPG 507.

516  Structure Elucidation of Natural Products II  3 hours.  Employing modern computational methods in the structure elucidation and demultiplication of a natural product by using real-life examples.  Same as BPS 516.  May be repeated.  Prerequisite(s): PMPG 515.

560  Organic Medicinal Chemistry I  3 hours.  Organic reactions are discussed in terms of their mechanisms and utility in the field of medicinal chemistry, particularly in the synthesis of medicinal agents.  Prerequisite(s): One year of organic chemistry with laboratory.

561  Principles of Medicinal Chemistry  4 hours.  Concerns basic chemical and physical principles necessary for an understanding of drug action.  These principles are applied in the design and discovery of medicinal agents.  Prerequisite(s): One year each of undergraduate organic chemistry and biochemistry.  Requires concurrent registration in MDCH 592.

562  Spectroscopy in Medicinal Chemistry  3 hours.  The fundamental principles used to determine structure and conformation in molecules, emphasizing spectroscopic methods useful in solving structural problems and in analyzing dynamic biological processes.  Prerequisite(s): One year of physical chemistry or consent of the instructor.

564  Physical Medicinal Chemistry  3 hours.  Focuses on kinetics and thermodynamics in biological systems.  Applications to drug action will be emphasized.  Prerequisite(s): One year of physical chemistry.

571  Organic Medicinal Chemistry II  3 hours.  Heterocyclic chemistry foundation for bio-organic mechanisms of enzyme reactions.  Enzymes involved in biosynthesis and metabolism, particularly those that are targets for drug action or involved in drug metabolism.  Prerequisite(s): MDCH 460 and MDCH 561.

572  Drug Design  2 hours.  Quantitative structure-activity relationships, computer graphics, molecular modeling and simulation, and chemometrics as applied to drug design and discovery.  Prerequisite(s): MDCH 561.

573  Principles of Stereochemistry  1 hour.  Principles of molecular structure and stereochemistry for medicinal and natural products chemists focusing on stereochemical structures rather than synthesis.  Prerequisite(s): Consent of the instructor.

592  Research Techniques in Medicinal Chemistry  2 hours.  Provides an initial biweekly informal seminar series with program faculty presenting a discussion of ongoing research in her/his laboratory.  May be repeated to a maximum of 6 hours.  Lectures/discussions will be given for the first part of the semester and an intensive lab experience takes place for the remainder of the semester.  To be taken fall and spring semesters of the first year of graduate study.

594  Special Topics in Medicinal Chemistry  2 TO 4 hours.  An advanced course covering selected topics which may include new spectroscopic, theoretical, chemical, and synthetic approaches to biomolecular structure and function.  May be repeated to a maximum of 4 hours.  Prerequisite(s): MDCH 561 and MDCH 562 and one year of physical chemistry and one semester of biochemistry consent of the instructor.

595  Seminar in Medicinal Chemistry  1 hour.  Presentation on a current research topic.  Satisfactory/Unsatisfactory grading only.

598  Master’s Research in Medicinal Chemistry  0 TO 16 hours.  Thesis research to fulfill master’s degree requirements.  Satisfactory/Unsatisfactory grading only.

599  Doctoral Research in Medicinal Chemistry  0 TO 16 hours.  Research for doctoral students.  Satisfactory/Unsatisfactory grading only.

Medicinal Chemistry and Pharmacognosy (PMMP)

412  Pharmaceutical Applications of Genomics and Bioinformatics  2 hours.  Introduction to genomics and bioinformatics for advanced pharmacy students.  Principles of gene expression, DNA sequencing in bacterial and human genomes, with emphasis on diagnostic and therapeutic applications.  Same as MDCH 412.  Prerequisite(s): PHAR 331 or consent of the instructor.  For graduate students: one or two semesters of basic molecular biology and/or
biochemistry with a grade of B or better.

460 Organic Medicinal Chemistry I 3 hours. Organic reactions in terms of their mechanisms and utility in the field of medicinal chemistry, particularly in the synthesis of medicinal agents. Upper-division elective taught simultaneously with MDCM 565; however, does not meet the prerequisite requirement of the medicinal chemistry graduate program. Prerequisite(s): One year of organic chemistry with laboratory.

Microbiology and Immunology (MIM)

425 Fundamentals of Immunology and Microbiology 3 hours. Mechanisms of host defense; antigens, immunoglobulins and their reactions; antibody synthesis, regulation and the cell-mediated immune response; bacterial and viral structure and function; mechanisms of pathogenesis. Prerequisite(s): Consent of the instructor or registration in the College of Medicine.

426 Microorganisms as Agents of Human Disease 3 hours. Fundamental aspects of bacterial, fungal, and viral pathogenesis; therapy, control, and prevention of infectious diseases. Prerequisite(s): Consent of the instructor.

455 Microbiology Laboratory Rotation 3 hours. Course in basic and applied methods essential for the study of nucleic acids, immunoglobulins, gene transfer, cell fusion, virological and immunological methods. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 6 hours. Students may register in more than one section per term. Prerequisite(s): Graduate standing.

513 Structure of Biopolymers 3 hours. Explores the relationship between structural stability, kinetic properties, and function of biopolymers, with particular emphasis on proteins and nucleic acids. Same as ECOM 513 and PMPG 513. Prerequisite(s): GCLS 501 and one year of physical chemistry or consent of the instructor.

551 Advanced Immunology 2 hours. Concepts in immunology, immunogenetics, molecular immunology, cellular immunology, and immunopathology at the intermediate level. Prerequisite(s): GCLS 501, GCLS 502, GCLS 503, and GCLS 510 or consent of the instructor.

553 Molecular Biology of Viruses 2 hours. Animal viruses including basic structure and viral nucleic acids; emphasizes molecular organization of viral genomes; cellular and molecular events during virus replication and viral transformation. Prerequisite(s): GCLS 501, GCLS 502, GCLS 503, and GCLS 511 or consent of the instructor.

554 Molecular Aspects of Microbiology 3 hours. Basic concepts of prokaryotic and eukaryotic genetics; gene structure and function; gene expression; molecular aspects of mutation and recombination; chromosome structure and function. Prerequisite(s): BCHE 460.

560 Microbial Pathogenesis 2 hours. Genetics, molecular biology, and physiology of pathogenic bacteria, and host-pathogen interactions. Credit is not given for MIM 560 if the student has credit for MIM 552.

585 Cell Biology 4 hours. Functional and structural organization of the cell with emphasis on the cellular basis of physiological activity. Same as ANAT 585 and PHRB 585.

594 Special Topics in Microbiology, Immunology, and Virology 1 TO 2 hours. Advanced topics are covered in depth. Topics vary yearly.

595 Seminar in Microbiology and Immunology 1 hour. Topics of current research interest are presented by guest lecturers from outside institutions in areas of molecular biology, bacteriology, virology, and immunology. Satisfactory/Unsatisfactory grading only.

598 Research in Molecular Biology and Immunology 0 TO 16 hours. MS thesis research on problems in microbiology, immunology, virology, and molecular biology. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Graduate standing in microbiology and immunology.

599 Research in Molecular Biology and Immunology 0 TO 16 hours. PhD thesis research on problems in microbiology, immunology, virology, and molecular biology. Satisfactory/Unsatisfactory grading only.

Movement Sciences (MVSC)

400 Business Principles for the Fitness Professional 3 hours. Provides a survey of basic requisite business principles and their application of these principles for students pursuing careers in corporate and community fitness. Previously listed as KINE 406. Prerequisite(s): MVSC 100, and junior standing or above.

403 Marketing and Facility Management in Exercise and Wellness 3 hours. Introduction to management and marketing principles as they apply to promoting organizations. Theory and practice of managing exercise and wellness facilities. Previously listed as KINE 403. Prerequisite(s): Senior standing or above.

410 Human Aging and Physical Performance 3 hours. Introduction to human aging focused on the impact of aging to physical structure and function. Investigate research-based evidence of the role of activity and exercise in altering physiology; enhance quality of life; and prevent disability. Previously listed as KINE 404. Prerequisite(s): MVSC 252, and junior standing or above.

417 Aging and Physical Activity 3 hours. Linking the effects of aging on motor performance to diagnostic procedures, prescriptive exercise, and instructional processes. Previously listed as KINE 428. Prerequisite(s): MVSC 160 and MVSC 252 and junior standing or above; or consent of the instructor.
463 Biomechanical Analysis of Sport Injuries 3 hours. The biomechanical principles related to sport injuries. Previously listed as KINE 429. Prerequisite(s): MVSC 360.

472 Movement Neuroscience 3 hours. Overview of the human nervous system. Emphasis is placed on the basic functional anatomical and physiological concepts relevant to the organization and execution of movement. Previously listed as KINE 472. Prerequisite(s): MVSC 251 and MVSC 252 and MVSC 352 and MVSC 372, and junior standing or above; or consent of the instructor.

481 Workshop in Movement Sciences 1 TO 3 hours. Intensified study of selected activities, topics, processes, or areas in movement sciences. Topic will be announced. May be repeated if topics vary. Students may register in more than one section per term. Previously listed as KINE 481.

489 Seminars in Movement Sciences 1 TO 3 hours. Weekly seminars devoted to research in movement sciences and related fields, followed by a one-hour discussion. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Junior standing or above.

490 Educational Practice with Seminar I 6 hours. The first half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Previously listed as KINE 490. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, and approval of the department.

491 Educational Practice with Seminar II 6 hours. The second half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Previously listed as KINE 491. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, and approval of the department.

527 Molecular Biology of Muscle Genes and Proteins 2 hours. Regulator mechanisms which govern gene expression relevant to the function of skeletal and cardiac muscle. Previously listed as KINE 429. Prerequisite(s): BIOS 524 and BIOS 525, and consent of instructor.

528 Cellular Response to Exercise 3 hours. Examines cellular structure/function relationships important for acute and chronic adaptations to exercise. Emphasis on understanding cellular basis of physiological response to exercise. Previously listed as KINE 428. Prerequisite(s): BIOS 422, consent of the instructor.

539 Exercise Genomics 3 hours. Molecular mechanisms by which cells adapt to increases and decreases in physical activity. Emphasis on understanding genomic, transcriptional, translational and post translational sites of control. Previously listed as KINE 529. Prerequisite(s): BIOS 460, consent of the instructor.

545 Advanced Exercise Programming and Assessment 3 hours. Emphasizes on current recommendations for exercise prescription and assessment methods for adult populations. Diagnostic and prescriptive procedures will be delineated. Previously listed as KINE 420. Prerequisite(s): MVSC 452, consent of the instructor.

570 Motor Control 4 hours. Neurophysiological mechanisms that underlie the control and regulation of movement. Previously listed as KINE 470. Prerequisite(s): Consent of the instructor.

571 Biomechanics of Normal and Abnormal Movement 3 hours. Principles of statics and dynamics exemplified by human movements. Examination of muscle mechanics, joint forces, stability, redundancy and intersegmental interactions in multiple movements. Same as PT 571. Prerequisite(s): Consent of the instructor.

572 Psychology of Motor Control and Learning 3 hours. Advanced principles of the control and acquisition of complex, voluntary skills. Same as PT 572. Previously listed as KINE 572. Prerequisite(s): MVSC 372, or consent of the instructor.

573 Advanced Topics in Motor Control and Learning 3 hours. Contemporary theories and models in motor control and learning. Previously listed as KINE 573.

574 Instrumentation for Motor Control 3 hours. Introduction to oscilloscopes, amplifiers, filters, and transducers. Origin and processing of electromyograms. Motion capture and processing techniques. Same as PT 574. Prerequisite(s): MVSC 571 or PT 571.

581 Exercise Leadership Field Instruction 3 hours. Students are assigned to fitness classes where, under the supervision of a field instructor, they prepare lessons, give instruction, and administer written and physical fitness exams. Previously listed as KINE 520. Prerequisite(s): MVSC 543.

590 Seminar in Movement Sciences 1 hour. Final experience for 40-hour MS student. Students must demonstrate ability to synthesize material obtained in program and relate it to their area of concentration. Previously listed as KINE 580. Prerequisite(s): 32 semester hours of graduate credit and consent of major advisor.

592 Clinical Rotations in Exercise Physiology 1 TO 4 hours. The clinical rotation serves as an avenue to introduce students to various experiences in clinical exercise physiology as a precursor to a clinical internship. Fieldwork is required. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 4 hours. Prerequisite(s): Approval of the department.
593 Internship in Movement Sciences 1 TO 12 hours. Supervised internship in a laboratory or field setting. A written report is required. Normal/open only to candidates in the Applied Exercise Physiology MS area of concentration. Satisfactory/ Unsatisfactory grading only. May be repeated to a maximum of 12 hours. Credit is not given for MVS 593 if the student has credit in MVSC 597 or MVSC 598. Fieldwork required. Prerequisite(s): Students must pass the comprehensive examination before placement at an internship site.

594 Selected Topics in Movement Sciences 1 TO 3 hours. Topic to be announced. Analysis of selected problems and concerns in specified concentrations. Topics vary from semester to semester, depending on the needs and interests of the graduate students. May be repeated if topics vary. Previously listed as KINE 594. Prerequisite(s): Consent of the instructor.

596 Independent Research in Movement Sciences 1 TO 4 hours. Topics vary. Students design, implement, and analyze a research problem in their individual area of concentration under the supervision of a faculty member. Previously listed as KINE 596. Prerequisite(s): MVSC 500.

597 Project in Movement Sciences 0 TO 8 hours. Supervised practicum in laboratory or field setting in which recent research findings are applied, tested, and evaluated. Satisfactory/Unsatisfactory grading only. May be repeated. Previously listed as KINE 597. Prerequisite(s): MVSC 500 and consent of the advisor and director of graduate studies.

598 Master’s Thesis Research 0 TO 16 hours. Thesis work under the supervision of a graduate adviser. Satisfactory/Unsatisfactory grading only. May be repeated. Previously listed as KINE 598. Prerequisite(s): MVSC 500 and consent of the advisor and director of graduate studies.

599 PhD Thesis Research 0 TO 16 hours. Independent research by the student under the supervision of the thesis adviser. Satisfactory/Unsatisfactory grading only. May be repeated. Previously listed as KINE 599. Prerequisite(s): Consent of the instructor.

Neuroscience (NEUS) 403 Human Neuroanatomy 3 hours. Morphological organization of the nervous system. Functional correlations of neural structures. Same as ANAT 403. Meets eight weeks of the semester. Prerequisite(s): Graduate standing and consent of the instructor. Must be in a degree program.

501 Foundations of Neuroscience I 2 hours. Provide a core understanding of modern neuroscience and will be taught by faculty from multiple units. Prerequisite(s): Credit or concurrent registration in GCLS 500.

502 Foundations of Neuroscience II 2 hours. A core understanding of modern neuroscience. Will be taught by faculty from multiple units. Continuation of NEUS 501. Prerequisite(s): NEUS 501 and credit or concurrent registration in ANAT 403.

506 Research Rotations in Neuroscience 3 TO 6 hours. Research rotation course in which first-year students from the Neuroscience program will undertake research projects in laboratories affiliated with this program. May be repeated. Prerequisite(s): Open only to PhD degree students.

511 Biomedical Neuroscience I: Molecular Biology of Synapses 2 hours. Molecular mechanisms of synaptic transmission. Information on the principal neurotransmitter systems, structure of ionotropic and metabotropic receptors, and their signal transduction mechanisms. Prerequisite(s): NEUS 501, NEUS 502.

512 Biomedical Neuroscience II: Aspects of Brain Function in Health and Disease 2 hours. An integrated view of brain function in health and disease: the anatomical and functional pathophysiological aspects underpinning major neurological and psychiatric disorders. Prerequisite(s): NEUS 501, or consent of the instructor.

561 Current Topics in Visual Neuroscience 2 hours. Discussion of current research and theoretical issues in visual neuroscience by staff, students, and guest lecturers. May be repeated. Prerequisite(s): Consent of the instructor.

582 Methods in Modern Neuroscience 2 hours. Underlying principles and applications of techniques used to analyze nervous system organization and function. Behavioral, electrophysiological, anatomical, and biochemical approaches are considered. Same as BIOS 582. Animals used in instruction.

598 Human Neuroscience: Functional Magnetic Resonance Imaging 3 hours. Lectures and demonstrations present the principles of magnetic resonance imaging for understanding cognitive, sensory, and motor function of the human brain in health and disease. Extensive computer use required. Laboratory work required. Prerequisite(s): Consent of the instructor.

595 Seminar in Neuroscience 1 hour. Oral presentations are made by students each session on timely journal articles, followed by in-depth discussions of the reported research. Presentation of research by invited lecturers. Satisfactory/Unsatisfactory grading only. May be repeated.

596 Independent Study 1 TO 4 hours. Independent study under the direction of a faculty member. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

598 Master’s Thesis Research in Neuroscience 0 TO 16 hours. Thesis research under the direction of a faculty member. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): NEUS 501 and NEUS 502 and NEUS 506; successful completion of first-year core courses; and consent of the instructor. Open only to Master’s degree students in Neuroscience.

599 Doctoral Research in Neuroscience 0 TO 16 hours. Independent research directed by a faculty member. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): NEUS 501 and NEUS 502 and NEUS 506; successful completion of first-year core courses; and consent of the instructor. Open only to PhD degree students in neuroscience.
Nursing Sciences (NUSC)

420 Pathophysiology and Pharmacotherapeutics I 3 hours.
First of two courses which provide an understanding of responses to disease and pharmaceutical treatments. Included are the therapeutic and toxic effects for major drug classes and basic microbiology principles. Prerequisite(s): MVSC 251 and NUSC 222 and graduate standing. Must enroll concurrently in NUSC 421.

421 Integrated Healthcare: Concepts and Skills 8 hours.
This course will provide the basis for understanding fundamental concepts to the practice of nursing across the life span. Theoretical concepts will be integrated with skills essential to practice. Prerequisite(s): Graduate standing. Must enroll concurrently in NUSC 420.

422 Integrated Healthcare: Community 2 hours.
Theories of community assessment, disease prevention, and health behavior are applied to promotion of health for communities and vulnerable populations. Understanding of systems and collaboration with the interdisciplinary team are emphasized. Prerequisite(s): NUSC 420 and NUSC 421 and graduate standing.

423 Pathophysiology and Pharmacotherapeutics II 4 hours.
Second of two courses which provide an understanding of responses to disease and pharmaceutical treatments. Included are the therapeutic and toxic effects for major drug classes and basic microbiology principles. Prerequisite(s): Credit or concurrent registration in NUSC 420.

424 Integrated Healthcare: Adult/Older Adult 4 hours.
This course focuses on critical evaluation/management of common/complex problems in adults and older adults. Emphasizes pathophysiology and management strategies in context of culture and ethnicity. Prerequisite(s): NUSC 420 and NUSC 421 and graduate standing.

425 Integrated Healthcare: Clinical Practice I 7 hours.
Provides students with experiences across all levels of prevention. Focus is on planning and implementing care for adults and older adults — individuals and populations. Students experience the systems of care from acute care to community. Prerequisite(s): NUSC 420 and NUSC 421 and graduate standing.

426 Cultural Fluency and Communication Skills 2 hours.
Course provides a foundation of communication skills, teaching, and learning theory, and cultural competence for provision of nursing care. Prerequisite(s): NUSC 420 and NUSC 421 and graduate standing.

427 Integrated Healthcare: Clinical Practice II 8 hours.
Provide students with experiences across all levels of prevention. Focus is on planning and implementing care for women, children, and the mentally ill in a variety of settings. Students experience the systems of care from acute care to community. Prerequisite(s): NUSC 420 and NUSC 421 and graduate standing.

Care for women throughout the life span, including pregnancy, birth, the postpartum and interconceptional periods, and throughout the aging process. Prerequisite(s): NUSC 420 and NUSC 421 and graduate standing.

429 Integrated Healthcare: Clinical Synthesis 7 hours.
Focus is on synthesis of nursing knowledge and skills and on implementation of leadership and management skills, including organizing care and delegation, in the provision of care. Clinical experiences occur in their area of concentration. Prerequisite(s): NUSC 420 and NUSC 421 and graduate standing.

430 Integrated Healthcare: Mental Health 2 hours.
Application and integration of biopsychosocial concepts and principles to the mental healthcare of individuals and groups across the continuum of care, including health promotion and illness prevention, maintenance, and rehabilitation. Prerequisite(s): NUSC 420 and NUSC 421 and graduate standing.

432 Bioethics 2 hours.
Examine ethical decision-making models as applied to nursing. Use ethics committees, resolution of conflict around ethical dilemmas, impact of cultural/ethnic influences on ethical decision making and nursing’s role as patient advocate. Prerequisite(s): NUSC 420 and NUSC 421 and graduate standing.

434 Leadership in Professional Practice 3 hours.
Theories of leadership/management are analyzed in relationship to the new healthcare delivery system, nursing role, evidence-based practice, future trends, and the professional education continuum. Prerequisite(s): NUSC 420 and NUSC 421 and graduate standing.

438 Infant Feeding: Historical, Societal, and Health Policy Issues 3 hours.
Examines infant feeding practices from historical, contemporary societal, and political dimensions. The importance of infant feeding in developing countries as well as legislation regarding infant feeding are also examined. Prerequisite(s): Consent of the instructor.

440 Wholistic Health: Use of Self 2 hours.
Comprehensive mind, body, and spiritual healthcare. Spiritual assessment of self, individuals, and families. Self as a therapeutic agent/health provider for wholistic healthcare. Prerequisite(s): Graduate standing, or senior standing and consent of the instructor.

441 Wholistic Health: Community Focus 2 hours.
Community and congregational assessment. Health beliefs and practices of faith communities and their impact on healthcare services, communities, and systems to foster planned change. Prerequisite(s): Graduate standing, or senior standing and consent of the instructor.

450 Women and Mental Health Nursing 3 hours.
Theories of female psychology; women’s daily lives and mental health; gender differences in mental illness; strategies for improving women’s mental health. Same as WGS 450 and NUWH 450. Prerequisite(s): Consent of the instructor. Students enrolled in the College of Liberal Arts and Sciences must have credit in PSQH 100 and either PSQH 270 or PSQH 315 or GWS 315.

455 Women’s Health: A Primary Healthcare Approach 3 hours.
Health promotion and disease prevention in women’s health. Includes community experience with community women. Primary healthcare approaches examined. Same as CHSC 456 and NUWH 455. Prerequisite(s): Consent of the instructor.

460 Individualized Internship 1 TO 5 hours.
Intensive internship experience will consist of a practicum that will develop skills, competencies, and knowledge in a focused healthcare delivery setting. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

494 Special Topics 1 TO 3 hours.
Discusses selected topics of current interest. Offered according to sufficient student demand and instructor availability. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

499 Urbana Nursing Registration 0 TO 16 hours.
Special course created to accommodate College of Nursing students in Urbana. Represents UIC registration for undergraduate and graduate nursing students. Satisfactory/Unsatisfactory grading only. No graduation credit.

500 Introduction to the Clinical Nurse Specialist Role 1 hour.
Models and role competencies of the clinical nurse specialist. Prerequisite(s): NUSC 527.

505 Philosophy of Science for Health Research 3 hours.
Traces the development of scientific reasoning and exploration from Aristotle to the present, focusing on...
Course Descriptions

Nursing Sciences (NUSC)

the nature of knowledge and role of truth for health research.
**Prerequisite(s):** Graduate-level research course or consent of the instructor.

506 Theory and Theory Development for Nursing Research 3 hours.
Methods of theory development and critical analysis of selected biological, behavioral, health science, and grand nursing theories which form the basis of nursing science are examined. **Prerequisite(s):** NUSC 505.

511 Advanced Research Design 4 hours.
In-depth analysis of research design, including such areas as design appropriateness and validity, sampling, research ethics, and interpretation. Application of the content to nursing and related fields. **Prerequisite(s):** Credit or concurrent registration in NUSC 505; and graduate-level statistics or consent of the instructor.

515 Measurement in Health Research 4 hours.
Qualitative and quantitative measurement theories; assessment of reliability, validity, and data quality. Critical analysis of measurement issues across the continuum of measures in health research. **Prerequisite(s):** Credit or concurrent registration in NUSC 506 and NUSC 511 or consent of the instructor and credit or concurrent registration in the second course in graduate-level statistics series.

517 Advanced Research Practicum 1 TO 4 hours.
An intensive guided research practicum in design, data collection, psychometric analysis, or specific analytic technique relevant to the student’s research specialization. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 6 hours. Must be repeated for a minimum of 3 hours of credit. **Prerequisite(s):** NUSC 515 and two advanced statistics courses.

520 Dying, Loss, and Grief 3 hours.
Analysis of social, cultural, and psychological aspects of human grief, loss/death within families and professional caregivers surrounding palliative and end-of-life care.

522 Palliative Management of Pain and Common Symptoms 3 hours.
Evidence-based of biobehavioral strategies for palliative management of pain and common symptoms in life-limiting and chronic illness across the lifespan. **Prerequisite(s):** Consent of the instructor.

524 Sociocultural and Ethical Issues in Palliative Care 3 hours.
Using an ethics theoretical framework, this course explores social, cultural, and political factors that influence palliative care for clients and families across the life span. **Prerequisite(s):** Consent of the instructor.

525 Intermediate Statistics 3 hours.
Application and interpretation of statistical techniques appropriate for health sciences. Prepares students to think quantitatively, use computer to perform statistical analysis, and assess data critically. **Prerequisite(s):** An undergraduate statistics course.

526 Nursing Inquiry I 2 hours.
The first of a two-course sequence on the process and application of nursing inquiry; emphasizes approaches to inquiry, theory analysis, constructs, measurement, and theory generation. **Prerequisite(s):** Credit or concurrent registration in NUSC 525 or the equivalent.

527 Nursing Inquiry II 2 hours.
Continuation of NUSC 526, emphasizing the methods of theory development and theory testing in selected areas of nursing sciences. Ethical issues in research. **Prerequisite(s):** NUSC 526.

528 Health, Environment, and Systems 2 hours.
Examination of international, national, and local environments for health, health systems, health policy, and their outcomes. Influence of social, cultural, and ethical factors. **Prerequisite(s):** Consent of the instructor.

529 Issues of Advanced Practice in Nursing 1 hour.
Examines advanced practice in nursing from historical, contemporary, and future dimensions. May be repeated. Students may register in more than one section per term. Only students enrolled in specific nursing concentrations are allowed to repeat course. **Prerequisite(s):** NUSC 528.

530 Physiologic Basis of Nursing Practice Across the Life Span 4 hours.
Advanced contemporary physiologic principles and their relevance to clinical practice. Content topics will include developmental (life span) physiologic changes. **Prerequisite(s):** An undergraduate physiology course or consent of the instructor.

531 Pharmacotherapeutics in Advanced Practice in Nursing 3 hours.
Advanced principles of pharmacotherapeutics. Includes legal issues, client adherence, and medication selection factors. **Prerequisite(s):** Credit or concurrent registration in NUSC 530 or credit or concurrent registration in NUSC 535 or the equivalent or consent of the instructor.

532 Comprehensive Health Assessment for Advanced Practice 0 TO 3 hours.
Includes physical, psychosocial, developmental, occupational, sexual, cultural assessments across the life spans, emphasizing differences between normal and abnormal. Students synthesize results in client’s health status. Students register for either one or three credit hours. Students registering for three credit hours must register for two additional laboratory/discussion hours per week. **Prerequisite(s):** NUSC 210 or the equivalent or consent of the instructor.

533 Applied Pharmacotherapeutics in Advanced Practice in Nursing 1 hour.
Application of pharmacology principles to specialty populations. May be repeated to a maximum of 2 hours. **Prerequisite(s):** Consent of the instructor.

535 Biological Basis of Disease 4 hours.
Provides a foundation for clinical therapeutics through an understanding of biophysical mechanisms of disease. Basic concepts of pathologic processes are examined with application to organ systems and across the lifespan. **Prerequisite(s):** Undergraduate physiology and pathophysiology courses.

540 Instructional Strategies for the Nurse Educator 3 hours.
Introduction to educational theory, methods, and strategies for nursing instruction and evaluation in classroom, clinical, and online teaching. **Prerequisite(s):** Consent of the instructor.

541 Teaching Practicum for the Nurse Educator 3 hours.
Application of educational theory, methods, and strategies for nursing education, curriculum development, program evaluation, or education administration in classroom, school, clinical or other selected settings. **Prerequisite(s):** Credit or concurrent registration in NUSC 540 or credit or concurrent registration in NUSC 542; and consent of the instructor.

542 Curriculum Processes in Nursing Education 3 hours.
Builds on basic instructional strategies to prepare the nurse educator for faculty roles in various levels of programs, including curriculum design and evaluation. **Prerequisite(s):** Consent of the instructor.

543 Issues for Nurse Educators and Administrators 3 hours.
Focuses on issues in nursing education administration in the context of society, healthcare, and nursing, especially strategic planning, resource, political influences, conflict, change and leadership. **Prerequisite(s):** Consent of the instructor.

544 Qualitative Research in Nursing 4 hours.
Major approaches to qualitative research including design, conduct, reporting, and firsthand experience in data collection and analysis. **Prerequisite(s):** Consent of the instructor.

548 Methodological Issues for Cross-Cultural Research 3 hours.
Conceptual, methodological, and ethical issues for research with varied racial/ethnic backgrounds. Applies acculturation, translation, immigration, and health behavior issues to clinical, community, and international settings. **Prerequisite(s):** NUSC 511; and consent of the instructor.
550 Issues for Research and Practice in Women's Health 3 hours. Analysis of gender-related definitions of health and illness in theory issues and research evaluation criteria for women's healthcare practice are developed as a basis for research.

Same as NuWH 550. Prerequisite(s): Consent of the instructor.

552 Responsible Conduct of Research 1 hour. Overview of the major ethical issues in the conduct of research with human or animal subjects with strategies for resolving these issues. Course is required by National Institutes of Health for all students supported by a National Research Service Award. Prerequisite(s): Open only to PhD degree students or consent of the instructor.

555 Theories and Methods in Women's Health Nursing Research 3 hours. Critical analysis of theoretical and methodological approaches in women's health nursing research. Emphasis on evaluation schema useful to researchers. Same as NuWH 555. Prerequisite(s): NuSC 505 or NuWH 550, and consent of the instructor.

560 Theoretical Basis for Primary Healthcare 3 hours. Students analyze the conceptual basis of primary healthcare applicable to diverse communities and develop a primary healthcare model specific to a community of interest.

561 Ethical Issues in Primary Healthcare 3 hours. Examination of the ethical components of primary healthcare as a philosophy, strategy, and level of care; and explication of personal framework for analysis of a specific healthcare issue. Prerequisite(s): NuSC 560 or consent of the instructor.

562 Primary Healthcare Research Methods 3 hours. Conceptual issues, advanced methodologies, and dissemination strategies for scientifically sound and policy relevant global primary healthcare research. Building community relationships for primary healthcare research. Prerequisite(s): NuSC 511 and NuSC 560 or the equivalent or consent of the instructor.

565 Advanced Research in Women's Health 1 TO 2 hours. Advanced seminar for doctoral students in graduate nursing concentration in women's health. Faculty and students present and critique ongoing and developing research. Same as NuWH 565. Prerequisite(s): Consent of the instructor.

570 International Dimensions in Women's Health 3 hours. Critical examination of the health of women from a global perspective. Emphasizes resources and strategies new researchers use to monitor women's health across cultures and countries. Same as NuWH 570. Prerequisite(s): Consent of the instructor.

575 Minority Women's Health Nursing 3 hours. Theoretic and descriptive overview of the health concerns and health conditions of women from ethnic/racial minority backgrounds with implications for nursing research and practice. Same as NuWH 575. Prerequisite(s): Consent of the instructor.

580 Health Services and Health Behavior Research: Models and Frameworks 3 hours. Examines and critiques individual, systems, and community-level models and frameworks which guide health services delivery and health promotion behavior research. Prerequisite(s): NuSC 505 and NuSC 506; or consent of the instructor.

581 Health Services and Health Behavior Research: Methods and Measurement 3 hours. Critically analyzes methodological and measurement issues which are important to advanced research in health services delivery and health promotion behavior. Prerequisite(s): NuSC 511 and NuSC 515 and NuSC 590; or consent of the instructor.

585 Advanced Research Seminar 1 TO 2 hours. Integrates theory and methods for health research. Topics vary according to student interests and instructor availability. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term.

590 Leadership in Scientific Careers 1 hour. Analyzes components of leadership in science at the national and global levels. Analyzes factors and issues of the discipline affecting a research career. Analyzes the interdependency of the science to policy cycles of influence. Satisfactory/Unsatisfactory grading only. Prerequisite(s): NuSC 517. Open only to PhD degree students.

592 Preliminary Exam Preparation 1 TO 12 hours. Literature review, reading, and writing in preparation for the preliminary examination supervised by faculty research advisor. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 24 hours. Prerequisite(s): Completion of core courses and consent of the instructor.

594 Special Topics: Advanced 1 TO 3 hours. Discusses selected topics of current interest. Offered according to sufficient student demand and instructor availability. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

595 Seminar in Nursing 1 TO 3 hours. Identifies and analyzes a broad range of issues related to modern nursing and nursing research. Topics vary according to student interests and instructor availability. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

596 Independent Study: Graduate 1 TO 4 hours. Selected problems in nursing are investigated under the direction of a graduate faculty member. Models of investigation are determined by the nature of the nursing problem selected. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

597 Master's Project 0 TO 16 hours. Master's student project research. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

598 Master's Thesis Research 0 TO 16 hours. Master's student thesis research. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

599 PhD Thesis Research 0 TO 16 hours. Doctoral student thesis research. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

Occupational Therapy (OT)

401 Occupational Performance in Adults and Adolescents 4 hours. Reviews the primary developmental aspects and roles of adolescence and adulthood. Personal and environmental factors that influence occupational performance and prevention and wellness models to facilitate occupational functioning. Prerequisite(s): Admission to the Master of Science in Occupational Therapy program.

406 Development of a Therapeutic Self 3 hours. Emphasizes understanding and developing foundational skills in therapeutic use of self and forms of therapeutic reasoning. Group theory and process is introduced and group leadership skills developed. Prerequisite(s): Admission to the Master of Science in Occupational Therapy program.

407 Introduction to Occupational Therapy Practice 2 hours. Overview of the role of the therapist and aspects of occupational therapy practice in multiple settings. The basics of assessment, treatment planning, intervention, and documentation as well as service delivery systems and current issues. Prerequisite(s): Admission to the Master of Science in Occupational Therapy program.

411 Occupational Performance in Children 4 hours. Developmental theories concerning factors influencing the development of occupational performance in
Occupational Therapy

Course Descriptions

268

infancy, childhood, and early adolescence. Developmental assessment methods and tools. 
Prerequisite(s): Grade of C or better in OT 401 and grade of C or better in OT 407; and graduate standing; and consent of the instructor.

Human Structure and Function 5 hours. Anatomical and physiological basis for occupational performance. Features structure and function of musculoskeletal, cardiovascular, and nervous systems and application of biomechanical principles. Prerequisite(s): Admission to the Master of Science in Occupational Therapy program.

OCCUPATIONAL THERAPY PRACTICE: PSYCHOSOCIAL ASPECTS OF OCCUPATIONAL PERFORMANCE 3 hours.

OCCUPATIONAL THERAPY PRACTICE: FUNCTIONAL MOVEMENT AND MOBILITY 5 hours.

OCCUPATIONAL THERAPY PRACTICE: COGNITION AND PERCEPTION IN ACTION 4 hours. The impact of impaired cognitive and perceptual processes on occupational performance of children and adults with neurological conditions, cognitive and intellectual disabilities, and psychiatric disabilities. Prerequisite(s): Grade of C or better in OT 411 and grade of C or better in OT 412 and grade of C or better in OT 416; and satisfactory completion of OT 422 and graduate standing; and consent of the instructor.

Occupational Therapy Practice: Cognition and Perception in Action 4 hours.

Fieldwork Level II A 8 hours. First of two supervised full-time twelve-week practica with emphasis on application of OT theory, development of psychomotor skills, reasoning client-related problems, and professional socialization as an entry-level occupational therapist. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Grade of C or better in OT 401 and grade of C or better in OT 406 and grade of C or better in OT 407 and grade of C or better in OT 450 and grade of C or better in OT 457 and graduate standing; and consent of the instructor.

Fieldwork Level IIB 4 hours. Second of two supervised full-time practica with emphasis on application of OT theory, development of psychomotor skills, reasoning client-related problems, and professional socialization as an entry-level occupational therapist. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Fieldwork required. Scheduled full time for a 6 week period. Prerequisite(s): Grade of C or better in OT 428 and grade of C or better in OT 436 and grade of C or better in OT 457; and graduate standing; and consent of the instructor.

Theories of Occupational Therapy 4 hours. Develops an understanding of the theoretical basis of occupational therapy and the impact of theory on clinical practice. Covers the history of knowledge and practice development in the field. Focuses on specific practice models developed as guides to clinical reasoning. Prerequisite(s): Consent of instructor.

Research in Occupational Therapy 3 hours.

Synthesis I 1 hour. Integrating theory, practice, and research knowledge and skills across courses using case studies and small group learning activities. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Grade of C or better in OT 401 and grade of C or better in OT 406 and grade of C or better in OT 407 and grade of C or better in OT 500 and grade of C or better in OT 510. 

Assisive Technology and the Environment 3 hours. Assessing the need for, delivering, and evaluating the outcomes of occupational therapy-based technology and environmental interventions with people with disabilities within the home, school, workplace, and community. Prerequisite(s): Grade of C or better in OT 411 and grade of C or better in OT 412 and grade of C or better in OT 416 and grade of C or better in AHS 510.

Advanced Field Experience: Clinical Specialization in Occupational Therapy 1 TO 4 hours. Provides opportunity for the student interested in advanced occupational therapy practice to observe a master clinician and participate in treatment and/ or clinical research. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

Advanced Field Experience in Occupational Therapy Management 1 TO 4 hours. Practicum experience working with an experienced professional to develop projects or programs in student's interest area, e.g. administration, middle management, consultation, program evaluation, and grantmanship. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

Advanced Field Experience: Occupational Therapy Education 1 TO 4 hours. Provides opportunity to observe, prepare, and present lectures/labs to occupational therapy students in technical or professional curricula or to develop skills as a clinical educator. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

Sociocultural Aspects of Occupational Therapy 3 hours.

Synthesis II 2 hours. Integrating advanced theory, practice, and research knowledge and skills across courses using complex

UIC
individual and programmatic case studies and small and large group interaction planning activities.

Satisfactory/Unsatisfactory grading only. **Prerequisite(s):** Grade of C or better in OT 424 and grade of C or better in OT 428 and grade of C or better in OT 526 and satisfactory completion of OT 422.

536 **Fatiguing Conditions and Disability** 3 hours. Empirically supported concepts related to assessment and management of fatiguing conditions. Course also explores the relationship between fatigue and disability from social, psychological, and community-based perspectives. Same as DIS 536. **Recommended background:** Health or behavioral sciences.

540 **Advanced Topics in Occupational Therapy Research and Evaluation** 4 hours. In-depth presentation of selected research/measurement strategies. Specific topics vary and include single system design, survey research, ethnography, evaluation of clinical effectiveness. May be repeated. Students may register in more than one section per term. **Prerequisite(s):** Consent of the instructor.

541 **Advanced Human Occupation Theory and Application** 4 hours. Provides an advanced understanding of evaluation, intervention, program development, and research based on the model of human occupation. Focuses on use of the model to address psychosocial problems in a range of disabled persons. **Prerequisite(s):** OT 400 or consent of the instructor.

542 **Advanced Clinical Reasoning and Therapeutic Use of Self in Occupational Therapy** 2 hours. Teaches occupational therapy students advanced skills in forming and maintaining ethical, empathic, and successful treatment relationships with their clients.

544 **Cognitive Behavioral Therapy for Persons with Chronic Illness and Disability** 4 hours. Core concepts of cognitive behavioral therapy for individuals with chronic illnesses and disabilities from practice and theoretical perspectives. **Recommended background:** Exposure to course work in therapeutic use of self, psychopathology or in psychosocial aspects of occupational therapy.

550 **Disability in the Urban Environment** 4 hours. Features of urban contexts that influence experiences of persons with disabilities are examined as they exacerbate problems or enhance resources in low income communities. Same as DIS 550.

551 **Computers, Communication, and Controls in Rehabilitation Technology** 3 hours. Provides information on operation and use of alternative controls for computers, augmentative communication devices, and powered mobility. Emphasis on matching consumer's need and assistive technology. Same as DHD 551. **Recommended background:** Speech-Language Pathology, Occupational Therapy, Special Education.

552 **Community-Based Interventions with Under served Populations** 4 hours. Addresses theories, ethics, and strategies of developing and providing outcomes-based clinical interventions in underserved communities. Students collaborate with a community population to implement course concepts. **Prerequisite(s):** Level II fieldwork or prior work experience or consent of the instructor. **Recommended background:** OT 550.

553 **Program Evaluation: Documenting the Impact of Human Services** 3 hours. Examines methods in program evaluation with emphasis on empowerment and participatory evaluation. Students will study quantitative and qualitative strategies, how to communicate information to stakeholders, and how to design evaluations. Same as DHD 553. **Recommended background:** Interest in research, health or behavioral sciences, and implementation and evaluation of community initiatives and community-based organizations.

554 **Applied Professional Ethics in Occupational Therapy** 2 hours. Integrates advanced theory, practice, and research knowledge and skills from fieldwork and course work to identify and mitigate ethical dilemmas, legal concerns, and/or complex intervention problems encountered in occupational therapy practice. Satisfactory/Unsatisfactory grading only. **Prerequisite(s):** Grade of C or better in OT 500 and grade of C or better in OT 510.

555 **Synthesis I** 2 hours. Integrating advanced theory, practice, and research knowledge and skills from advanced fieldwork and coursework using complex case studies and small group assessment and intervention planning activities from students' fieldwork experiences. Satisfactory/Unsatisfactory grading only. **Fieldwork required. Prerequisite(s):** OT 448.

556 **Theory and Methods of Needs Assessment in Aging and Disability** 4 hours. Introduces theories of need, models of the needs assessment process, and reviews research methods typically used in conducting needs assessments. Emphasis will be on needs assessments in health-related community agencies. Same as CHSC 556 and DIS 556. **Prerequisite(s):** A 400 or 500-level research course such as OT 510, DHD 415, CHSC 446, or SOC 500. The prerequisite research course needs to provide students with an understanding of basic research design, sampling strategies, and an introduction to methods such as surveys and focus groups. **Recommended background:** Health or behavioral sciences, research methods.

557 **Acting on Needs Assessment Findings** 3 hours. Follows OT 556, focusing on the translation of needs assessment findings into solution strategies. Addresses setting needs-based priorities, developing solutions, setting action plans, and working with communities to enact those plans. **Prerequisite(s):** Grade of C or better in OT 500 and grade of C or better in OT 510 and grade of C or better in 556; or consent of the instructor.

558 **Writing for Professional Publications in Occupational Therapy** 3 hours. Addresses processes and issues related to writing for publication in occupational therapy and related journals and magazines, including preparation and submission processes, IRB, receiving critiques, and communicating with reviewers and editors. **Prerequisite(s):** Grade of C or better in OT 500 and grade of C or better in OT 510.

564 **Administration and Management in Occupational Therapy** 3 hours. Overview of issues related to administration and management in varied settings in which occupational therapists practice. Topics include management functions, service planning, quality improvement, financial management, and accreditation. **Prerequisite(s):** OT 428 or approval of the department.

565 **Research Methodology and Outcomes Measures in Rehabilitation Technology** 3 hours. Analyses the research process in rehabilitation technology and assistive technology and how such analyses leads to the development of a research proposal. Outcome measures related to assistive technology will be evaluated for their applicability. Same as DHD 565. **Recommended background:** Engineering, occupational therapy, physical therapy, special education, and speech and language pathology.

567 **Professional Leadership in Occupational Therapy** 3 hours. Focuses on application of theory and evidence in administrative, managerial, and educational leadership. Examines roles and functions of leaders and application of problem solving, change management, and quality improvement in a variety of settings. **Prerequisite(s):** Grade of C or better in OT 564; or consent of the instructor.

568 **Occupational Therapy Professional Curriculum Design, Implementation, and Evaluation** 3 hours. Didactic material and experiential learning as students explore design and implementation of a professional curriculum. Students will be exposed to student admissions, advising, student life, and accreditation. **Prerequisite(s):** Consent of the instructor.

590 **Pace Seminar in Occupational Therapy** 2 hours. Topics related to leadership/management, education, and advanced practice in occupational therapy. Satisfactory/Unsatisfactory grading only.
only. May be repeated. Open only to ODT students, or consent of the instructor.

592 Project Research 0 TO 16 hours. Applied scholarship involving planning and implementation of one or more action projects based on theory and evidence, evaluation, writing a comprehensive report, dissemination, and oral presentation. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

594 Special Topics in Occupational Therapy 1 TO 4 hours. New course under development and selected seminar topics of current interests to faculty and students. Prerequisite(s): Consent of the instructor.

595 Seminar in Occupational Therapy 1 hour. Prethesis seminar. Students participate in faculty-student discussion and activities related to individual areas of research/thesis. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

596 Independent Study 1 TO 4 hours. This course is for graduate students who wish to pursue independent study not related to their project/thesis research. Prerequisite(s): Consent of the instructor.

597 Project Research 0 TO 8 hours. Independent scholarship focusing on problems of application in field. Students undertake an action project, create a method for dissemination, and orally present the project. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 8 hours. Prerequisite(s): Graduate standing in the Master of Science in Occupational Therapy program and consent of the instructor.

598 Research in Occupational Therapy 0 TO 16 hours. Independent research in occupational therapy, directed by a faculty member. MS students are required to take a minimum of 7 credit hours. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Foundation courses in research methods, such as DT 510, and statistics, or consent of the instructor.

599 Oral and Maxillofacial Surgery (OSUR) 4 hours. Focused on the biological basis of oral disease and modern concepts in the biomedical sciences.

501 Advanced Oral Pathology I 2 hours. Detailed consideration of oral cysts, odontogenic tumors, and diseases of facial bones, blood and lymphatic systems and salivary glands. Journal literature used. Prerequisite(s): OMDS 424 or the equivalent.

502 Advanced Oral Pathology II 2 hours. Detailed consideration of oral cancer and lesions of oral mucosa, inflammatory periodontal disease, skin lesions, and microscopic diagnostic techniques. Journal literature used. Prerequisite(s): OMDS 424 or the equivalent.

510 Conscious Sedation and General Anesthesia 3 hours. Didactic lectures in all phases of pain and anxiety control, supplemented with clinical experience in administration of general anesthetic and inhalation and intravenous sedatives. Satisfactory/Unsatisfactory grading only. May be repeated.

511 Oral Surgery Seminar 2 hours. Lecture, seminars, conferences, and journal clubs dealing with current topics of clinical and research interest. Satisfactory/Unsatisfactory grading only.

513 Craniofacial Deformity Seminar 1 hour. Discusses the investigation, evaluation, treatment planning, and follow-up monitoring of patients with craniofacial deformities. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Admission to oral and maxillofacial surgery/residency or orthodontics graduate program.

519 Electron Microscopy Seminar 1 hour. A student speaker makes a seminar-type presentation about a topic and follows this with a discussion involving electron microscopy. Prerequisite(s): Consent of the instructor.

527 Oral Biology Seminar 1 hour. Invited speakers present the progress of current research work in their field of interest related to oral tissues. Same as HSTL 514. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

529 Electron Microscopy in Dentistry 1 hour. Principles, theory and practice of transmission and scanning electron microscopy, and energy dispersive X-ray microanalysis. Processing, sectioning, staining, and examination of tissues. Same as HSTL 515. Prerequisite(s): Consent of the instructor.

533 Oral and Maxillofacial Surgery Literature Review 2 hours. The methodology for critical review of medical literature and discussion of key articles appearing in appropriate medical journals. Satisfactory/Unsatisfactory grading only.

534 Dental and Medical Anthropology within Human Evolution 1 TO 3 hours. Studies the biological and physical anthropological hominid teeth and the craniofacial complex with relevant medical anthropology, ethnopharmacology, forensic sciences, and paleopathology topics. Same as ANTH 534 and PMRG 534. Fieldwork required. A lab experience, independent study, and a research paper are required for 3 hours of credit. Prerequisite(s): Graduate standing and consent of the instructor.

556 Physical Diagnosis 4 hours. In-depth methods of obtaining a history and performing physical diagnosis of the entire body through theoretical and practical lessons.

561 Physical Diagnosis 4 hours. In-depth methods of obtaining a history and performing physical diagnosis of the entire body through theoretical and practical lessons.

571 Advanced Oral Pathology I 2 hours. Detailed consideration of oral cysts, odontogenic tumors, and diseases of facial bones, blood and lymphatic systems and salivary glands. Journal literature used. Prerequisite(s): OMDS 424 or the equivalent.

572 Advanced Oral Pathology II 2 hours. Detailed consideration of oral cancer and lesions of oral mucosa, inflammatory periodontal disease, skin lesions, and microscopic diagnostic techniques. Journal literature used. Prerequisite(s): OMDS 424 or the equivalent.

580 Advanced Oral Sciences I 2 hours. Discussion follows presentation of faculty research. Topics include developmental and molecular biology, tissue engineering, genetics, and structural biology in tandem with cutting-edge dental technology.

589 Seminar in Oral Pathology 2 hours. Reviews, reports, and discussion topics are drawn from the literature and material of surgical oral pathology. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

590 Research in Oral Pathology 0 TO 16 hours. Independent thesis research on basic biomedical phenomena or specific oral disease(s). Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the advisor.

596 Biomedical Basis of Oral Diseases 2 hours. Focused on the biological basis of oral disease and modern concepts in the biomedical sciences. Prerequisite(s): BCMG 411 and HSTL 451 or the equivalent courses, or consent of the instructor.

597 Research Methodology 1 hour. Designed to help the student understand, utilize, and appreciate the process of scientific inquiry. Primarily intended for students enrolled in the Master of Science in General Sciences degree program. Prerequisite(s): Matriculation into the Master of Science in Oral Sciences program, or courses in basic biomedical sciences or the equivalent background and consent of the instructor.

598 Biological Basis of Oral Diseases 2 hours. Focused on the biological basis of oral disease and modern concepts in the biomedical sciences. Prerequisite(s): BCMG 411 and HSTL 451 or the equivalent courses, or consent of the instructor.

599 Oral Medicine and Diagnostic Sciences (OMDS) 424 Oral Pathology 4 hours. Diseases of teeth, periodontium, facial bones, muscles, nerves and mucous membranes of the oral region, and salivary glands. Introduction to clinical differential diagnosis. Prerequisite(s): ANAR 512 and BCHE 411 and HSTL 451 and PHPB 321 and PATH 421.

599 Research in Oral Pathology 0 TO 16 hours. Independent thesis research on basic biomedical phenomena or specific oral disease(s). Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the advisor.

601 Advanced Oral Pathology I 2 hours. Detailed consideration of oral cysts, odontogenic tumors, and diseases of facial bones, blood and lymphatic systems and salivary glands. Journal literature used. Prerequisite(s): OMDS 424 or the equivalent.

602 Advanced Oral Pathology II 2 hours. Detailed consideration of oral cancer and lesions of oral mucosa, inflammatory periodontal disease, skin lesions, and microscopic diagnostic techniques. Journal literature used. Prerequisite(s): OMDS 424 or the equivalent.

603 Electron Microscopy Seminar 1 hour. A student speaker makes a seminar-type presentation about a topic and follows this with a discussion involving electron microscopy. Prerequisite(s): Consent of the instructor.

604 Oral Biology Seminar 1 hour. Invited speakers present the progress of current research work in their field of interest related to oral tissues. Same as HSTL 514. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

605 Electron Microscopy in Dentistry 1 hour. Principles, theory and practice of transmission and scanning electron microscopy, and energy dispersive X-ray microanalysis. Processing, sectioning, staining, and examination of tissues. Same as HSTL 515. Prerequisite(s): Consent of the instructor.
381 Advanced Oral Sciences II 2 hours. Continuation of OSC 580. Prerequisite(s): OSC 580.
383 Research Laboratory Rotation 1 TO 4 hours. Students participate directly in laboratory research, learn to approach a scientific problem, and perform various experimental techniques to investigate the problem. May be repeated to a maximum of 6 hours.
390 Hominid Evolution, Dental Anthropology, and Human Variation 1 hour. Evolution, hominid origins; organization and development of human dentition, agenesis, metric and non-metric variation in tooth form, human growth and maturation, variation and adaptation. Prerequisite(s): Consent of the instructor.
393 Independent Research in Oral Sciences 1 TO 8 hours. Faculty supervised research projects. Research may not duplicate that being done in OSC 598. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.
509 Advanced Oral Sciences II 2 hours. Continuation of OSC 580. Prerequisite(s): OSC 580.
583 Research Laboratory Rotation 1 TO 4 hours. Students participate directly in laboratory research, learn to approach a scientific problem, and perform various experimental techniques to investigate the problem. May be repeated to a maximum of 6 hours.
390 Hominid Evolution, Dental Anthropology, and Human Variation 1 hour. Evolution, hominid origins; organization and development of human dentition, agenesis, metric and non-metric variation in tooth form, human growth and maturation, variation and adaptation. Prerequisite(s): Consent of the instructor.
393 Independent Research in Oral Sciences 1 TO 8 hours. Faculty supervised research projects. Research may not duplicate that being done in OSC 598. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.
509 Advanced Oral Sciences II 2 hours. Continuation of OSC 580. Prerequisite(s): OSC 580.
583 Research Laboratory Rotation 1 TO 4 hours. Students participate directly in laboratory research, learn to approach a scientific problem, and perform various experimental techniques to investigate the problem. May be repeated to a maximum of 6 hours.
390 Hominid Evolution, Dental Anthropology, and Human Variation 1 hour. Evolution, hominid origins; organization and development of human dentition, agenesis, metric and non-metric variation in tooth form, human growth and maturation, variation and adaptation. Prerequisite(s): Consent of the instructor.
393 Independent Research in Oral Sciences 1 TO 8 hours. Faculty supervised research projects. Research may not duplicate that being done in OSC 598. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.
509 Advanced Oral Sciences II 2 hours. Continuation of OSC 580. Prerequisite(s): OSC 580.
530 Medical Bacteriology 3 hours. Principles, theory, and practice of diagnostic bacteriology and infectious diseases. Prerequisite(s): MM 452 or the equivalent.

534 Medical Mycology, Parasitology, and Virology 3 hours. An advanced microbiology course on the latest theoretical and practical concepts of human pathogenic fungi, protozoa, helminths, and viruses, and their relation to disease and diagnosis. Prerequisite(s): MM 452 or consent of the instructor.

595 Pathology Seminar and Journal Club 2 hours. Weekly seminar and journal club covering selected fields of interest and research in pathology. Satisfactory/Unsatisfactory grading only.

598 Master’s Thesis Research 0 TO 16 hours. Research in experimental pathology towards MS degree. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term.

599 PhD Thesis Research 0 TO 16 hours. Research in experimental pathology towards a PhD degree. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term.

Pediatric Dentistry (PEDD)

410 Principles and Methods in Dental Research I 2 hours. Introduces students to several of the more commonly used statistical procedures for testing hypotheses; provides students with a beginner’s set of tools for using statistics. Prerequisite(s): Enrollment in postgraduate or graduate program in pediatric dentistry.

411 Principles and Methods in Dental Research II 2 hours. Designed to provide the student with an understanding of the scientific method. Prerequisite(s): PEDD 410.

501 Dental Pediatrics I 2 hours. The pathophysiology and biologic basis of the neurologically, mentally, and medically-compromised developing child and the implications to dental management and research.

502 Dental Pediatrics II 2 hours. The pathophysiology and biologic basis of the neurologically, mentally, and medically-compromised developing child and the implications to dental management and research. Prerequisite(s): PEDD 501.

595 Pediatric Dentistry Seminar 2 hours. Presentation and discussion of current literature and research in pediatric dentistry, medical and dental aspects of pulpal therapy, traumatology, fluorides and cariology. Provides behavior guidance and application of material from other areas. Satisfactory/Unsatisfactory grading only.

Pharmacognosy (PMGP)

480 Biological Evaluation of Natural Products 3 hours. Short-term procedures useful for the discovery and characterization of natural product drugs, with related laboratory experiments, and principles of more advanced drug development. Prerequisite(s): Consent of the instructor.

499 Special Projects in Pharmacognosy 1 TO 3 hours. Special topics in pharmacognosy dealing with isolation and characterization of natural products.

507 Drug Discovery, Design, and Development 3 hours. Overview of drug development process from target identification and screening through clinical trials and FDA evaluation. Same as BPS 507 and MDCH 507.

510 Research Techniques in Pharmacognosy 3 hours. Introduction to the techniques used in pharmacognosy.

511 Advanced Pharmacognosy 4 hours. A theoretical and applied course designed to acquaint the student with the occurrence, isolation, characterization, identification, biosynthesis, and activity profile of biologically active natural products. Prerequisite(s): PMGP 510 or the equivalent or consent of the instructor.

512 Microscopy of Natural Drug Products 3 hours. Use of microscopic methods in the identification of natural drugs and herbal products, with emphasis on the use of light and scanning electron microscopes. Prerequisite(s): PMGP 517 or consent of the instructor.

513 Structure of Biopolymers 3 hours. Explores the relationship between structural stability, kinetic properties, and function of biopolymers, with particular emphasis on proteins and nucleic acids. Same as BCN 513 and MIM 513. Prerequisite(s): GOLS 501 and one year of physical chemistry, or consent of the instructor.

515 Structure Elucidation of Natural Products I 2 hours. Learn the basic skills needed to elucidate the structure of a natural product by spectroscopic methods using real-life examples. May be repeated to a maximum of 6 hours. Prerequisite(s): Credit or concurrent registration in MDCH 562 and credit or concurrent registration in PMGP 511.

516 Structure Elucidation of Natural Products II 3 hours. Employing modern computational methods in the structure elucidation and dereplication of a natural product by using real-life examples. Same as MDCH 516. May be repeated. Prerequisite(s): PMGP 515.

517 Problem Solving in Plant Taxonomy 4 hours. Principles and concepts in plant taxonomy, which includes identification, classification, nomenclature, discussion of major recent/modern systems, family characterization, and fieldwork methods. Prerequisite(s): Consent of the instructor.

518 Correlative Phytochemistry 2 hours. Distributional correlation of well-defined groups of secondary plant constituents with existing plant classification systems as an aid in the search for biologically active natural products. Prerequisite(s): PMGP 517.

520 Ethnopharmacology Fieldwork 4 hours. Studies the plants used by primitive peoples as medicinal agents in defined geographic areas, primarily through interviews with medicine men and the populace. Plant material will be collected for subsequent study. Contingent on availability of funds for travel support. Prerequisite(s): PMGP 517 or consent of the instructor.

521 Recent Advances in Pharmacognosy 2 hours. A review of recent progress in the chemistry biosynthesis, and biological properties of natural products. Prerequisite(s): PMGP 511.

522 Laboratory Techniques in Pharmaceutical Biotechnology I 3 hours. Students will perform laboratory research rotations as assigned by the Biotechnology track faculty in the three laboratories of the Center for Pharmaceutical Biotechnology in the College of Pharmacy. Prerequisite(s): Consent of the instructor.

523 Laboratory Techniques in Pharmaceutical Biotechnology II 3 hours. In a continuation of PMGP 522, students will perform laboratory research rotations as assigned by the Biotechnology track faculty in the laboratories of the Center for Pharmaceutical Biotechnology in the College of Pharmacy. Prerequisite(s): PMGP 522; or consent of the instructor.

534 Dental and Medical Anthropology Within Human Evolution 1 TO 3 hours. Studies the biologic and physical anthropologic hominid teeth and the cranial facial complex with relevant medical anthropologic, ethnonanpharmacology, forensic sciences, and paleopathology topics. Same as ANTH 534 and OSU 534. Fieldwork required. A lab experience, independent study, and a research paper are required for 3 hours of credit. Prerequisite(s): Graduate standing and consent of the instructor.

540 Marine Natural Products 2 hours. Expose graduate students to field of marine natural product chemistry. Course will include examples of marine antibiotic agents.
marine toxins, and other pharmaceutically relevant marine natural products from various marine organisms. May be repeated to a maximum of 6 hours.

565 Special Projects in Pharmacognosy 1 TO 3 hours. Overview of current research topics of interest in pharmacognosy: potential areas—ethnopharmacology, biological evaluation, dietary supplements, taxonomy, chemotaxonomy, organism propagation, and applications of contemporary analytical techniques. May be repeated up to 3 times. Prerequisite(s): Completion of the first year of the program.

568 Predictive Strategies in Pharmacognosy 2 hours. Consideration of the methods employed for the selection of plants that are most likely to yield biologically active compounds. Prerequisite(s): Demonstration of competency in organic chemistry, botany, and pharmacology.

590 Laboratory Techniques in Pharmacognosy I 2 hours. Perform laboratory research rotations as assigned by Pharmacognosy drug discovery track faculty of Program for Collaborative Research in Pharmaceutical Sciences (PCRPS). Prerequisite(s): Credit or concurrent registration in PMPG 510 or consent of the instructor.

592 Laboratory Techniques in Pharmacognosy II 2 hours. In continuation of PMPG 590, student will perform lab research rotations as assigned by Pharmacognosy drug discovery track faculty of the Program for Collaborative Research in Pharmaceutical Sciences (PCRPS). Prerequisite(s): PMPG 590 or consent of the instructor.

595 Seminar in Pharmacognosy 1 hour. Presentation on a current research topic. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 2 hours.

598 Master’s Research in Pharmacognosy 0 TO 16 hours. Research for completion of master’s degree. Satisfactory/Unsatisfactory grading only.

599 Doctoral Research in Pharmacognosy 0 TO 16 hours. Research for students in the pharmacognosy doctoral program. Satisfactory/Unsatisfactory grading only. May be repeated.

Pharmacology (PCOL)

430 Principles of Toxicology 2 hours. Examines the toxic effects of drugs and chemicals on organ systems. Lectures emphasize basic principles, effects on specific organ systems, major classes of toxic chemicals, and specialized topics such as forensic and industrial toxicology. Same as BPS 430. Credit is not given for PCOL 430 if the student has credit for EHHS 457.

501 Medical Pharmacology I 3 hours. A lecture, conference, and laboratory course on human pharmacology. Drug mechanisms, toxicities, and kinetics are presented as a foundation to therapeutic application. This is a College of Medicine course that does not follow the regular academic calendar. Credit is not given for PCOL 501 if the student has credit for PCOL 425. Prerequisite(s): Grade of C or better in GCLS 501 and grade of C or better in GCLS 503; or consent of the instructor.

502 Medical Pharmacology II 3 hours. Continues PCOL 501. A lecture, conference, and laboratory course on human pharmacology. Drug mechanisms, toxicities, and kinetics are presented as a foundation to therapeutic application. Credit is not given for PCOL 502 if the student has credit for PCOL 425. College of Medicine course that does not follow the regular academic calendar. Prerequisite(s): Grade of C or better in GCLS 501 and grade of C or better in GCLS 503; or consent of the instructor.

510 Molecular Pharmacology of Platelets, Thrombosis, and Vascular System 2 hours. Molecular mechanisms and therapeutic approaches to: platelet functions, thrombosis, hemostasis, and vascular biology. The platelet as a model cell for molecular mechanisms of intracellular signal transduction and cell adhesion. Prerequisite(s): Credit or concurrent registration in GCLS 501 and GCLS 503; or consent of the instructor.

530 Pharmacology and Biology of the Vessel Wall 2 hours. Regulation of physiological and pathological processes in the cardiovascular system: e.g., endothelial barrier, cell adhesion, smooth muscle proliferation, angiogenesis, endothelial gene expression. Pharmacological treatment of cardiovascular diseases. Prerequisite(s): Credit or concurrent registration in GCLS 501 and GCLS 503; and consent of the instructor.

540 Ion Channels: Structure, Function, Pharmacology, and Pathology 2 hours. The concept of ion channels is treated from the perspectives of their molecular structures and functions: Modulation, pathological conditions (channelopathies), and pharmacological intervention will also be treated. Same as PHRB 540. Recommended background: One undergraduate course in biochemistry and one in physiology, or consent of the instructor.

594 Special Topics 1 hour. Organized presentation and discussion of rapidly developing research areas in molecular, cellular, and systems pharmacology. May be repeated. Prerequisite(s): Consent of the instructor.

595 Pharmacology Seminar 1 hour. Presentation of research and/or current literature by invited lecturers and students. Satisfactory/Unsatisfactory grading only. May be repeated.

596 MS Thesis Research 0 TO 16 hours. Thesis work under the supervision of a graduate advisor. Satisfactory/Unsatisfactory grading only.

599 PhD Thesis Research 0 TO 16 hours. Thesis work under the supervision of a graduate advisor. Satisfactory/Unsatisfactory grading only.

Pharmacy (PHAR)

400 Pharmacokinetics 3 hours. Concepts and principles in pharmacokinetics including theories and basis for drug receptor actions, drug absorption, distribution, excretion, and biotransformation. Prerequisite(s): Credit or concurrent registration in PHAR 322 and credit or concurrent registration in PHAR 332 and credit or concurrent registration in PHRY 302.

401 Principles of Drug Action and Therapeutics I 3 hours. Integration of medicinal chemistry, pharmacology, pharmacochemistry, and toxicology in the drug actions related to the disease states associated with the endocrine, renal, optical, and auditory systems. Prerequisite(s): PHAR 302 and PHAR 342 and PHAR 400 and second-year standing in the Doctor of Pharmacy program.

402 Principles of Drug Action and Therapeutics II 4 hours. Integration of medicinal chemistry, pharmacology, pharmacochemistry, and toxicology in the areas of the autonomic nervous system, cardiology, lipid disorders, and hypertension. Prerequisite(s): PHAR 302 and PHAR 342 and PHAR 400 and second-year standing in the Doctor of Pharmacy program.

403 Principles of Drug Action and Therapeutics III 3 hours. Integration of medicinal chemistry, pharmacology, pharmacochemistry, and toxicology in the areas of pain management and psychiatric disorders. Prerequisite(s): PHAR 352 and PHAR 401 and PHAR 402 and second-year standing in the Doctor of Pharmacy program or consent of the instructor.

404 Principles of Drug Action and Therapeutics IV 3 hours. Integration of medicinal chemistry, pharmacology, pharmacochemistry, and toxicology in the areas of women’s and men’s health, respiratory disorders, diabetes, and pediatrics. Prerequisite(s): PHAR 352 and PHAR 401 and PHAR 402 and second-year standing in the Doctor of Pharmacy program or consent of the instructor.
405 Principles of Drug Action and Therapeutics V 3 hours.  Integration of medicinal chemistry, pharmacology, pharmacotherapeutics, pharmacokinetics, and toxicology in the areas of drug abuse, cerebrovascular diseases, Parkinson’s, and epilepsy.  Prerequisite(s): PHAR 353 and PHAR 401 and PHAR 402 and third-year standing in the Doctor of Pharmacy program or consent of the instructor.

406 Principles of Drug Action and Therapeutics VI 3 hours.  Integration of medicinal chemistry, pharmacology, pharmacotherapeutics, pharmacokinetics, and toxicology in the area of infectious disease.  Prerequisite(s): PHAR 353 and PHAR 401 and PHAR 402 and third-year standing in the Doctor of Pharmacy program or consent of the instructor.

407 Principles of Drug Action and Therapeutics VII 4 hours.  Integration of medicinal chemistry, pharmacology, pharmacotherapeutics, pharmacokinetics, and toxicology in the areas of transplants, gastrointestinal disorders, body fluids, nutrition, and the impact of drug therapies on a geriatric person.  Prerequisite(s): PHAR 353 and PHAR 401 and PHAR 402 and third-year standing in the Doctor of Pharmacy program or consent of the instructor.

408 Principles of Drug Action and Therapeutics VIII 3 hours.  Integration of medicinal chemistry, pharmacology, pharmacotherapeutics, pharmacokinetics, and toxicology in the areas of bones and joints, hematological disorders, and oncology.  Prerequisite(s): PHAR 353 and PHAR 401 and PHAR 402 and third-year standing in the Doctor of Pharmacy program or consent of the instructor.

441 Roles, Environments, and Communications 3 hours.  Selected factors that influence pharmacists’ practice, societal and professional expectations, and the importance of effective communications with a variety of patients and professional audiences.  Prerequisite(s): Acceptance into the Doctor of Pharmacy program.

445 Pharmacy Law 3 hours.  Federal and state statutes and regulations pertaining to the licensing of pharmacists, the practice of pharmacy, and distribution of drugs.  Case law relating to the pharmacists’ standard of care.  Prerequisite(s): PHAR 342.

455 Drug Information and Statistics 4 hours.  Overview of drug information resources and statistics used in healthcare research, including systematic approaches for critical evaluation of the literature and effective communication of information.  Prerequisite(s): PHAR 341.

482 Professional Practice Management 3 hours.  Managerial functions of the pharmacist in all practice environments.  Prerequisite(s): PHAR 402 and PHAR 403 and third-year standing in the Doctor of Pharmacy program or consent of the instructor.

494 Special Topics in Pharmacy Administration 1 TO 3 hours.  Topics will vary, including the ongoing analysis of contemporary issues associated with delivery, financing, and management of pharmaceutical products and professional services.  May be repeated to a maximum of 6 hours.

502 Research Methods in Pharmacy Administration 3 hours.  Focuses on “how-to-do” a research project and “why-to-use” a particular technique including meta-analysis, path analysis, concept-utilization, measurements, and data processing.  Prerequisite(s): SOC 500 and consent of the instructor.

507 Pharmacy and Its Environment 2 hours.  Factors directly influencing the practice of pharmacy.  Prerequisites: PHAR 407 and PHAR 408.

525 Medication, Identity, and Illness 3 hours.  Concepts and principles of human behavior related to pharmacy practice.  Prerequisite(s): Approval of the instructor.  May be repeated.  Prerequisite(s): Consent of the instructor.  Open only to degree candidates.

535 Health Policy and Pharmaceutical Care 3 hours.  Regulatory controls and reform proposals covering drug approval, manufacturing, marketing, and use, including problems of drug diversion, gag, orphan products, and patent restoration.  Prerequisite(s): FPA 500.

573 Principles of Economic Evaluations of Healthcare Interventions 3 hours.  Principles, models, and practical methods for the economic evaluation of a healthcare services.  Prerequisite(s): FPA 573.  Previously listed as PMAD 571.

596 Independent Study 1 TO 4 hours.  Individual research under direction of a member of the faculty.  May be repeated.  Prerequisite(s): Consent of the instructor.  Open only to degree candidates.

604 Special Topics in Pharmacy Administration 1 TO 3 hours.  Topics vary.  Intensive analysis of contemporary issues associated with the delivery and financing of pharmaceutical products and professional services.  May be repeated to a maximum of 6 hours.

795 Departmental Seminar 1 hour.  Presentation by students, faculty, and visiting experts.  Topics to be arranged.  Satisfactory/Unsatisfactory grading only.  May be repeated.  Prerequisite(s): Consent of the instructor.

796 Master’s Thesis Research 0 TO 16 hours.  Independent research on topic approved by student’s graduate committee.  Satisfactory/Unsatisfactory grading only.  May be repeated.  Prerequisite(s): PMAD 502 or consent of the instructor.

799 PhD Thesis Research 0 TO 16 hours.  Independent research on topic approved by student’s graduate committee.  Satisfactory/Unsatisfactory grading only.  May be repeated.  Prerequisite(s): Consent of the committee.  Open only to degree candidates.

430 Critical Care I 2 hours.  Advanced pharmacotherapeutics course that will concentrate on the management and the pharmacotherapist’s role in the management of the critically ill patient.  Prerequisite(s): PHAR 402 and PHAR 403 and PHAR 404 and PHAR 405 and PHAR 406; and completion of the second year of the program.  Must enroll concurrently in PHAR 407 and PHAR 408.
Philosophy (PHIL) 400
Philosophical Writing 1 hour. Philosophical issues covered will vary from semester to semester. Fulfills Writing-in-the-Discipline requirement. Must be taken in conjunction with designated 400-level courses. See the undergraduate adviser for details.
Prerequisite(s): Major in philosophy and concurrent registration in a 400-level philosophy course as designated in the Timetable.

401 Theory of Knowledge 3 OR 4 hours. Survey and analysis of key topics in epistemology, such as skepticism, the nature of propositional knowledge, justification, perception, memory, induction, other minds, and naturalistic epistemology. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): PHIL 201 or consent of the instructor.

403 Metaphysics 3 OR 4 hours. Intensive treatment of one or more topics such as free will, personal identity, causation, existence, substance and attribute, and the nature of the mind. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): PHIL 203 or PHIL 226 or PHIL 426 or consent of the instructor.

404 Philosophy of Science 3 OR 4 hours. Selected works on the aims and methods of science; the status of scientific theories, natural laws, and theoretical entities; the nature of scientific explanation. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): PHIL 102 or PHIL 210, and one 200-level course in philosophy, or consent of the instructor.

406 Philosophy of Language 3 OR 4 hours. Intensive treatment of one or more topics such as meaning and reference, communication, the structure of language, language and thought, and the relation of language to reality. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): PHIL 102 or one 200- or 400-level logic course or PHIL 226 or consent of the instructor.

410 Introduction to Formal Logic 3 OR 4 hours. Review of predicate logic and of introductory set theory. The concept of a formal system. Notions of completeness and soundness. Introduction to Gödel’s first incompleteness theorem. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): PHIL 210 or consent of the instructor.

416 Metalogic I 3 OR 4 hours. Metatheory for sentence and predicate logic. Completeness and compactness theorems and their applications. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): PHIL 210 or consent of the instructor.

417 Metalogic II 3 OR 4 hours. Effective computability and recursive functions. Peano arithmetic. Arithmetization of syntax. Incompleteness and undecidability: Gödel’s and Church’s theorems. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): PHIL 416 or consent of the instructor.

420 Plato 3 OR 4 hours. Careful reading of selected works. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time with approval. Approval to repeat course granted by the department. Prerequisite(s): PHIL 220 or PHIL 221 or 3 courses in philosophy or consent of the instructor.

421 Aristotle 3 OR 4 hours. Careful reading of selected works. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time with approval. Approval to repeat course granted by the department. Prerequisite(s): PHIL 220 or PHIL 221 or 3 courses in philosophy or consent of the instructor.

424 Kant 3 OR 4 hours. Intensive study of Kant’s metaphysics and theory of knowledge with main reading drawn from the Critique of Pure Reason. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): PHIL 223 or PHIL 224 or 3 courses in philosophy or consent of the instructor.

425 Studies in Nineteenth-Century Philosophy 3 OR 4 hours. Careful reading of one or more post-Kantian philosophers such as Hegel, Schelling, Fichte, Schopenhauer, Marx, J.S. Mill, Kierkegaard, and Nietzsche. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): One 200-level course in philosophy or consent of the instructor.

426 Analysis and Logical Empiricism 3 OR 4 hours. Developments in twentieth-century philosophy with roots in the study of logic and language, such as logical atomism, logical empiricism, and contemporary analytic philosophy. Topics vary. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): PHIL 210 or PHIL 226 or consent of the instructor.

427 Continental Philosophy II: European Thought Since 1960 3 OR 4 hours. European thought since 1960: Existential Marxism, Critical Theory; Structuralism, Post-Structuralism and Deconstruction. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): PHIL 227 or consent of the instructor.

429 Special Studies in the History of Philosophy 3 OR 4 hours. Advanced study of a historical school, period, or the development of a historical theme. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time with approval. Approval to repeat course granted by the department. Prerequisite(s): One 200-level course in the history of philosophy or consent of the instructor.

430 Ethics 3 OR 4 hours. Selected topics in moral philosophy such as normative ethics, value theory, or metaethics. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time with approval. Approval to repeat course granted by the department. Prerequisite(s): One 200-level course in philosophy or consent of the instructor. Recommended background: Credit in a course in moral, social, or political philosophy.

431 Social/Political Philosophy 3 OR 4 hours. Selected topics in social and political philosophy. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time with approval. Approval to repeat course granted by the department. Prerequisite(s): One 200-level course in philosophy or consent of the instructor. Recommended background: Credit in a course in moral, social, or political philosophy.

432 Topics in Ethics 3 OR 4 hours. Selected topics in ethics. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time with approval. Approval to repeat course granted by the department. Prerequisite(s): One 200-level course in philosophy or consent of the instructor. Recommended background: Credit in a course in moral, social, or political philosophy.

433 Topics in Social/Political Philosophy 3 OR 4 hours. Selected topics in social and political philosophy. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time with approval. Approval to repeat course granted by the department. Prerequisite(s): One 200-level course in philosophy or consent of the instructor. Recommended background: Credit in a course in moral, social, or political philosophy.
441 Topics in Philosophy of Religion 0 TO 4 hours. Intensive study of one or more selected topics concerning the philosophical aspects of basic religious beliefs and concepts. 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time with approval. Approval to repeat course granted by the department. Prerequisite(s): One 200-level course in philosophy or consent of the instructor. Recommended background: PHL 241.

484 Neuroscience I 3 hours. Neuroscience as an integrative discipline. Neuroanatomy of vertebrates, neural development, cellular neurobiology, action potential mechanisms, synaptic transmission, and neuropharmacology. Same as BIOS 484 and PSCH 484. Prerequisite(s): BIOS 286 or PSCH 262.

485 Neuroscience II 3 hours. Integrative neuroscience. Continuation of BIOS/PSCH/PHIL 484. Sensory and motor systems; learning, memory, and language. Pathology of nervous systems. Philosophical perspectives and modeling. Same as BIOS 485 and PSCH 485. Prerequisite(s): BIOS 484.

500 Writing in Philosophy 4 hours. Practice in philosophical writing including finding a thesis, judicious choice of reading on the topic, outlining, and composing drafts as well as style, paragraphing, and making sentences. Required of all first-year PhD students. Prerequisite(s): Graduate standing in philosophy.

501 Seminar: Topics in Ancient Philosophy 4 hours. Intensive study of selected topics. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

503 Medieval Philosophy 4 hours. Intensive study of special topics in medieval philosophy. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

504 Theoretical Approaches to Policy and Governance 4 hours. Different theoretical approaches to the relationship between policy and governance and the philosophical foundations on which those approaches are based. Same as POLS 504. Prerequisite(s): Consent of the department required for nondegree graduate students.

505 Seminar in Modern Philosophy 4 hours. Intensive analysis of the work of one important philosopher or philosophical movement between 1600 and 1900. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

508 Nineteenth-Century Philosophy 4 hours. Topics in nineteenth-century philosophy. May be repeated with approval. Students may register for more than one section per term. Approval to repeat course granted by the department.

509 History of Analytic Philosophy 4 hours. Topics in late-nineteenth- and early-twentieth-century Anglo-American philosophy. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

510 History of Ethics and Social/Political Philosophy 4 hours. Topics in the history of ethics or social-political philosophy. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

513 Topics in History of Philosophy 4 hours. Philosophers, philosophical schools, or intellectual trends other than those of the ancient and modern periods. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

520 Topics in Contemporary Philosophy 4 hours. Intensive analysis of the work of one important philosopher or philosophical movement of the twentieth century. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

522 Feminist Philosophy 4 hours. Topics in feminist philosophy. May be repeated with approval. Students may register for more than one section per term. Approval to repeat course granted by the department.

524 Continental Philosophy 4 hours. Topics in continental philosophy. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

526 Ethics 4 hours. Intensive study of selected topics. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

528 Social/Political Philosophy 4 hours. Intensive study of selected topics. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

530 Aesthetics 4 hours. Intensive study of selected topics in aesthetics. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

532 Metaphysics 4 hours. Intensive study of selected topics. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

534 Philosophy of Mind 4 hours. Intensive study of selected topics. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

536 Epistemology 4 hours. Selected topics in the contemporary theory of knowledge. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

538 Philosophy of Language 4 hours. Intensive study of selected topics. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

540 Philosophy of Science 4 hours. Intensive study of selected topics. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

542 Philosophy of Special Sciences 4 hours. Intensive study of special topics in philosophy of physics, philosophy of biology, or other sciences. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

544 Philosophy of Logic 4 hours. Intensive study of selected topics. May be repeated with approval. Approval to repeat course granted by the department. Students may register for more than one section per term when topics vary.

546 Philosophy of Mathematics 4 hours. Philosophical foundations of mathematics. May be repeated with approval. Approval to repeat course granted by the department.

562 Metamathematics I 4 hours. First order logic, completeness theorem, and model theory. Same as MATH 502. Prerequisite(s): MATH 430 or consent of the instructor.

563 Metamathematics II 4 hours. Incompleteness theorems, elementary recursion theory and proof theory, first and second order arithmetic. Same as MATH 503. Prerequisite(s): MATH 502 or PHIL 562.
565 Set Theory I 4 hours.
Naive and axiomatic set theory. Independence of the continuum hypothesis and the axiom of choice. Same as MATH 504.
Prerequisite(s): MATH 430 or MATH 502 or PHIL 562.

567 Model Theory I 4 hours.
Introduction to stability theory: categoricity, stability, forking, finite equivalence relation, indiscernibles, orthogonality. Same as MATH 507.
Prerequisite(s): MATH 502 or PHIL 562.

568 Model Theory II 4 hours.
Intermediate stability theory: dependence, prime models, isolation, regular types, dimension, weight. Same as MATH 508.
Prerequisite(s): MATH 506 or PHIL 567.

569 Advanced Topics in Logic 4 hours.
Advanced topics in modern logic: e.g., descriptive set theory, model theory of fields, theory of hierarchies, stable groups. Same as MATH 512. May be repeated. Students may register in more than one section per term.
Prerequisite(s): Approval of the department.

590 Research Seminar 4 hours.
A work-in-progress seminar for graduate students at the topical, prospectus, or dissertation level. Satisfactory/Unsatisfactory grading only. May be repeated.
Prerequisite(s): Completion of 10 of the 14 required courses for the PhD in Philosophy.

593 Independent Research 2 TO 8 hours.
Topics and plan of study must be approved by the candidate’s adviser and by the staff member who directs the work. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term.

596 Independent Study 1 TO 4 hours.
Topics and plan of study must be approved by the candidate’s adviser and by the staff member who directs the work. May be repeated. Students may register in more than one section per term.

599 Thesis Research 0 TO 16 hours.
Research for the PhD thesis. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term.

597 Physical Therapy (PT)

501 Science of Physical Therapy Practice 3 hours.
Concepts of evidence-based physical therapy practice including practice theory, measurement, outcomes assessment, and critical evaluation of bodies of literature in context of the healthcare system and health policy.
Prerequisite(s): Consent of the instructor.

502 Measuring Motor Development and Function 3 hours.
Psychometric characteristics of standardized tests of motor development and function. Survey of tests, test evaluation, interpretation of test scores, and application to clinical practice.
Prerequisite(s): Consent of the instructor and a graduate-level course in statistics.

503 Analysis of Motor Development 3 hours.
Sensorimotor development in children, relating changes to maturation, skill acquisition, motor learning, environmental influences and individual differences. Includes critical review of current literature.
Prerequisite(s): Consent of the instructor.

504 Assessment of Developmental Processes in Infancy 2 hours.
Motor and behavioral competencies of the newborn, both term and preterm. Assessment of behavior and motor dysfunction in infants; analysis of the literature on intervention.
Prerequisite(s): Consent of the instructor and credit or concurrent registration in a graduate-level course in statistics.

510 Control of Posture and Locomotion 2 hours.
Review and analysis of normal and developmental aspects, assessment, disorders, and rehabilitation of balance and gait disorders.
Prerequisite(s): PT 562; and consent of the instructor.

511 Therapeutic Intervention 3 hours.
Provides clinicians with an approach to integrate research into practice. The goal is to acquire skills to evaluate therapeutic interventions in the literature and in practice.
Prerequisite(s): Consent of the instructor.

520 Mechanics of Joint Dysfunction 3 hours.
Principles of mechanics applied to pathology of joint components; mechanical and neurological implications of extremity and spinal joint dysfunction; critical review of pertinent literature.
Prerequisite(s): PT 519.

521 Biomechanics of Locomotor Dysfunction 3 hours.
Principles of mechanics applied to the study of walking pattern. Kinematic and kinetic analysis of normal and pathological deviations, and issues related to development from birth to adult and neuromuscular control.
Prerequisite(s): Consent of the instructor.

561 Biomechanics of Motor Control and Learning 3 hours.
Introduction to oscilloscopes, amplifiers, filters, and transducers. Origin and processing of electromyograms. Motion capture and processing techniques. Same as MVSC 572. Prerequisite(s): KINE 354; or consent of the instructor.

574 Instrumentation for Motor Control Research 3 hours.
Advanced principles of the control and acquisition of complex voluntary skills. Same as MVSC 572. Prerequisite(s): KINE 571. Prerequisite(s): Consent of the instructor.

578 Philosophy of Movement 3 hours.
Introduction to philosophy of movement. Emphasis on intervention. Prerequisite(s): Consent of the instructor.

580 Professional Practice Theory 3 hours.
Applications of theory and research to clinical practice. Prerequisite(s): Consent of the instructor.

594 Special Topics in Physical Therapy 1 TO 4 hours.
Selected topics of interest within physical therapy specialty areas. Particular attention is given to topics of cross cutting importance to these professions, especially applications in teaching, consultation, and administration. May be repeated to a maximum of 8 hours if topics vary. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

595 Seminar in Physical Therapy 1 hour.
Topics of recent interest in physical therapy. Includes discussions of current research and important new developments in the specific disciplines. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

596 Independent Study 1 TO 4 hours.
For graduate students who wish to pursue independent study not related to their project/thesis research. May be repeated to a maximum of 8 hours. Students may register in more than one section per term.

571 Biomechanics of Normal and Abnormal Movement 3 hours.
Principles of statics and dynamics exemplified by human movements. Examination of muscle mechanics, joint forces, stability. Redundancy and intersegmental interactions in multijoint movements. Same as MVSC 571. Prerequisite(s): Consent of the instructor.

572 Psychology of Motor Control and Learning 3 hours.
Advanced principles of the control and acquisition of complex, voluntary skills. Same as MVSC 572. Prerequisite(s): KINE 354; or consent of the instructor.

574 Instrumentation for Motor Control Research 3 hours.
Introduction to oscilloscopes, amplifiers, filters, and transducers. Origin and processing of electromyograms. Motion capture and processing techniques. Same as MVSC 574. Prerequisite(s): Consent of the instructor.

594 Special Topics in Physical Therapy 1 TO 4 hours.
Selected topics of interest within physical therapy specialty areas. Particular attention is given to topics of cross cutting importance to these professions, especially applications in teaching, consultation, and administration. May be repeated to a maximum of 8 hours if topics vary. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

595 Seminar in Physical Therapy 1 hour.
Topics of recent interest in physical therapy. Includes discussions of current research and important new developments in the specific disciplines. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

596 Independent Study 1 TO 4 hours.
For graduate students who wish to pursue independent study not related to their project/thesis research. May be repeated to a maximum of 8 hours. Students may register in more than one section per term.
21 GradCourseDescr.qxd  7/13/06  1:44 PM  Page 278

UIC

Course Descriptions

Physical Therapy (PT)

Physics (PHYS)

401 Electromagnetism I 4 hours.
Vector calculus; electrostatic fields in vacuum; solution of electrostatic boundary-value problems; electrostatic fields in material media; electrostatic energy; electric currents. Prerequisite(s): PHYS 142 and PHYS 215.

402 Electromagnetism II 4 hours.
Magnetic fields of steady currents and magnetic materials; electromagnetic induction; magnetic energy; slowly-varying currents; a-c circuits; Maxwell’s equations; electromagnetic waves; bounded regions; special relativity. Prerequisite(s): PHYS 401.

411 Quantum Mechanics I 4 hours.
Wave particle duality; wave functions; Schrödinger equation; mathematical structure of quantum mechanics; operators and observables; matrix representation of operators; three dimensional Schrödinger equation. Prerequisite(s): PHYS 244.

412 Quantum Mechanics II 4 hours.
Orbital angular momentum. Spin and vector addition of angular moments; degenerate and non-degenerate perturbation theory; identical particles; time-dependent perturbation theory; scattering theory. Prerequisite(s): PHYS 411.

421 Modern Physics: Atoms and Molecules 4 hours.
Hydrogenic atoms, electron spin, external fields, multi-electron atoms, diatomic molecules, line widths, photons, radiation from atoms and other electromagnetic processes, positions, postionum, elastic electron scattering. Prerequisite(s): Credit or concurrent registration in PHYS 411.

425 Modern Optics 5 hours.
Review of electromagnetic wave theory; advanced geometrical optics; Fourier transforms and optics; interference and diffraction; laser cavities and gain media; introduction to nonlinear and fiber optics. Prerequisite(s): PHYS 244.

431 Modern Physics: Condensed Matter 4 hours.
Crystal structures; interatomic binding; lattice, bands. thermal and magnetic properties; quantum statistical mechanics; free electron theory of metals; electronic band theory; semiconductors and insulators, superconductivity. Prerequisite(s): PHYS 411 and PHYS 461; or consent of the instructor.

441 Theoretical Mechanics 4 hours.
Variable motion, noninertial frames, oscillations, rigid body motion, three-dimensional motion, angular momentum, torque, orbits, Lagrange’s equations. Prerequisite(s): PHYS 142 and PHYS 215.

450 Molecular Biophysics of the Cell 4 hours.
Introduction to molecular length, time, force, energy scales; statistical thermodynamics of solutions; DNA, RNA, and protein structure and function; experimental methods. Same as BIDE 450. Prerequisite(s): PHYS 245 or the equivalent.

451 Modern Physics: Nuclei and ElementaryParticles 4 hours.
Accelerators, detectors, symmetries, conservation laws, leptons, weak interactions, electroweak theory, strong interactions, hadrons, nuclear forces, symmetries and reactions, nuclear models, nuclear astrophysics, quarks, quantum chromodynamics. Prerequisite(s): PHYS 411.

461 Modern and Statistical Physics 4 hours.
Thermal equilibrium (Zeroth Law); thermodynamic states (First Law); irreversibility; entropy (Second Law); thermodynamic potentials and properties; phase transitions; kinetic theory of gases; classical statistical mechanics. Prerequisite(s): PHYS 245.

470 Educational Practice with Seminar I 6 hours.
The first half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, and approval of the department.

471 Educational Practice with Seminar II 6 hours.
The second half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, credit or concurrent registration in PHYS 470, and approval of the department.

481 Modern Experimental Physics I 4 hours.
Theory and experimental use of linear circuits, semiconductor devices, amplifiers, oscillators. Techniques and experimental atomic, molecular and solid-state physics. Prerequisite(s): PHYS 244.

482 Modern Experimental Physics II 4 hours.
Techniques and experiments in nuclear and particle physics. Gamma-gamma correlations, muon lifetime, Compton scattering, alpha particle scattering, computer-based experimentation. Prerequisite(s): PHYS 481.

491 Special Topics in Physics 1 TO 4 hours.
Selected topics of current interest in physics. May be repeated. Prerequisite(s): PHYS 215 and sophomore standing or above; or approval of the department.

494 Special Topics in Physics Teaching 2 TO 4 hours.
Seminar on various topics related to the teaching of physics. Subjects are announced. May be repeated. Students may register in more than one section per term. Supervised teaching practice included. Prerequisite(s): Graduate standing or approval of the department.

499 Survey of Physics Problems 1 hour.
Problem-solving techniques applied to the variety of undergraduate physics topics. May be repeated up to 1 time. No gradation credit for graduate students. Grade of C or better required to graduate with an undergraduate degree in physics. Prerequisite(s): Credit or concurrent registration in PHYS 401 and PHYS 411 and PHYS 441 and PHYS 461 and PHYS 481.

501 Electrodynamics I 4 hours.
Maxwell’s equations, static and time dependent fields in material media and in vacuo. Boundary value problems, wave propagation. Classical theory of radiation. Prerequisite(s): PHYS 402 or approval of the department.

502 Electrodynamics II 4 hours.
Special relativity in electrodynamics. Covariant form of Maxwell’s equations. Lagrangian form of electrodynamics. Applications to modern physics problems. Prerequisite(s): PHYS 501 or consent of the department.

511 Quantum Mechanics I 4 hours.

512 Quantum Mechanics II 4 hours.

573 Quantum Field Theory I 3 hours.
Lagrangian formulation of relativistic wave equations. Quantum electrodynamics: Feynman rules, trace theorems, lowest-order calculations for several processes, self-energy, renormalization, higher-order diagrams. Prerequisite(s): PHYS 512.
21 GradCourseDescr.qxd  7/13/06  1:44 PM  Page 279

514 Quantum Field Theory II 3 hours. Path integrals, gauge theories, Weinberg-Salam model, electroweak processes, quantum chrodynamics, nonperturbative methods, topological objects in field theories, instantons. Prerequisite(s): PHYS 513.

515 Methods in Mathematical Physics 3 hours. Applications of mathematical methods to physics problems, linear operators, orthogonal functions, Green’s functions, ordinary and partial differential equations, Sturm-Liouville problem, Hilbert space, group theory. Prerequisite(s): PHYS 215.

521 Molecular Physics 3 hours. Rotational and vibrational energies of molecules, potential curves, electronic transitions, transition moments, intensity rules, thermodynamic properties. Applications. Prerequisite(s): PHYS 411 and PHYS 421; or approval of the department.

522 Laser Physics/Quantum Electronics 3 hours. Laser physics: population inversion; quantum theoretical calculation; modern laser systems; coherence phenomena; applications of lasers. Prerequisite(s): PHYS 521 or approval of the department.

524 Group Theory in Physics 3 hours. Applications of group theory and symmetry principles to problems in elementary particle, solid-state, atomic, and molecular physics. Prerequisite(s): PHYS 512 or approval of the department.

531 Solid-State Physics I 3 hours. Crystal structure, reciprocal lattice, X-ray methods, phonons, heat capacity, thermal expansion. Classification of solids, band structure. Metals: free-electron model, band-structure effects, transport. Prerequisite(s): PHYB 401 or consent of the instructor.

532 Solid-State Physics II 3 hours. Semiconductor physics, electron-electron and electron-phonon interactions, superconductivity, spin systems, diamagnetism, paramagnetism, ferromagnetism, and antiferromagnetism. Prerequisite(s): PHYS 531.

533 Theory of Solids: Magnetism and Superconductivity 3 hours. The main body problem; many-particle states; functional integrals; Green’s functions; Feynman diagrams; perturbation expansions; tree diagrams. Prerequisite(s): PHYS 512 and PHYS 532.

534 Theory of Solids: Semiconductor Physics 3 hours. Spin systems; magnetism; equilibrium Green’s functions; Landau theory of Fermi liquids; Hubbard model; Luttinger model, nonequilibrium Green’s functions, Keldysh, Kadanoff-Baym approach. Prerequisite(s): PHYS 512 and PHYS 532.

540 Physics of Semiconductor Devices 4 hours. Electrons in periodic lattice; equilibrium carrier distribution; energy band diagrams in junctions, in homogeneous semiconductors; recombination and generation; nonequilibrium processes, radiation and electric fields; diodes. Same as ECE 540. Prerequisite(s): ECE 346 or the equivalent.

545 Introduction to General Relativity 3 hours. Principle of equivalence, the metric field and geodesics, tensor analysis, and differential geometry, Einstein’s equations and the action principle, gravitational fields and waves, black holes. Prerequisite(s): PHYS 502 and PHYS 541 or approval of the department.

551 Elementary Particle Physics I 3 hours. Phenomenology and theories of modern day particle physics. Classification of particles and their interactions. Survey of experimental techniques, accelerators, and detectors. Prerequisite(s): PHYS 512 or approval of the department.

552 Elementary Particle Physics II 3 hours. Lagrangian formulation of electromagnetic, weak and strong interactions. Transition rates. Unification of electroweak and strong interactions. Gauge theories. Modern topics. Prerequisite(s): PHYS 551 or approval of the department.

561 Statistical Mechanics 3 hours. Density matrix, information theory; Boltzmann-Gibbs distribution; the n-vector model, renormalization group theory; cellular automata. Prerequisite(s): PHYS 461 or approval of the department.

581 Advanced Experimental Physics 2 hours. Experimental techniques in atomic, molecular and solid and solid-state physics. Prerequisite(s): PHYS 431 or consent of the instructor.

594 Special Topics in Modern Physics 1 TO 4 hours. Lectures on topics of current interest. Subjects are announced in the previous semester. May be repeated. Students may register in more than one section per term. Prerequisite(s): PHYS 512.

595 Graduate Seminar 1 hour. Seminars in areas of research activity within the department covering recent contributions to the literature and research in progress. Presentations by students, faculty, and scientists from other institutions. Satisfactory/ Unsatisfactory grading only. May be repeated to a maximum of 6 hours. Students may register in more than one section per term.

596 Individual Study 2 TO 4 hours. Special topics. Outside reading and a term paper are assigned by a special arrangement with the department and faculty. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term.

Physiology and Biophysics (PHYB)

502 Physiology of Reproduction 2 hours. Advanced study of the physiology of the gastrointestinal tract. Special emphasis will be placed on recent developments in cellular and molecular aspects and on how they relate to established concepts in the literature. Prerequisite(s): PHYS 402 or consent of the instructor.

516 Physiology and Biochemistry of Muscle Contraction 3 hours. Structure and function of myosin, actin, tropomyosin, troponin, and the sarcoplasmic reticulum; control, energetics, and mechanism of muscle contraction; gene expression.

518 Molecular, Cellular, and Integrative Cardiovascular Physiology 3 hours. Advanced study of the cardiovascular system from molecule to organism. Emphasis on recent developments at the molecular/ cellular level and their relationship to overall function. Prerequisite(s): PHYS 401 or consent of the instructor.

523 Exercise Biology in Health and Disease 3 hours. Interrelationships between exercise and various pathological conditions. Current research focusing on molecular and cellular mechanisms in healthy and diseased states. Same as MVSC 523.

Prerequisite(s): Consent of the instructor.
540 Ion Channels: Structure, Function, Pharmacology, and Pathology 2 hours.
The concept of ion channels is treated from the perspectives of their molecular structures and functions. Modulation, pathological conditions (channelopathies), and pharmacological intervention will also be treated. Same as PCOL 540. Recommended background: One undergraduate course in biochemistry and one in physiology, or consent of the instructor.

551 Human Physiology I 5 hours.
Lectures and conferences in human physiology. Emphasis is on cellular, nerve-muscle, cardiovascular, respiratory, and renal physiology. Prerequisite(s): Mathematics, undergraduate physics, and organic chemistry; or consent of instructor. Recommended background: Course work in biological sciences.

552 Human Physiology II 5 hours.
Continuation of PHYB 551. Emphasizes gastrointestinal and physiology of the central nervous system, endocrine, and reproductive systems. Prerequisite(s): A grade of C or better in PHYB 551 or consent of the instructor. Recommended background: Course work in biological sciences.

569 Methods in Experimental Physiology 3 hours.
Primarily for students in physiology. Registration limited to eight. A laboratory course designed to acquaint students with advanced techniques and methodology in physiologic investigations. Prerequisite(s): Enrollment in the MS or PhD in Physiology and Biophysics program, and credit or concurrent registration in PHYB 401 or the equivalent; or consent of the instructor.

585 Cell Biology 4 hours.
Functional and structural organization of the cell with emphasis on the cellular basis of physiological activity. Same as ANAT 585 and MM 585.

586 Cell Physiology 3 hours.
Advanced functional and structural organization of the cell with emphasis on the cellular basis of physiological activity.

Prerequisite(s): PHYB 552 and GCIS 501 and GCIS 503, or consent of the instructor.

591 Departmental Seminar 1 hour.
Weekly seminar by staff and invited speakers. Satisfactory/Unsatisfactory grading only. May be repeated. Required of all physiology and biophysics students each fall and spring semester while enrolled in the graduate program. Prerequisite(s): Graduate or professional standing.

592 Tactics and Strategy of Research in Physiology 2 hours.
Course presents an analysis concerning various approaches in solving current physiology problems. Emphasizes critical reading of the literature. Prerequisite(s): PHYB 401.

594 Special Topics in Physiology and Biophysics 1 TO 4 hours.
Topics may include bioengineering, endocrinology, membrane biology, ion transport and its regulation, muscle physiology, neuro-physiology, molecular neurobiology, and others of current significance in physiology and biophysics. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

595 Journal Club and Seminar in Physiology 1 hour.
Student presentation and discussion of assigned topics of current importance in physiology and biophysics as well as related fields. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor. Limited to degree candidates in physiology and biophysics.

596 Independent Study 1 TO 4 hours.
Individual study guided by a faculty member. The format of the course, examination and grading to be established by the faculty member. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

598 MS Thesis Research 0 TO 16 hours.
Thesis work under the supervision of a graduate adviser. Satisfactory/Unsatisfactory grading only.

Prerequisite(s): Graduate standing in Physiology and Biophysics.

599 PhD Thesis Research 0 TO 16 hours.
Thesis work under the supervision of a graduate adviser. Satisfactory/Unsatisfactory grading only.

Policy Studies (PS)

453 Topics in Education Policy 3 OR 4 hours.
Workshop; emphasis on issues related to school organization, control, and community relations. Topics are announced at the time the class is scheduled. 3 undergraduate hours. 4 graduate hours. May be repeated to a maximum of 12 hours. Prerequisite(s): Advanced undergraduate or graduate standing.

500 City Schools: The Urban Educational Environment 4 hours.
Cross-disciplinary, critical analysis of relationships between public schools and their urban contexts, with attention to implications for school improvement. Prerequisite(s): Consent of the instructor.

501 School Finance and Policy Analysis 4 hours.
Role of government, school boards, and community in funding education. Principles of school and district financial planning, management, and analysis. Equity issues in school finance. Prerequisite(s): Consent of the instructor.

510 Seminar in Urban Education 4 hours.
May be repeated to a maximum of 12 hours. Prerequisite(s): Consent of the instructor; admission to a degree program in the College of Education. Students admitted to the EdD in Urban Education Leadership, prerequisites also include PS 550 and PS 552.

Examine theory and practice of social justice teaching in schools, including: history, literacy pedagogies, culturally relevant and critical pedagogies, funds of knowledge, critical multiculturalism and antiracist pedagogy, critical race theory. Same as CE 549. Prerequisite(s): Consent of the instructor.

550 Organizational Leadership and Change in Education 4 hours.
Introduction to models and theories of organizational leadership and change in education. Overview of mechanisms, resources, and contexts of effective school improvement. Prerequisite(s): Consent of the instructor.

Prerequisite(s): ED 500 and enrollment in the PhD in Policy Studies in Urban Education program or consent of the instructor.

544 Research Design 4 hours.
Alternative research design models and evaluation methodologies; quantitative and qualitative approaches; ethnography; historiography; experimentation and quasiexperiments; institutional and practitioner research designs and methods. May be repeated. Prerequisite(s): Admission to the PhD in Policy Studies in Urban Education (Educational Organization and Leadership Concentration) or the EdD in Urban School Leadership Program and consent of the instructor.

548 Leadership for Literacy Instruction 4 hours.
School and system leadership practices for promoting effective literacy instruction in urban elementary and secondary schools. Assessment and improvement of literacy curricula, pedagogy, and evaluation. Same as CE 548. Prerequisite(s): Consent of the instructor; admission to a degree program in the College of Education. Students admitted to the EdD in Urban Education Leadership, prerequisites also include PS 550 and PS 552.

Prerequisite(s): Consent of the instructor. Admission to a degree program in the College of Education. Students admitted to the EdD in Urban Education Leadership, prerequisites also include PS 550 and PS 552.
552 The Urban School Principal 4 hours. Leadership and management responsibilities of principals in urban schools. Theory and research on principal leadership, case study analysis, and field experience with working principals. Prerequisite(s): Consent of the instructor.

553 System Leadership in Urban Schools 4 hours. Leadership and management responsibilities of system administrators in urban school systems. Theory and research on system level leadership using case study analysis and fieldwork with system administrators. Prerequisite(s): Consent of the instructor.

555 Politics of Urban Education 4 hours. Politics of urban school policy and practice. Interest groups, school boards, educators, citizens, and governments as political actors. Educational leadership in political context. Prerequisite(s): Consent of the instructor.

556 Instructional Leadership 4 hours. Instructional improvement role of educational leaders of urban schools. Human resource development, parent/community support, supportive organizational context, personal leadership development, collaborative leadership, evaluation. Prerequisite(s): Consent of the instructor.  

559 Internship in Educational Leadership 4 hours. Field experience in approved educational leadership positions and sites to perform authentic leadership tasks. Supervision by site-based mentor and university instructor. Different sections will focus on school-level and system-level administration. May be repeated. 4 hours required for the Illinois Type 75 certificate. Additional hours may be needed for students to satisfy local school system administrator certification requirements (such as Chicago Public School’s 1019 requirement). Prerequisite(s): PS 550 and PS 552 and admission to a degree program in the College of Education and to the Type 75 General Administrative Certificate program, and consent of the instructor. Requires concurrent registration in PS 573.

566 Cultural Studies in Education 4 hours. Examines origins, evolutions, and current cultural studies frameworks, with a focus on educational policy and practice. Prerequisite(s): Consent of the instructor or admission to the PhD in Policy Studies in Urban Education program.

567 Economics of Education and Public Policy: An Introduction 4 hours. Introduction to the economics of education. It relates education and income, studies and conditions for efficient production of education, teacher markets and school finance. Prerequisite(s): Consent of the instructor or admission to the PhD in Policy Studies in Urban Education program.

568 Education and the Law 4 hours. Legal rights, responsibilities, and authority of students, parents, teachers, administrators, boards, and government units in relation to laws. Legal issues in education policy and practice. Prerequisite(s): Consent of the instructor.

570 Educational Policy: Historical and Philosophical Analysis 4 hours. The evolution of American educational thought and policy in the context of social and intellectual developments in the culture of the United States. Prerequisite(s): Consent of the instructor.

571 Education Policy: Formation, Implementation, Outcomes 4 hours. Examination of social forces outside the school that influence educational policy making, and the results of implementing policy decisions: legislatures, courts, government agencies, interest groups. Prerequisite(s): Consent of the instructor.

572 Sociology of Education 4 hours. Education as a social institution in interaction with other institutions, such as the economy. Topics include the emergence of national systems of education, purposes of education, inequality, and educational reform. Same as SOC 572. Prerequisite(s): Enrollment in the PhD in Policy Studies in Urban Education program or consent of the instructor.

573 Seminar in Administrative Practice 4 hours. Budget and finance, strategic planning and decision making, communication, use of data and technology, parent/community relations, student support services. Different sections will focus on school-level and system-level administration. May be repeated. 4 hours required for the Illinois Type 75 certificate. Additional hours may be needed for students to satisfy local school system administrator certification requirements (such as Chicago Public School’s 1019 requirement). Prerequisite(s): PS 550 and PS 552 and admission to a degree program in the College of Education and to the Type 75 General Administrative Certificate program, and consent of the instructor. Requires concurrent registration in PS 559.

574 The Impact of College on Students 4 hours. Introduction to the research evidence on the impact of college on students. Emphasis is placed on methods of assessing impact and research on college effects. Same as PPA 574. Prerequisite(s): Consent of the instructor.

575 Higher Education Organization and Administration 4 hours. Perspectives on administration in higher education. Understandings from organization theory and research on postsecondary institutions applied to issues in higher education administration. Same as PPA 575. Prerequisite(s): Admission to PhD in Public Policy Analysis program or consent of the instructor.

576 History of Higher Education 4 hours. Key historical events which have enduring implications for colleges and universities. Emphasis on social, political, economic, intellectual, and legal forces shaping American higher education. Same as PPA 576. Prerequisite(s): Admission to PhD in Public Policy Analysis program or consent of the instructor.

577 Women in Education 4 hours. An overview of girls’ and women’s educational experiences and placement within the academic structure (as students, professionals, and intellectuals). The impact of gender on the realization of educational, economic, and social opportunities. Same as GWS 583. Prerequisite(s): Consent of the instructor or enrollment in the PhD in Policy Studies in Urban Education program.

578 Theoretical Frameworks of Educational Politics 4 hours. Basic concepts, hypotheses, research findings, and theory development. Nature and function of theory in educational politics at the federal, state, and local levels. Prerequisite(s): PS 406 or consent of the instructor.

579 Unions and Collective Bargaining in Education 4 hours. Role of unions, professional associations, and collective bargaining in governance, function, and improvement of school systems. Models and processes of negotiation, engagement, and conflict resolution. Prerequisite(s): Consent of the instructor.

582 Cultural Pluralism and Education Policy 4 hours. Social philosophical analysis of the theory of cultural pluralism, its relationship to the liberal-experimentalist tradition in educational thought; selected equal educational opportunity policies; recent federal and state legislation on multicultural education. Emphasis on institutional and disciplinary variation in the performance, evaluation, and reward of faculty activities. Same as PPA 583.

583 Sociology of Education 4 hours. Education as a social institution in interaction with other institutions, such as the economy. Topics include the emergence of national systems of education, purposes of education, inequality, and educational reform. Same as SOC 572. Prerequisite(s): Consent of the instructor.

587 Historical and Systematic Foundations of the Academic Profession 4 hours. Historical and systematic foundations of the academic profession.
856 Methods of Institutional and Practitioner Research 4 hours. Methods of institutional and practitioner research for practicing educators in school and school system settings. Use of this form of inquiry in educational leadership and improvement. Prerequisite(s): Admission to a doctoral program in the College of Education and consent of the instructor.

587 Topics in Documentary and Field Research in Education 4 hours. Study and practice in documentary and field research methods of collecting, organizing, and integrating educational data: interviewing, participatory observation, ethnography, case study, historiography. Topics vary. May be repeated to a maximum of 8 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

588 Critical Race Theory: Race and Racism in Education 4 hours. Examines theories of race and racism in education within the interdisciplinary construct of Critical Race Theory. Prerequisite(s): Consent of the instructor or admission to the PhD in Policy Studies in Urban Education program.

589 Educational Administration Theory 4 hours. Overview of administrative theory, including theory functions; theory practice interface; administrative theory history; and relationships of administrative theory to educational administration and organizations. Prerequisite(s): PS 550 or consent of the instructor.

592 Professional Career Training in Education Policy 4 hours. Faculty supervised training through university teaching, research, or internship. Presentation relating experience to theory. May be repeated to a maximum of 16 hours. Prerequisite(s): Consent of the instructor.

593 PhD Research Project 1 TO 8 hours. Students design, implement, and analyze results of a research problem in this area of specialization. Completed study is reviewed by faculty. May be repeated to a maximum of 8 hours. Prerequisite(s): Admission to the PhD in Education program.

594 Special Topics in Educational Policy 4 hours. Exploration of an area not covered in existing course offerings. Topics vary. May be repeated to a maximum of 12 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

596 Independent Study 1 TO 4 hours. Students carry out independent study in policy studies under the direction of a faculty member. May be repeated to a maximum of 12 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the adviser and the area chairperson.

599 Thesis Research 0 TO 16 hours. Research on the topic of the student’s dissertation. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the dissertation adviser.

401 Polish Composition and Conversation III 3 OR 4 hours. Development of oral and writing skills: expanding vocabulary and perfecting style. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): POL 302.

402 Polish Composition and Conversation IV 3 OR 4 hours. Continues POL 401. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): POL 401 or the equivalent.

410 Structure of Modern Polish 3 OR 4 hours. A synchronic linguistic analysis of Polish substantives, pronouns, verbs, deverbal nouns, and minor parts of speech from a syntactic and paradigmatic point of view. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): POL 402 or the equivalent.

450 Studies in Polish Drama 3 OR 4 hours. Main trends in Polish drama, leading playwrights, their aesthetics and philosophy in the context of European drama and from the Renaissance to the present. 3 undergraduate hours. 4 graduate hours. May be repeated up to 2 times. Prerequisite(s): Advanced undergraduate standing.

460 Studies in Polish Literature 3 OR 4 hours. Literary trends in Polish poetry and prose; their poetics, aesthetics, and philosophy in their European context. 3 undergraduate hours. 4 graduate hours. May be repeated up to 2 times. Prerequisite(s): Advanced undergraduate standing.

499 Independent Study 1 TO 4 hours. Investigation of special problems under the general direction of a staff member. May be repeated to a maximum of 8 hours. Graduate students may register in more than one section per term. Prerequisite(s): Senior or graduate standing, consent of the instructor, and consent of the head of the department.

510 History of the Polish Language 4 hours. Phonological and morphological development; emphasis on lexical, syntactical, and stylistic problems. Linguistic analysis of selected texts. Prerequisite(s): POL 410 or the equivalent.

515 Topics in Contemporary Polish Linguistics 4 hours. Variable content. May be repeated to a maximum of 12 hours. Prerequisite(s): POL 201; or graduate standing.

520 Topics in Historical Polish Linguistics 4 hours. Variable content. May be repeated to a maximum of 12 hours.

545 Studies in Polish Medieval, Renaissance, and Baroque Literature 4 hours. Study of a topic, genre, author, or movement. Content varies. May be repeated to a maximum of 12 hours.

550 Studies in Polish Enlightenment and Romanticism 4 hours. Study of an author, topic, genre, or movement. Content varies. May be repeated to a maximum of 12 hours.

560 Studies in Polish Positivism and Symbolism 4 hours. Study of an author, topic, genre, or movement. Content varies. May be repeated to a maximum of 12 hours.

565 Studies in Twentieth-Century Polish Literature 4 hours. Study of an author, topic, genre, or movement. Content varies. May be repeated to a maximum of 12 hours.

570 Studies in Polish Literary Criticism 4 hours. Literary criticism in the major epochs of Polish literary history. May be repeated to a maximum of 12 hours.

401 Data Analysis I 3 OR 4 hours. Statistical inference for the social sciences. Emphasis on univariate and bivariate statistics. Same as PPA 401. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): POLS 200 and POLS 201; or graduate standing.

405 The Problem of Justice 3 OR 4 hours. Premodern and modern views of justice and their practical utility in analyzing legislative, executive, and judicial programs for enhancing or restricting justice. Same as CRJ 405. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): CRJ 101, plus two 200-level courses in criminal justice or two 200-level courses in political science.

435 Special Topics in Bureaucracy 3 OR 4 hours. Consideration of timely or enduring issues in policy formation and bureaucracy not available in regularly offered courses. 3 undergraduate hours. 4 graduate hours. May be repeated to a maximum of 12 hours. Prerequisite(s): POLS 460 or consent of the instructor.
Law and Public Policy 3 OR 4 hours.
The role of law and legal institutions in the development and implementation of public policies. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Graduate standing or consent of the instructor.

Topics in Sociology of Politics 3 OR 4 hours.
Intensive examination of a specialized topic announced when the class is scheduled. Same as GWS 465. 3 undergraduate hours. 4 graduate hours. May be repeated to a maximum of 12 hours. Students may register in more than one section per term. Prerequisite(s): 6 hours of upper-division sociology or consent of the instructor.

Public Opinion and Political Communication 3 OR 4 hours.
Nature of public opinion and political communication systems. Patterns of opinion distribution and its measurement. Forces shaping public opinion and its impact on public policy. Same as COMM 467. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): POLS 200 or the equivalent or consent of the instructor.

Democratic Theory 3 OR 4 hours.
Democracy as a procedure of government and value commitments associated with this form of government. Special attention paid to classical and modern democracies. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): POLS 290 or POLS 291 or consent of the instructor.

Gender and Politics 3 OR 4 hours.
Impact of gender on basic categories of western political thought. Distinctions between reason and emotion, public and private, among others, examined from feminist perspective. Same as GWS 465. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): POLS 190 and one 200-level course in political theory or consent of the instructor.

Directed Readings in Political Science 4 hours.
Intensive readings on a topic not covered in regular curriculum. May be repeated with approval.

Approval of the graduate director required to repeat course. Prerequisite(s): Graduate standing and consent of the instructor.

Independent Research in Political Science 2 TO 6 hours.
Research on special problems not included in course offerings. May not duplicate work done in POLS 596 or POLS 590. May be repeated with approval. Approval of the graduate director required to repeat course. Prerequisite(s): Graduate standing and consent of the instructor.

Introduction to Policy and Governance 4 hours.
Introduces the intellectual traditions and debates that have characterized the study of public policy and the social order. Society-centered and state-centered explanations for policy will be explored. Same as PPA 500. Prerequisite(s): Consent of the department required for nondegree graduate students.

Data Analysis II 4 hours.
Interpretation and application of multivariate methods of analysis in the social sciences. Regression specification and diagnostics, limited dependent variable models, measurement issues. Same as PPA 501. Prerequisite(s): POLS 401 or PPA 401.

Time Series Analysis for Political Science 4 hours.
Single series (ARIMA) models, event history analysis, Vector autoregression (VAR), panel and pooled models. Prerequisite(s): POLS 402 or consent of the instructor.

Theoretical Approaches to Policy and Governance 4 hours.
Different theoretical approaches to the relationship between policy and governance and the philosophical foundations on which those approaches are based. Same as PHL 504. Prerequisite(s): Consent of the department required for nondegree graduate students.

Research Design and Methods 4 hours.
Overview of the methods and conduct of research in political science. Issues of inference, measurements, data collection, hypothesis testing, and ethics.

The Profession of Political Science 2 hours.
Introduces graduate students to the range of teaching, research, and service possibilities in the political science profession. Students are encouraged to take this course during their first year of graduate study.

Seminar on Teaching Political Science 2 hours.
Seminar on ethics and responsibilities of teaching political science in various academic settings. Teaching methods and technology applicable to community colleges and four-year colleges. Complements the Preparing Future Faculty Program. The format will include guest speakers from area community and four-year colleges. Satisfactory/Unsatisfactory grading only.

Policy Formation, Implementation, and Evaluation 4 hours.
Introduction to political science theories of how elections, interest groups, and state structure affect the formulation of public solutions to societal problems. Same as PPA 541. Prerequisite(s): Consent of the department required for nondegree graduate students.

Distributive/Redistributive Public Policy 4 hours.
Introduction to the politics of enacting and maintaining distributive policies. Focus is on the parochial and community-wide efficiency of such policies.

Regulatory Public Policies 4 hours.
Exploring the nature and determinants of public policy making with respect to the regulation of the economy.

Topics in Public Policy Analysis 4 hours.
A research seminar on some aspects of public policy analysis not otherwise covered in the regular curriculum.

Introduction to Urban Politics 4 hours.
Explores relationships between private economy and public policies in American cities; causes of urban decline and uneven development; and urban redevelopment and human capital policies.

Urban Public Policy 4 hours.
Explores the problems of poverty, race, education, transportation policy, and housing in America’s cities with a special emphasis on Chicago.

Graduate Student Field Experience in Political Science 1 TO 8 hours.
Graduate student intern experience. Placement with government agencies, community organizations, or civic organizations, in conjunction with a seminar class and directed readings. May be repeated up to 8 times. Students may register in more than one section per term. Fieldwork required. Prerequisite(s): POLS 402 and POLS 500.

Topics in State and Local Government 4 hours.
Case analysis and research in selected problems dealing with structure, functions, and administrative processes of American state and local governments. Prerequisite(s): POLS 500 and POLS 541.

Proseminar in American Politics 4 hours.
Introduction to research literature on American policy-making institutions and processes. Prerequisite(s): Consent of the instructor.

Seminar on Legislation and Public Policy 4 hours.
Review of recent theories and research on structure and policy formulation in American legislatures. Emphasis on theoretical development in this field. Prerequisite(s): POLS 541.

Executive Process 4 hours.
Presidential elections; presidential decision making; the powers of the president; presidential leadership; the distributive state; policy implementation; federalism and administration; the politics of budgeting. Prerequisite(s): Admission to the MA or PPA programs or consent of the instructor.

Seminar in Judicial Process 4 hours.
The judicial process as part of political and policy processes. Demands made by, and policy impacts on, individual and organizational litigants and other political actors. Prerequisite(s): POLS 460.
566 Interest Groups 4 hours. Pluralism: the distributive state; radical group theory; public-interest groups; collective actions; corporatism; statism; structural Marxism; social movements and interest groups.
567 Topics in Political Communication 4 hours. Intensive study of selected aspects: organizational communication in public institutions, urban political communication patterns, communication elites, independent research using a variety of community research techniques. Same as COMM 567 and PA 567. Prerequisite(s): Consent of the instructor.
569 Topics in American Political Processes 4 hours. A research seminar on some aspect of American political process. Topics vary. Prerequisite(s): COMM 560 and POLS 500.
570 Comparative Politics and Public Policy 4 hours. Comparative analysis of how different political systems deal with a variety of public policy issues, such as environmental protection, social welfare, and crime control.
571 Seminar in International Relations 4 hours. State building and challenges to state authority, democratization and regime change, political economy, environment, war, regionalism and globalization, social movements, and international governance.
572 International Political Economy 4 hours. Exploration of competing perspectives on nation-states and economic systems. Previously listed as POLS 472.
573 Transitions to Democracy 4 hours. Game-theoretic view of democracy. Process and outcomes of transitions to democracy in capitalist and in communist countries. Civil-military relations in the process of transition. Case studies.
579 Topics in Comparative Politics 4 hours. Advanced seminar on selected topics in comparative politics. Topic(s) will vary from semester to semester. Prerequisite(s): POLS 500 and POLS 541.
582 The Philosophy of the Social Sciences 4 hours. The ontological and epistemological foundations of alternative approaches to the study of human beings. Naturalistic, hermeneutic, and critical approaches are addressed and assessed.
589 Topics in Political Theory 4 hours. Detailed analysis of a political theorist or type of political theory, especially designed to meet programmatic and graduate needs.
590 Advanced Public Policy Workshop 4 hours. Interdisciplinary workshop on preparing a dissertation proposal for public policy analysis students. Same as POLS 550. Prerequisite(s): Advanced standing in the PhD in PPA program and completion of PPA core courses.
593 Independent Research for Master's Degree 2 hours. Under the supervision of two faculty members, students will complete a major research paper that combines a review of relevant literature of a political science topic with analysis of original data or research materials. Satisfactory/Unsatisfactory grading only. Prerequisite(s): POLS 401 and POLS 505 and POLS 506; and POLS 541 or POLS 504 or POLS 551 or POLS 570 or POLS 571. Open only to Master's degree students and approval of the department.
596 Advanced Readings in Political Science 1 TO 4 hours. Intensive readings on an advanced topic not covered in the regular curriculum. May be repeated with approval. Students may register in more than one section per term. Approval to repeat course granted by the graduate director. Prerequisite(s): POLS 401 and POLS 404 and consent of the instructor.
598 Thesis Research 0 TO 16 hours. Individual study required of all students pursuing advanced degree in political science under thesis option. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor. Open only to degree candidates.
599 Dissertation Research 0 TO 16 hours. Individual study required of all students pursuing PhD degree with specialization in political science. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor. Open only to degree candidates.
Prosthodontics (PROS)
504 Advanced Dental Materials 3 hours. A seminar course designed to develop an advanced understanding of dental materials and a fundamental knowledge of materials science. Involves a critical evaluation of the literature. Prerequisite(s): REST 320, REST 321, REST 322, REST 323, or the equivalent course work or matriculation into the Advanced Certificate in Advanced Prosthodontics program.
517 Advanced Occlusion/TMJ Disorders 2 hours. A lecture and seminar discussion of the advanced concepts of occlusion, articulation, occlusal analysis, diagnosis, and treatment of functional disturbances. Prerequisite(s): Matriculation into the Advanced Certificate in Advanced Prosthodontics program or the MS in Oral Sciences program and consent of the department head.
521 Clinical Practicum in Behavioral Health I 3 TO 5 hours. Advanced nursing management of common mental health problems. Emphasis on primary care and community settings. Assessment, triage, case management, emergency care, and brief interventions. May be repeated. Prerequisite(s): Consent of the instructor.
522 Clinical Practicum in Behavioral Health II 3 TO 8 hours. Advanced psychiatric nursing with a selected caseload of clients with serious and complex problems. Emphasis on psychiatric rehabilitation, cognitive-behavioral methods, psychopharmacology and dual diagnosis. May be repeated. Prerequisite(s): NUPS 521.
527 Behavioral Health Care II 3 hours. Complex mental health problems experienced in psychiatric populations. Focus on stabilization and management of psychotic illnesses, dual diagnosis treatment models, psychoeducational models, and psychiatric rehabilitation. Prerequisite(s): NUPS 516.
518 Family Behavioral Health 2 hours. Theories of family development and behavior; functional and dysfunctional communication and behavioral patterns. Theories and strategies for family assessment and intervention. Prerequisite(s): Consent of the instructor.
523 Clinical Practicum in Behavioral Health III 2 TO 5 hours. Development of mental health nurse practitioner role to deliver mental health services and impact policies affecting a selected population. May be repeated. Prerequisite(s): NUPS 522 or consent of the instructor.
547 Substance Misuse and Dependence 2 hours. Theories, research trends, treatment perspectives, ethical and social issues related to alcohol and other drug misuse and dependence. Prerequisite(s): Consent of the instructor.

Psychology (PSCH)

411 Stereotyping, Prejudice, and Racism 3 hours. Psychological research and theory concerning stereotyping, prejudice, and racism. Historical conceptualization, development, causes, expression, and psychological consequences of prejudice as well as theories of prejudice reduction. Prerequisite(s): Graduate standing in psychology or consent of the instructor.

415 Social Bases of Health Behavior 3 hours. Psychological theory and research concerning the coronary-prone personality, pain management, controlling adherence to medical regimens, biofeedback, smoking, and weight control. Prerequisite(s): PSCH 270 and consent of the instructor, or graduate standing.

417 Psychology and Law 3 hours. Application of psychological theories to the development, operation and effects of law; evaluation of different and similar approaches of law and psychology. Prerequisite(s): PSCH 312 or consent of instructor.

420 Social Development of Urban Children 3 OR 4 hours. General principles of social development and socialization during childhood and the factors common to urban children that illustrate and modify these principles. Same as EPSY 420. 3 under-graduate hours. 4 graduate hours. Prerequisite(s): Admission to a graduate program in education or psychology, or consent of the instructor.

422 Advanced Developmental Psychology and Educational Processes 3 hours. Focuses on cognitive and social development from birth to adolescence. Examines relations between development, learning, and educational processes. Same as ED 422. Prerequisite(s): PSCH 100 and any one from ED 210, PSCH 259, PSCH 320; or graduate standing and consent of the instructor.

423 Characteristics of Early Adolescence 3 hours. Physiological, social, emotional, and cognitive development of early adolescence. The relationship between these developmental characteristics and success in the middle grades. Same as EPSY 446. Prerequisite(s): ED 210 or ED 421 or ED 422 or PSCH 422 or the equivalent, and approval of the College of Education; or admission to the PhD in Psychology program, or consent of the instructor.

429 Constructivist Approaches to Development: Piaget and Vygotsky 3 OR 4 hours. Piaget’s and Vygotsky’s theories of development of knowledge. Empirical and logico-mathematical forms of knowledge. Thought and action. Thought and language. Same as EPSY 429. 3 under-graduate hours. 4 graduate hours. Prerequisite(s): ED 422 or PSCH 422 or the equivalent and graduate standing in education or graduate standing in psychology or consent of the instructor.

443 Advanced Statistics 3 hours. Design and analysis of experiments between, within factorial and mixed factorial designs and introduction to multiple regression. For students planning research careers or advanced degrees. Prerequisite(s): PSCH 343.

452 Cognitive Psychology of Memory and Attention 3 hours. A survey of empirical research and theories concerning the human memory system and the encoding, retention, retrieval of information in that system and research and theories of attention. Prerequisite(s): Graduate standing; or PSCH 352 and consent of the instructor.

455 Cognitive Psychology of Thinking 3 hours. Introduce students to research and theory concerning higher mental processes, including problem solving, reasoning, judgment, and decision making. Prerequisite(s): Graduate standing; or PSCH 352 and consent of the instructor.

457 Cognitive Psychology of Skill and Knowledge Acquisition 3 hours. The course approaches learning from a variety of cognitive perspectives. The instruction is organized around discussions of original research articles. Prerequisite(s): Previous knowledge of cognitive psychology (with at least an undergraduate survey course) or admittance into the Cognitive Division graduate program.

459 Cognitive Methods 3 hours. Hands-on training in the methods of cognitive psychology, especially computational modeling and the analysis of verbal protocols and other types of trace data. Prerequisite(s): Graduate standing or consent of the instructor.

460 Advanced Learning 3 hours. Methods, results, and interpretation of experimental studies of basic learning processes in animal and human subjects. Prerequisite(s): Graduate standing; or PSCH 360 and PSCH 361 and consent of the instructor.

462 Neural Basis of Learning and Memory 3 hours. Theory and research on the anatomical, electrophysiological, and chemical bases of learning and memory in humans and other animals. Prerequisite(s): Graduate standing; or PSCH 262 and consent of the instructor.

465 Neural Basis of Perception 3 hours. Psychophysical and physiological studies of sensory systems and processes. Primary emphasis on the early processing of visual stimuli. Prerequisite(s): Graduate standing; or PSCH 351 and consent of the instructor.

466 Neural Basis of Motivation 3 hours. Review of empirical data and theories concerning the physiological basis of motivational processes in animals and humans. Prerequisite(s): Graduate standing; or PSCH 262 and consent of the instructor.

467 Fundamentals of Neuroscience 3 hours. Basic principles of neurophysiology and neuropharmacology, including logic bases of nerve action, chemistry of synapses, and actions of pharmacological agents. Prerequisite(s): PSCH 262 or graduate standing.

481 Interviewing 1 hour. Lecture on the theory and practice of clinical interviewing with supervised experience. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Graduate standing in psychology or consent of the instructor.

484 Neuroscience I 3 hours. Neuroscience as an integrative discipline. Neuroanatomy of vertebrates, neural development, cellular neurobiology, action potential mechanisms, synaptic transmission, and neuropharmacology. Same as BIOS 484 and PHIL 484. Prerequisite(s): BIOS 286 or PSCH 262.

485 Neuroscience II 3 hours. Integrative neuroscience, continuation of BIOS/PSCH/PHIL 484. Sensory and motor systems, learning, memory, and language. Pathology of nervous systems. Philosophical perspectives and modeling. Same as BIOS 485 and PHIL 485. Prerequisite(s): BIOS 484.

494 Special Topics in Psychology 1 TO 4 hours. Advanced treatment of an announced topic. Prerequisite(s): Graduate standing or consent of the instructor. May be repeated. Students may register in more than one section per term. Prerequisite(s): Graduate standing or consent of the instructor.

495 Seminar in Psychology 1 TO 3 hours. Seminar devoted to special topics in psychology. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 9 hours. Students may register in more than one section per term. Prerequisite(s): Graduate standing or consent of the instructor.

504 Rating Scale and Questionnaire Design and Analysis 4 hours. Development and administration of rating scales and questionnaires, analysis of data, and reporting of
results. The focus is on rating scales. Same as EPSY 504.
Prerequisite(s): ED 501, and ED 503 or EPSY 503 or the equivalents or consent of the instructor.
505 Advanced History of Psychology 3 hours.
The history of scientific psychology, with an emphasis on the forerunners of major contemporary research problems. Prerequisite(s): Completion of master’s thesis.
506 Item Response Theory/Rasch Measurement 4 hours.
Statistical inference with item response theory models, useful to measure an individual’s performance on a test or questionnaire. Models include parametric, nonparametric, unidimensional, multidimensional, and cognitive. Same as EPSY 506. May be repeated to a maximum of 8 hours. Extensive computer use required. Prerequisite(s): ED 501 and EPSY 503 and EPSY 546 or the equivalent. Appropriate score on the department placement test. Graduate or professional standing required or consent of the instructor.
507 Emerging Research Issues 1 hour.
Weekly seminar that introduces PhD students in psychology to the current research of each faculty member in the department of psychology. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 2 hours. Prerequisite(s): Consent of the instructor.
508 Colloquium on the Teaching of Psychology 1 hour.
Required training to prepare graduate students for contact teaching in the Department of Psychology. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.
510 Attitudes and Social Cognition 3 hours.
Survey of theory and research in social psychology, including attitudes and social cognition. Prerequisite(s): Consent of the instructor.
512 Interpersonal Relations and Group Processes 3 hours.
Survey of theory and research in social psychology, including interpersonal relations and group processes. Prerequisite(s): Consent of the instructor.
515 Psychology of Women and Gender 3 hours.
Critical examination of psychological theories and research on women and gender, including biological, psychoanalytic, socialization, power, and social constructionist perspectives. Same as GWS 515.
Prerequisite(s): Graduate standing in psychology, or PSCH 315 or GWS 315, and consent of the instructor.
516 Research Methods in Social Psychology 3 hours.
Critical analysis of current theories in social psychology. Prerequisite(s): PSCH 512 and PSCH 513 and PSCH 514; or consent of the instructor.
517 Social Psychology of Education 4 hours.
Social psychological factors influencing academic and social outcomes in schools. Achievement motivation, peer relations, social values in relation to student characteristics and school practice. Same as EPSY 502.
Prerequisite(s): Admission to the PhD in Education program or the PhD in Psychology program, or consent of the instructor.
518 Seminar in Social and Personality Psychology 1 to 4 hours.
Critical discussion of selected topics, such as helping and altruism, social judgment, group processes, attitude formation and change. Content varies. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.
519 Current Topics in Social Psychology 1 hour.
Discussion of recently published research and ongoing research by department faculty and graduate students. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.
520 Development in Infancy and Early Childhood 4 hours.
Consideration of development in the preschool years. Stress on theory, research, individual child study, and educational implications. Same as EPSY 520.
Prerequisite(s): ED 422 or PSCH 422 or the equivalent.
525 Achievement Motivation 4 hours.
The psychology of achievement motivation will be explored from the perspectives of personality, social, and educational psychology. Same as EPSY 530.
Prerequisite(s): Graduate standing in education or psychology or consent of the instructor.
526 Developmental Psychopathology 3 hours.
Major sources and manifestations of maladjustment in childhood with an emphasis on emotional and intellectual handicaps. Prerequisite(s): Consent of the instructor.
527 Seminar in Moral Development, Character Formation, and Education 4 hours.
Philosophical assumptions, psychology research, and theory underlying current approaches to moral and character education. Cultural and developmental factors in value formation. Same as EPSY 527.
Prerequisite(s): ED 422 or PSCH 422 or the equivalent, or admission to the PhD in Education program, PhD in Psychology program, or PhD in Social Work program, or consent of the instructor.
531 Community Research 3 hours.
Introduction to research design for community and action research; data collection techniques; perspectives on the relationship between researchers and communities; ethical issues; and philosophies of science informing community-based research.
Prerequisite(s): Consent of the instructor.
532 Community Intervention 3 hours.
Theory research, and practice of community interventions in public, nonprofit, and voluntary settings, such as disability organizations; intervention types and effectiveness; role of community intervention. Same as DHD 532.
Prerequisite(s): Consent of the instructor.
533 Advanced Community and Prevention Research 3 hours.
Overview of community psychology theory and intervention research in areas like prevention, empowerment, diversity, ecology, competence enhancement, and social change from historical and contemporary perspectives. Prerequisite(s): Graduate standing in psychology or consent of the instructor.
534 Prevention Research, Theory, and Practice 3 hours.
Emphasizes issues related to the conceptualization, design, implementation, and evaluation of prevention and competence-promotion programming. Prerequisite(s): Consent of the instructor.
537 Seminar in Action Research 3 hours.
Supervised action research in community settings, including entry, data collection, ethics, feedback, and report preparation. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Graduate standing in the Community and Prevention Research Specialization of the PhD in Psychology program or consent of the instructor.
538 Seminar in Community and Prevention Research 1 to 4 hours.
Examination of a selected topic in community and prevention research. May be repeated. Students may register in more than one section per term. Prerequisite(s): PSCH 530 or consent of the instructor.
539 Current Topics in Community and Prevention Research 1 hour.
Ongoing seminar with faculty and graduate students to discuss contemporary issues in community and prevention research. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.
540 Research with Diverse Groups 3 hours.
Highlights some of the issues relevant to doing research with diverse groups, such as race/ethnicity, gender, social class, age, disability.
541 Introduction to Computing in Psychology 1 hour.
An introduction to applications of computing in psychological research. Several projects are required. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPSY 429</td>
<td>Seminar in Cognitive Psychology</td>
<td>Preseminar in Educational Psychology 2 hours. Interdisciplinary colloquia on selected topics in educational psychology. Serves as introduction to faculty research. Same as EPSY 501. Prerequisite(s): Admission to the PhD in Education program or the PhD in Psychology program, or consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 543</td>
<td>Seminar in Clinical Psychology</td>
<td>1 TO 4 hours. Detailed critical review of selected topics in cognitive psychology: emphasis on current research and theoretical developments. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 544</td>
<td>Seminar in Clinical Psychology</td>
<td>1 TO 4 hours. Discussion of current research and theoretical issues in broad areas of cognitive psychology: psychotherapy work. Prerequisite(s): Consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 545</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Contemporary research in personality psychology and a review of theoretical approaches to the study of personality structure and processes. Prerequisite(s): Consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 546</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Theoretical, methodological, and empirical issues related to the pharmacological treatment of psychopathology. Prerequisite(s): Consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 547</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 548</td>
<td>Seminar in Clinical Psychology</td>
<td>1 TO 4 hours. Research and case presentations in clinical psychology. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 549</td>
<td>Seminar in Clinical Psychology</td>
<td>1 hour. Interviewing practicum through the Office of Applied Psychological Services. Students observe and conduct clinical interviews under supervision. Satisfactory/Unsatisfactory grading only. Prerequisite(s): PSCH 481 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 550</td>
<td>Seminar in Clinical Psychology</td>
<td>4 hours. Seminar in clinical psychology. 1 TO 4 hours. Current research issues and studies in biopsychology are discussed in terms of methodology and theory. Topic to be announced each semester. May be repeated. Prerequisite(s): Consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 551</td>
<td>Seminar in Clinical Psychology</td>
<td>1 TO 4 hours. Detailed consideration of disorders of behavior, including description, etiology, process, and many other topics. Examines research in personality psychology and a review of theoretical approaches to the study of personality structure and processes. Prerequisite(s): Consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 552</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 553</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 554</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 555</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 556</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 557</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 558</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 559</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 560</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 561</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 562</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 563</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 564</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 565</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 566</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 567</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 568</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 569</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 570</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 571</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 572</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 573</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 574</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 575</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 576</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 577</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 578</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 579</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 580</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 581</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 582</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
<tr>
<td>PSCH 583</td>
<td>Seminar in Clinical Psychology</td>
<td>3 hours. Research methods and theory related to psychotherapy and behavior change, with an emphasis on design, evaluation, and results of empirically-based psychotherapy studies. Prerequisite(s): PSCH 571 and consent of the instructor.</td>
</tr>
</tbody>
</table>
logical principles to varied parent populations. Satisfactory/ Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): FSCN 574 and consent of the instructor.

Practicum for Clinical Trainees on Assessment, Intervention, and Research 0 TO 3 hours. Presentation and discussion of trainee assessment, intervention, and research projects. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Acceptance into either an NIH- or OAPS-sponsored training program.

Practicum in Instruction in Psychology 0 TO 9 hours. Seminar on course planning and supervised teaching of an undergraduate course. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 12 hours. Students may register in more than one section per term. Students register for 2 to 9 hours. Prerequisite(s): Consent of the instructor.

Research Apprenticeship 2 TO 3 hours. Directed training in conducting research in specific areas of psychology, and in developing skills related to the research. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 5 hours. Prerequisite(s): Consent of the instructor.

Advanced Special Topics in Psychology 1 TO 4 hours. Advanced treatment of an announced topic. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

Methods and Measurement in Clinical Psychology 2 hours. Provides students with an overview of research methods, process concerns, ethics, and issues that are relevant to the field of clinical psychology. May be repeated. Prerequisite(s): Consent of the instructor.

Independent Study 1 TO 12 hours. Research on or study of topics not included in regular classes or theses and dissertation research. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

Thesis Research 0 TO 16 hours. Research on the topic of the master’s thesis. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 12 hours. Prerequisite(s): Consent of the instructor.

Dissertation Research 0 TO 16 hours. Research on the topic of the doctoral dissertation. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

Public Administration (PA)

400 Public Administration Theory 3 OR 4 hours. Public administration as a professional and scholarly area of knowledge and practice focusing on administrative reform and its intellectual roots. Politics versus administration, efficiency, effectiveness, representative bureaucracy, and market versus bureaucratic alternatives. Undergraduate hours. 3 graduate hours. Prerequisite(s): Admission to the MPA program or consent of the instructor.

407 Data Analysis for Public Administration 4 hours. Topics and methods of analyzing information relevant to the administration and management of public programs and organizations. Includes causation, univariate statistics, significance testing, correlation, and regression. Prerequisite(s): Appropriate score on the department placement test, and graduate standing; or consent of the instructor. Admission to the MPA program or consent of the instructor.

410 Economics for Public Administration and Policy Decisions 3 OR 4 hours. Basic economic tools and methods relevant to public administration and current policy, including opportunity cost, competition versus monopoly, economic efficiency, equity, market failure, public goods, and externalities.

415 Organization Theory and Public Management 3 OR 4 hours. Theories and concepts of organizational behavior and public management from economics, sociology, and political science. Organizational decision making, bureaucracy, organizational change and learning, public versus private organizations, leadership, and organizational culture. Undergraduate hours. 4 graduate hours. Prerequisite(s): Admission to the MPA program or consent of the instructor.

447 Survey Planning and Design 3 hours. The survey applications of sample survey planning and design for conducting research in health sciences and related fields. Addresses three major topics: survey design and planning, sampling, and data collection procedures. Same as CHSC 447. Prerequisite(s): Graduate or professional standing and BSTT 400 or the equivalent. Recommended background: Credit in CHSC 446 or the equivalent.

460 Computers in Public Administration 4 hours. Database theory and constructing and managing databases relevant to the operation of government. Utilizes database software and allows students to gain practice with complex database programs and development of a database system. Prerequisite(s): Admission to the MPA program or consent of the instructor.

461 Management of Information Technology in Government 4 hours. Concepts and methods of planning, implementing, and managing new information technology or modifying existing technology. Prerequisite(s): Admission to the MPA program or consent of the instructor.

502 The Legal Context of Public Administration 4 hours. Legal basis and statutory framework for administrative agencies and actions in government. Relationship between courts and public agencies, rulemaking and adjudicative powers of public policy.
agencies, and impact of specific laws on government.
Prerequisite(s): Admission to the MPA program or consent of the instructor.

503 Public Personnel Management 4 hours.
History and current innovations in managing personnel and other areas of human resources. Compensation, classification, affirmative action, performance appraisal, labor relations, and unions. Statutory and court decisions affecting government personnel issues. Prerequisite(s): Admission to the MPA program or consent of the instructor.

504 Budgeting for Public Administration 4 hours.
Processes and methods relevant to government finances and fiscal health: revenues, taxation, budget formulation, operating budgets, cost analysis, planning and performance, budget reforms, politics, capital budgeting, role of budgeting in management. Prerequisite(s): Admission to the MPA Program or consent of the instructor.

506 Policy Development and Analysis for Public Administrators 4 hours.
Examines the process by which public policies are formulated, decided on, implemented, and evaluated. Techniques of analysis appropriate for various policy issues, and substantive policy issues facing us today. Prerequisite(s): Admission to the MPA program or consent of the instructor.

510 Organization Theory and Behavior in Public Administration Research 4 hours.
Analysis of major analytical models of organizations; decision making; control and accountability; change and development; interorganizational relations; the organization-environment interaction. Prerequisite(s): Admission to the MPA program or consent of the program director.

511 The History and Development of Public Administration Research and Theory 4 hours.
The history and development of modern public administration with emphasis on the U.S. model. Major scholarly movements; institutional developments; other factors shaping the present state of the discipline. Prerequisite(s): Admission to the PhD in Public Administration program or consent of the program director.

515 The Bureaucracy and the Policy Process 4 hours.
Theories and research issues concerning the role of administrators in policy formation. Case studies and research on federal, state, and local agencies. Prerequisite(s): Admission to the PhD in Public Administration program or approval of the program director.

521 Strategic Management: Planning and Measurement 4 hours.
This course addresses strategic issues and strategies related to the strategic management of public and quasi-public organizations. It addresses strategic planning and performance measurement processes within organizations. Prerequisite(s): Admission to the MPA program or consent of the instructor.

522 Ethics and Accountability 4 hours.
Better government through institutionalizing ethics and accountability. Effectiveness of boards of ethics, inspectors general, codes of ethics, and educational programs. History of ethics within the Western intellectual tradition. Prerequisite(s): Admission to the MPA program or consent of the instructor.

523 Intergovernmental Management 4 hours.
Relationships between federal, state, and local governments, focusing on management of overlapping programmatic, regulatory, and fiscal responsibilities. Prerequisite(s): Admission to the MPA program or consent of the instructor.

524 Leadership in Public Sector Organizations 4 hours.
Examines theories and practices of leadership in public sector organizations. Global, political, social, and organizational contexts of public sector leaders and interface between administrators, appointees, elected officials. Prerequisite(s): Admission to the MPA program or consent of the instructor.

526 Public Decision Analysis 4 hours.
Provides an introductory treatment of decision analysis. The intended participants are students who want to learn more about decision making under uncertainty and tools that can be used to support it. Prerequisite(s): PA 407 or consent of the instructor.

527 Public Management Theory 4 hours.
Addresses the development of the public management subfield within the field of public administration. It covers the development of public management theory from its early stages to current questions and theoretical approaches. Prerequisite(s): Admission to the PhD in Public Administration program or consent of the instructor.

528 Public Program Evaluation 4 hours.
Theory and procedures for evaluating the effectiveness of programs administered by public and nonprofit organizations. Includes application of research design, quantitative, and qualitative methodologies. Prerequisite(s): PA 542 or equivalent, and admission to the PhD in Public Administration program or consent of the instructor.

529 Change and Reform in Public Organizations 4 hours.
Examines how large, bureaucratic organizations change how they do business. Can improved efficiency and effectiveness result from such change? What techniques are being applied by public organizations to achieve such change? Prerequisite(s): Admission to the MPA program or consent of the instructor.

531 Labor Management Relations in the Public Sector 4 hours.
Skills and knowledge to manage labor relations in government. Constitutional influences on public employment, rights of public employees, management and labor unions; civil service laws, collective bargaining, nondiscrimination, and equal opportunity. Prerequisite(s): PA 503; and admission to the MPA program or consent of the instructor.

533 Managing Workplace Diversity 4 hours.
Examines discrimination and diversity in public sector workplaces along several dimensions, including race, ethnicity, sex, age, sexual orientation, and physical ability. Prerequisite(s): PA 503, and admission to the MPA program or consent of the instructor.

534 Human Resource Development and Management in Public Administration 4 hours.
Topics in public personnel administration; work motivation, performance appraisal, high performance work systems, equal employment opportunity, affirmative action, strategic human resource management, and representative bureaucracy. Prerequisite(s): Admission to a PhD program or consent of the instructor.

540 Research Design for Public Administration 4 hours.
Logic and methods of quantitative and nonquantitative research in public administration. Issues in measurement; causal inference; experimental and quasi-experimental designs; and methods of data collection. Prerequisite(s): Admission to the PhD in Public Administration program or approval of the program director.

541 Advanced Data Analysis I 4 hours.
Elements of matrix theory; introduction to the theory of estimation; hypothesis testing; logit and probit models; factor analysis; and principal components analysis. Application of techniques to public administration research. Prerequisite(s): Graduate standing; and PA 540 or equivalent or approval of the instructor.

542 Advanced Data Analysis II 4 hours.
For those likely to pursue careers in the more quantitative aspects of public administration research. Discrete multivariate analysis and regression; multivariate analysis of variance; other advanced techniques. Prerequisite(s): Graduate standing; and PA 541 or equivalent or approval of the instructor.
544 Qualitative Research Methods in Public Administration 4 hours. The uses, strengths, and limitations of qualitative methods of research and analysis, including case studies, participant-observer, and ethnomethodology, will be explored. 
Prerequisite(s): Graduate or professional standing; PA 540 or equivalent; or consent of the instructor.

545 Research Topics in Public Administration I 2 hours. Provides PhD students with a better understanding of current research topics in Public Administration. Students will read current working papers and published articles so as to develop the tools needed for critical analysis of current research. Satisfactory/Unsatisfactory grading only. 
Prerequisite(s): Admission to the PhD program in Public Administration and advanced standing or consent of the instructor.

546 Research Topics in Public Administration II 2 hours. Continuation of PA 545. Students critically analyze current research and will develop a research topic of their own, focusing on the elements needed to write a quality research paper. Satisfactory/Unsatisfactory grading only. 
Prerequisite(s): PA 545; and admission to the PhD program in Public Administration with advanced standing or consent of the instructor.

550 Financial Management of Government 4 hours. Overview of issues and concepts important for administration and management of government's financial affairs: government accounting, purchasing, cash management and investment, risk management, pension and benefits administration, debt management and capital financing. 
Prerequisite(s): PA 504; and admission to the MPA program or consent of the instructor.

551 Governmental Accounting 4 hours. Introduction to major concepts, principles, and objectives of governmental accounting (including fund accounting) and budgetary control systems for local and state government. Designed for students with little or no background in accounting. 
Prerequisite(s): PA 504; and admission to the MPA program or consent of the instructor.

552 Public Capital Budgeting and Finance 4 hours. Examines governmental capital budgeting processes, linkages between the capital budget and capital improvement plan, and methods and techniques of financing capital projects including debt financing. 
Prerequisite(s): PA 504; and admission to the MPA program or consent of the instructor.

553 State and Local Public Finance 4 hours. Analyzes expenditures and revenues of state and local governments and public sector responses to market failures. Examines state and local revenue sources and discusses governmental provision of services. 
Prerequisite(s): PA 504; and admission to the MPA program or consent of the instructor.

Prerequisite(s): Graduate or professional standing; and PA 410 and PA 504 or equivalents; or consent of the instructor.

557 Topics in Political Communication 4 hours. Intensive study of selected aspects: organizational communication in public institutions, urban political communication patterns, communication elites. Independent research using a variety of community research techniques. 
Same as COMM 567 and POLS 567. Prerequisite(s): Consent of the instructor.

577 Survey Questionnaire Design 3 hours. Concepts and strategies for developing survey questionnaires for various modes of survey data collection. Students develop and present questionnaires related to their individual interests. 
Same as CHSC 577. Prerequisite(s): CHSC 446 or CHSC 447; or consent of the instructor.

578 Surveys, Public Opinion, and Public Policy 4 hours. Addresses the nature of the relationship between public policy and public opinion and the role that surveys play in that relationship. 
Prerequisite(s): Admission to the MPA or PhD in Public Administration program or consent of the instructor.

579 Practicum in Survey Methodology 2 TO 6 hours. Students learn about survey research by participating in the process of conducting a survey or surveys. 
Prerequisite(s): Admission to the MPA or PhD in Public Administration program or consent of the instructor.

580 Survey Nonresponse 2 hours. Provides an overview of current problems in survey nonresponse and related questions of impact on data quality. 
Prerequisite(s): Admission to the MPA or PhD in Public Administration program or consent of the instructor.

581 Cross-Cultural Survey Research Methods 2 hours. Provides graduate students with a clear understanding of the methodological issues involved in collecting survey data across multiple cultural groups and best practices when conducting cross-cultural research. 
Recommended background: Admission to the MPA or PhD in Public Administration program or consent of the instructor.

582 Survey Data Collection Methods 2 hours. This course will address the impact of data collection methods on survey responses and data quality. 
Prerequisite(s): Admission to the MPA or PhD in Public Administration program or consent of the instructor.

586 Seminar on Special Topics in Survey Methodology 2 hours. This seminar is for special topics in survey methodology not covered in the other elective courses. 
Prerequisite(s): Admission to the MPA or PhD in Public Administration program or consent of the instructor.

588 Survey Data Reduction and Analysis 2 hours. Provides an in-depth overview of available procedures and standards for survey data reduction and data analysis activities. 
Prerequisite(s): Admission to the MPA or PhD in Public Administration program or consent of the instructor.

590 Public Administration Capstone 4 hours. Integration of classroom learning with practical experience. Students will work in groups to solve real problems for public and nonprofit organizations. Extensive collaboration required among group members outside of class time. Students should expect significant fieldwork at their assigned organizations. Students are responsible to the course professor and to the project supervisor in their assigned organizations. Because the course work is team-based, students are not allowed to drop this course once teams are created. 
Prerequisite(s): Consent of the instructor and enrollment in the MPA program. Course must be taken in the last two semesters in the MPA program or consent of the instructor.
593 Independent Research in Public Administration 1 TO 8 hours. Advanced study and analysis of a topic selected by a student under the supervision of a faculty member. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the director of graduate studies and consent of the instructor.

594 Special Topics in Public Administration 1 TO 4 hours. Advanced study of an announced topic. May be repeated. Students may register in more than one section per term. Prerequisite(s): Admission to the PhD in Public Administration program or consent of the instructor.

596 Independent Study in Public Administration 1 TO 4 hours. Advanced study and analysis of a topic under guidance of select faculty. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the director of graduate studies and consent of the instructor.

599 PhD Thesis Research 0 TO 16 hours. Individual study and research. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Open only to degree candidates, upon approval of topic by dissertation committee.

Public Health Nursing (NUPH)

400 Introduction to Occupational Health Nursing 2 hours. Theoretical bases for application of public health nursing practice to working population in occupational settings. Prerequisite(s): Consent of the instructor.

500 Health Maintenance and Promotion in Primary Care Nursing 4 hours. Prepares nurse practitioners to provide health maintenance and promotion to families and individuals in primary care settings. Prerequisite(s): Credit or concurrent registration in NUSC 532 or consent of instructor.

502 School Nursing Theory and Trends 3 hours. Explores population-focused frameworks, health needs, and legal mandates that impact school community. School nursing practice models are studied as relevant to developing leadership and management. Prerequisite(s): Consent of the instructor.

505 Nursing Systems Operations Management 3 hours. Nursing systems operations management of health services. Examines the managerial role at individual, program, work unit, department, and organizational levels. Includes focus on interaction of the organization and environment. Same as NUSC 506. Prerequisite(s): Consent of the instructor.

507 Advanced Community Health Nursing: Introduction and Interventions 4 hours. Addresses application of evidence-based population-focused interventions in healthcare organizations that promote wellness and improve community health status. Introduces leadership roles/concepts in advanced public health nursing practice.

509 Population-Focused Assessment 3 hours. Explores population-focused assessment in community and integrated healthcare systems emphasizing the application of assessment models used in health service delivery and market analysis. Prerequisite(s): Credit or concurrent registration in EPID 400 and credit or concurrent registration in NUSC 525 and credit or concurrent registration in NUSC 526.

511 Planning and Evaluation for Advanced Nursing Practice 3 hours. Explores strategic and program planning/applications. Focuses on evaluation as a measurement of quality, performance, and impact of health services. Emphasizes interdisciplinary perspective and addresses integrated quality improvement systems. Prerequisite(s): NUPH 509 and NUSC 525 and NUSC 526. Requires concurrent registration in NUSC 527.

512 Healthcare Human Resources Management 3 hours. Focuses on the development of a strategic human resources plan to support the mission of the healthcare organization. Current human resources management and organizational performance research findings are explored. Same as NUAS 512. Prerequisite(s): NUAS 505 or NUPH 506.

517 Budget and Finance of Health and Nursing Services 3 hours. Financial management techniques, supply and demand, cost behaviors, and revenue sources, provider reimbursement and public and private health insurance for health and nursing services will be analyzed. Same as NUAS 517. Prerequisite(s): NUAS 505 or NUPH 505.

518 Field Study in Health and Nursing Management 3 hours. Field study emphasizing leadership within population-focused nursing management practice, including organization and management concepts from public and private perspectives. Same as NUAS 518. Prerequisite(s): NUAS 516 or NUPH 516, and NUAS 517 or NUPH 517, or consent of the instructor.

519 School Nursing Internship 1 TO 3 hours. Prepares nurse practitioners to assess, diagnose, and manage stable chronic and acute episodic illnesses encountered in primary care settings. Prerequisite(s): NUPH 500.

525 Primary Care Nursing of Acute and Chronic Disorders II 6 hours. Second of a two-course sequence to prepare nurse practitioners to assess, diagnose, and manage stable chronic and chronic episodic illnesses encountered in primary care settings. Prerequisite(s): NUPH 524.

528 Advanced Clinical Practice in Primary Nursing 1 TO 5 hours. Prepares nurse practitioners to assess, diagnose, and manage stable chronic and chronic episodic illnesses encountered in primary care settings. Prerequisite(s): NUPH 525.

529 Practicum in Occupational Health Nursing 1 TO 5 hours. Prepares nurse practitioners to assess, diagnose, and manage stable chronic and chronic episodic illnesses encountered in primary care settings. Prerequisite(s): NUPH 400 and credit or concurrent registration in EPID 421 and credit or concurrent registration in EPID 482 and credit or concurrent registration in EPID 551.

Public Policy Analysis (PPA)

401 Data Analysis I 3 OR 4 hours. Statistical inference for the social sciences. Emphasis on univariate and bivariate statistics. Same as POLS 401, 3 undergraduate hours. 4 graduate hours. Prerequisite(s): POLS 200 and POLS 201; or graduate standing.

500 Introduction to Policy and Governance 4 hours. Introduces the intellectual traditions and debates that have characterized the study of public policy and the social order. Society-centered and state-centered explanations for policy will be explored. Same as POLS 500. Consent of the department required for nondegree graduate students.

501 Data Analysis II 4 hours. Interpretation and application of multivariate methods of analysis in the social sciences. Regression specification and diagnostics, limited dependent variable models, measurement issues. Same as POLS
501. Prerequisite(s): POLS 401 or PPA 401.

541 Policy Formation, Implementation, and Evaluation 4 hours. Introduction to political science theories of how elections, interest groups, and state structure affect the formulation of public solutions to societal problems. Same as POLS 541. Prerequisite(s): Consent of the department required for non-graduate students.

574 The Impact of College on Students 4 hours. Introduction to the research evidence on the impact of college on students. Emphasis is placed on methods of assessing impact and research on college effects. Same as PS 574. Prerequisite(s): Consent of the instructor.

575 Higher Education Organization and Administration 4 hours. Perspectives on administration in higher education. Understandings from organization theory and research on postsecondary institutions applied to issues in higher education administration. Same as PS 575. Prerequisite(s): Admission to PhD in Public Policy Analysis program or consent of the instructor.

576 History of Higher Education 4 hours. Key historical events which have enduring implications for colleges and universities. Emphasis on social, political, economic, intellectual, and legal forces shaping American higher education. Same as PS 576. Prerequisite(s): Admission to PhD in Public Policy Analysis program or consent of the instructor.

577 American Academic Profession 4 hours. Historical and systemic foundations of the academic profession. Emphasis on institutional and disciplinary variation in the performance, evaluation, and reward of faculty activities. Same as PS 577. Prerequisite(s): Admission to the PhD in Public Policy Analysis program and consent of the instructor.

584 Methods of Policy Analysis 4 hours. Analytic, allocative, and evaluative techniques in policy analysis. Preparation of case studies in problem analysis and policy recommendation. Same as UPP 584. Prerequisite(s): Consent of the instructor.

590 Advanced Public Policy Workshop 4 hours. Interdisciplinary workshop on preparing a dissertation proposal for public policy analysis students. Same as POLS 590. Prerequisite(s): Advanced standing in the PhD in Public Policy Analysis program and completion of core PPA courses.

Religious Studies (RELS) 446 Race, Ethnicity, and Gender in American Religion 3 OR 4 hours. Religious institutions in the U.S. as a crucible for racial, ethnic, and gender identities, group formation, and intergroup relations; major world religions represented in the U.S. Same as SOC 446. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): SOC 100 and junior standing or above; or consent of instructor.

478 The Bible as Literature 3 OR 4 hours. Literary analysis of the English Bible (including the Apocrypha) in its historical and religious contexts; study of the King James Version and successive revisions of it. Same as ENGL 478 and JST 478. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in ENGL 240, and grade of C or better in ENGL 241 or grade of C or better in ENGL 242 or grade of C or better in ENGL 243; or consent of instructor.

495 Topics in Religious History 3 OR 4 hours. Specific topics are announced each term. Same as HST 495. 3 undergraduate hours. 4 graduate hours. May be repeated ed. Students may register in more than one section per term. Prerequisite(s): 3 hours of history or consent of the instructor.

Russián (RUSS) 401 Russian Composition and Conversation III 3 OR 4 hours. Oral presentations, compositions, conversation: daily life and current events. Problems of grammar and syntax. Improving pronunciation and intonation. Reading. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): RUSS 302 or the equivalent.

402 Russian Composition and Conversation IV 3 OR 4 hours. Continuation of RUSS 401. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): RUSS 401 or the equivalent.

410 Structure of Modern Russian 3 OR 4 hours. A synchronic linguistic analysis of Russian substantives, adjectives, pronouns, verbs, deverbal nouns, and minor parts of speech from a syntagmatic and paradigmatic point of view. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): At least 4 semester hours of Russian or the equivalent.

450 Studies in the Russian Novel 3 OR 4 hours. Study of a major novelist, movement, or special themes. Content varies. 3 undergraduate hours. 4 graduate hours. May be repeated up to 2 times. Prerequisite(s): 24 hours of Russian or consent of the instructor.

460 Studies in Russian Literature 3 OR 4 hours. Study of a major author, movement, or special topic. Content varies. 3 undergraduate hours. 4 graduate hours. May be repeated up to 2 times. Prerequisite(s): 24 hours of Russian or consent of the instructor.

499 Independent Study 1 TO 4 hours. Investigation of special problems under the general direction of a staff member. May be repeated to a maximum of 8 hours. Graduate students may register for more than one section per term. Prerequisite(s): Senior or graduate standing, consent of the instructor and the head of the department.

510 History of the Russian Language 4 hours. Formation and development of standard Russian to the end of the eighteenth century. Analysis of selected texts. Prerequisite(s): RUSS 410 or SLAV 505 or the equivalent.

515 Topics in Contemporary Russian Linguistics 4 hours. Variable content. May be repeated to a maximum of 12 hours. Prerequisite(s): RUSS 410 or the equivalent.

520 Topics in Historical Russian Linguistics 4 hours. Specific topics are announced each term. May be repeated to a maximum of 12 hours.

550 Studies in Russian Romanticism 4 hours. Study of a topic, author, or movement. Content varies. May be repeated to a maximum of 12 hours.

555 Studies in Russian Realism 4 hours. Study of a topic, author, or movement. Content varies. May be repeated to a maximum of 12 hours.

560 Studies in Russian Neo-Realism and Modernism 4 hours. Study of a topic, author, or movement. Content varies. May be repeated to a maximum of 12 hours.

565 Studies in Soviet Prose 4 hours. Study of a topic or movement. Content varies. May be repeated to a maximum of 12 hours.

570 Studies in Russian Literary Criticism 4 hours. Study of a critical school or movement. Content varies. May be repeated to a maximum of 12 hours.


596 Independent Study 1 TO 4 hours. Investigation of special problems under the general direction of a staff member. May be repeated to a maximum of 8 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor and the head of the department.
Slavic and Baltic Languages and Literatures (SLAV)

409
Problems in Slavic
Grammars 3 OR 4 hours. Systematic review of important topics in grammar and syntax. Content varies. Required for department undergraduate majors in Slavic programs. 3 undergraduate hours. 4 graduate hours. May be repeated up to 2 times. Prerequisite(s): RUSS 302 or POL 302 or SLAV 302 or the equivalent.

410
Structure of Modern
Serbian 3 OR 4 hours. A synchronic linguistic analysis of Serbian phonology and morphology with fundamentals of syntax. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): SLAV 104 or the equivalent or consent of the instructor.

433
Topics in Eastern European
History 3 OR 4 hours. Specific topics are announced each term. Same as HIST 433. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): 3 hours of European history or consent of the instructor.

460
Studies in East European
Literatures and
culture 3 OR 4 hours. Study of a topic, author, genre, or movement. 3 undergraduate hours. 4 graduate hours. May be repeated up to 2 times. Prerequisite(s): 24 hours of Slavic or Baltic or consent of the instructor.

470
Educational
Practice with
Seminar I 6 hours. The first half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student teaching field experiences, and approval of the department.

471
Educational
Practice with
Seminar II 6 hours. The second half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student teaching field experiences, and approval of the department.

536
Topics in Comparative
Slavic Literatures 4 hours. Comparative study of a literary topic or movement. Content varies. May be repeated to a maximum of 12 hours.

542
Studies in
Serbian Poetry 4 hours. Specific topics are announced each semester. May be repeated to a maximum of 12 hours.

545
Studies in
Serbian Prose I 4 hours. Specific topics of the Serbian short story and novel are announced each term. May be repeated to a maximum of 12 hours.

546
Topics in
Serbian Prose II 4 hours. Specific topics of Serbian drama are announced each semester. May be repeated to a maximum of 12 hours.

550
Studies in Yugoslav
Literary Historiography and
Criticism 4 hours. Major concepts and movements in the South Slavic literary history. May be repeated to a maximum of 12 hours.

556
Studies in Twentieth-
Century Ukrainian
Prose 4 hours. Study of a genre, topic, period, movement, or author. Content varies. May be repeated to a maximum of 12 hours.

568
Studies in
Ukrainian Drama 4 hours. Study of a period, movement, or author. Content varies. May be repeated to a maximum of 12 hours.

570
Studies in Ukrainian
Literary Historiography and
Criticism 4 hours. Study of methodology, periods, schools and groups, individual literary historians and critics. Content varies. May be repeated to a maximum of 12 hours.

575
Studies in Slavic
Literary Theory 4 hours. Russian, Czech, Polish, and Serbian contributions to literary theory: formalism, structuralism, semiotics, phenomenology. May be repeated to a maximum of 12 hours. Taught in English.

576
Methods and
Principles of
Translation 4 hours. Introduction to theory and methods of literary translation. Extensive practice translating expository prose, literary prose, and poetry from Slavic languages into English. Taught in English.

596
Independent
Study 1 TO 4 hours. Investigation of special problems under the general direction of a staff member. May be repeated to a maximum of 8 hours. Graduate students may register for more than one section per term. Prerequisite(s): 3 hours of European history or consent of the instructor.

599
PhD Thesis
Research 0 TO 16 hours. Independent research on a topic approved for a graduate thesis. Students engaged in research and writing these will be assigned to this course at the discretion of the department. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor and the head of the department.

586
Studies in
Nineteenth-
Century Ukrainian
Prose 4 hours. Study of a genre, topic, period, movement, or author. Content varies. May be repeated to a maximum of 12 hours.
Social Work (SOCW)

410 Human Behavior and the Social Environment 3 hours.
Human development through the life cycle including urban family, group, community, and organizational interactions with social, cultural, psychological factors. Credit is not given for SOCW 410 if the student has credit for SOCW 535.
Prerequisite(s): Graduate standing and consent of the instructor or admission to the MSW program.

411 Social Work in a Multicultural Society 3 hours.
Place of social work in a multicultural society, focus on racial and ethnic minority groups, particularly African-Americans, Latinos, Asian Americans, and Native Americans. Credit is not given for SOCW 411 if the student has credit for SOCW 537. Prerequisite(s): Admission to MSW program.

420 Policy I: Social Welfare Policy and Services 3 hours.
Social work history, structure and development of current policies; policy analysis and policy advocacy skills for social and economic justice. Credit is not given for SOCW 420 if the student has credit for SOCW 550. Prerequisite(s): Admission to MSW program.

430 Practice I: Generalist Practice with Individuals, Families, and Groups 3 hours.
Generalist practice principles applied to individuals, families, and groups, including content on community context, racial and ethnic minorities, poor, oppressed, and other urban vulnerable communities. Credit is not given for SOCW 430 if the student has credit for SOCW 501.
Prerequisite(s): Admission to the MSW program.

431 Practice II: Generalist Practice with Task Groups, Organizations, and Communities 3 hours.
Generalist practice principles applied to task groups, organizations, and communities, including focus on community context and the poor, oppressed, and other urban vulnerable communities. Credit is not given for SOCW 431 if the student has credit for SOCW 502.
Prerequisite(s): SOCW 430 and graduate standing.

460 Research I: Social Work Research 3 hours.
Research methodology basics applied to social work; problem formulation, design, measurement, sampling, data analysis, computerization, ethics, qualitative and quantitative methodologies. Credit is not given for SOCW 460 if the student has credit for SOCW 560.
Prerequisite(s): Admission to the MSW program.

480 Special Studies in School Social Work Practice 3 hours.
Ecological and strengths-based interventions in urban school systems. Prerequisite(s): Admission to the post-MSW Type 73 program and graduate standing.

503 Family Practice in Urban Communities 3 hours.
Empowering at-risk urban families using strengths-based intervention; brief treatment models; attention to diversity, community, poor, and other urban at-risk populations.
Prerequisite(s): SOCW 430.

504 Group Theory and Practice 3 hours.
Theory and practice of social work with empowerment groups in both clinical and large system settings; diversity and equity issues.
Prerequisite(s): SOCW 430.

511 Practice with Children 3 hours.
Direct treatment with urban at-risk children, including situations involving homelessness, substance abuse, violence, and/or modalities emphasizing family, community, culture.
Prerequisite(s): SOCW 430.

517 Practice with Family Violence, Neglect, and Abuse 3 hours.
Ecological approach to family violence; physical, psychological, and sexual abuse of children, women, and elders at practice and policy levels; urban vulnerable population.
Prerequisite(s): SOCW 430; or consent of the instructor.

519 Practice III: Community Health and Urban Development 3 hours.
Advanced integrated practice with urban communities at levels of individuals, families, groups, organizations, and communities. Emphasis on diversity, strengths, capacity-building, and small systems.
Prerequisite(s): Grade of C or better in SOCW 431.

520 Practice IV: Community Health and Urban Development 3 hours.
Advanced, integrated practice with urban communities with emphasis on diversity, strengths, capacity-building, and large systems.
Prerequisite(s): Grade of C or better in SOCW 519.

521 Aging Populations: Social Work Response 3 hours.
Psychological, social, biological aging factors of individuals and families; emphasis on practice skills for community, long-term care and hospital-based services with urban emphasis.
Prerequisite(s): SOCW 410; or consent of the instructor.

522 Crisis Intervention 3 hours.
Nature of crises, including suicide and large-scale disaster; strengths-based interventions in urban settings; medical and mental health facilities, schools, community centers, and neighborhoods.
Prerequisite(s): SOCW 430.

523 Drug and Alcohol Abuse and Social Work 3 hours.
History and pharmacology of alcohol and other drugs; ecology of abuse and dependence; assessment and treatment models; practice in multidisciplinary settings; emphasis on urban systems.
Prerequisite(s): SOCW 430.

525 Social Work with Adolescents 3 hours.
Research, policy, and practice approaches to working with women in diverse urban settings; empowerment and diversity perspectives.
Same as GWS 525.
Prerequisite(s): SOCW 410; or consent of the instructor.

527 Topics in Social Services 3 hours.
Critical review of selected areas of social work, social services, and social welfare. Prerequisite(s): Consent of the instructor and admission to MSW program.

530 Leadership and Professional Development 3 hours.
Social work leadership and professional development, including writing for publication, communication skills, personal leadership plan development, theory and practice of leadership at individual agency and community levels.
Prerequisite(s): SOCW 410.

531 Policy II: Community Health and Urban Development 3 hours.
Advanced policy content for urban communities, including health disparities, discrimination, urban poverty, and social dislocation. Analytical and policy practice skills addressed. Prerequisite(s): Grade of C or better in SOCW 420.

532 Social Work in Corrections 3 hours.
Policy and practice roles of social workers in correctional settings with emphasis on race, ethnicity, gender, sexual orientation, and poverty factors. Prerequisite(s): SOCW 410; or consent of the instructor.

533 Sexual Minority Communities 3 hours.
Community and social justice framework applied to gay, lesbian, bisexual, and transgendered populations; historical development of sexual minority communities; overview of social work response.
Prerequisite(s): Admission to the MSW program or consent of the instructor.

534 Independent Study in Practice 1 TO 3 hours.
Independent study in practice area not covered by existing course offerings. May be repeated to a maximum of 6 hours. Prerequisite(s): Consent of the instructor and approval of the college.

539 Mental Health Issues with Children and Adolescents 3 hours.
Critical, strengths-based understanding of current classification and diagnostic systems for assessment and treatment planning with children and adolescents. Prerequisite(s): SOCW 410 or consent of the instructor.

540 Mental Health Issues with Adults 3 hours.
Critical, strengths-based understanding of current classification and diagnostic systems for assessment and treatment planning with adults. Prerequisite(s): SOCW 410 or consent of the instructor.

544 Community Violence 3 hours.
Urban community violence; impact on individuals and society; policies and theories critically studied from race, class, and gender perspectives; social work implications.
Prerequisite(s): SOCW 410 or consent of the instructor.
545  HIV/AIDS: Social Work Challenges 3 hours.  HIV prevention and intervention in urban settings; system and ecological understanding of impact of HIV on society and role of social work practice and policy.  Prerequisite(s): SOCW 410 or consent of the instructor.  
549  Independent Study in Human Behavior and the Social Environment 1 TO 3 hours.  Independent study in human behavior and social environment areas not covered by existing course offerings.  May be repeated to a maximum of 6 hours.  Prerequisite(s): Consent of the instructor and approval of the college.  
551  Policy II: School Social Work Policy 3 hours.  Critical analysis of federal, state, and local policies relevant to social work practice in urban school systems.  Prerequisite(s): SOCW 420.  
552  Policy II: Child and Family Policy 3 hours.  Critical analysis of policies affecting welfare of families and children; focus on child welfare, juvenile justice, adult criminal justice, mental health, and special education systems.  Prerequisite(s): SOCW 420.  
553  Policy II: Healthcare Systems and Policies 3 hours.  Critical analysis of current healthcare programs and policies including policy change skills; content on urban poor and at-risk populations.  Prerequisite(s): SOCW 420.  
554  Policy II: Mental Health Policy 3 hours.  Critical analysis of policies and structures in mental health delivery system with focus on urban and chronically mentally ill populations.  Prerequisite(s): SOCW 420.  
556  Policy II: Community and Administrative Practice 3 hours.  Critical analysis of national, state, and local policies affecting urban community building and development.  Prerequisite(s): SOCW 420.  
558  Social Work and the Law 3 hours.  Social work input in legal system: family law, family violence, crime, delinquency, civil rights, education, health, mental health, social advocacy, social work practice regulation.  Prerequisite(s): SOCW 420 or consent of the instructor.  
559  Independent Study in Social Welfare Policy and Services 1 TO 3 hours.  Independent study in social welfare policy and services areas not covered by existing course offerings.  May be repeated to a maximum of 6 hours.  Prerequisite(s): Consent of the instructor and approval of the college.  
565  Research Seminars: Social Service Issues 3 hours.  Methodologies and results of research in selected fields of social services; special issues and problems in practice; relationship of research, theory and practice; priorities for future research.  Prerequisite(s): SOCW 460 or consent of the instructor.  
567  Research Project 0 TO 9 hours.  Application of research methods to social work problems in an individual or group project or library research project.  Preparation of a formal report based on field study processes and findings.  Satisfactory/Unsatisfactory grading only.  May be repeated to a maximum of 6 hours.  Prerequisite(s): SOCW 460 or consent of the instructor; and approval of the college.  
569  Independent Study in Research 1 TO 3 hours.  Independent study in research methodology or areas not covered by existing course offerings.  May be repeated to a maximum of 6 hours.  Prerequisite(s): Consent of the instructor and approval of the college.  
570  Field Instruction I 5 hours.  Students are assigned to social agencies where, under the supervision of an agency field instructor, they carry selected cases or groups for social work services.  Satisfactory/Unsatisfactory grading only.  Prerequisite(s): Consent of the instructor.  
571  Field Instruction II 5 hours.  Students are assigned to social agencies where, under the supervision of an agency field instructor, they carry selected cases or groups for social work services.  Satisfactory/Unsatisfactory grading only.  Prerequisite(s): SOCW 570 and consent of the instructor.  
572  Field Instruction III 8 hours.  Students are assigned to social agencies where, under the supervision of an agency field instructor, selected micro and macrosystem cases are carried for social work services.  Satisfactory/Unsatisfactory grading only.  Prerequisite(s): SOCW 571 and consent of the instructor.  
573  Field Instruction IV 8 hours.  Students are assigned to social agencies where, under the supervision of an agency field instructor, selected micro and macrosystem cases are carried for social work services.  Satisfactory/Unsatisfactory grading only.  Prerequisite(s): SOCW 572 and consent of the instructor.  
574  Special Studies in Field Instruction I 2 TO 4 hours.  Practicum experiences in approved social agencies/organizations where students carry selected cases applying knowledge to skill applications under the supervision of an agency field instructor.  Satisfactory/Unsatisfactory grading only.  Prerequisite(s): Consent of the instructor.  
575  Special Studies in Field Instruction II 2 TO 4 hours.  Practicum experiences in approved social agencies/organizations where students carry selected cases applying knowledge to skill applications under the supervision of an agency field instructor.  Satisfactory/Unsatisfactory grading only.  Prerequisite(s): Consent of the instructor.  
577  Social Welfare History 3 hours.  Social work history in context of political, economic, and social developments; focus on gender, class, and race; critical application of theoretical models.  Prerequisite(s): Admission to the PhD in Social Work program or consent of the instructor.  
579  Integrative Seminar 2 hours.  Application of concepts of social work practice, policy, and research to selected fields of social service.  Focus on appropriate service delivery models and intervention strategies.  May be repeated to a maximum of 4 hours.  Prerequisite(s): Concurrent registration in SOCW 575 and consent of the instructor.  
580  Practice III: Community and Administrative Practice 3 hours.  Management of human service organizations; resource acquisition and management; planning; community relations; focus on urban, community-based agencies.  Prerequisite(s): SOCW 431.  
581  Practice IV: Community and Administrative Practice 3 hours.  Advanced urban community building and developing; emphasis on poor at-risk communities.  Prerequisite(s): SOCW 580.  
582  Practice III: Practice with Children and Families 3 hours.  Ecological and strengths-based practice with urban children and families; special focus on child welfare.  Prerequisite(s): SOCW 431.  
583  Practice IV: Practice with Children and Families 3 hours.  Advanced critical analysis and application of ecological and strengths-based practice emphasizing interactions of children and families with urban courts, schools, and child welfare systems.  Prerequisite(s): SOCW 582.  
584  Practice III: Healthcare 3 hours.  Theoretical basis and skills for health social work in diverse settings; biopsychological understanding of health and disease; emphasis on clinical practice with urban clients and families.  Prerequisite(s): SOCW 431.  
585  Practice IV: Healthcare 3 hours.  Advanced knowledge and skills in healthcare settings; specific populations, including urban poor and at-risk populations; emphasis on urban community and organizational levels.  Prerequisite(s): SOCW 584.
Course Descriptions

586 Practice III: Mental Health  3 hours. Strengths-based assessment and treatment planning in urban settings; diversity issues; managed care settings; critical use of current mental health diagnostic and classification systems. **Prerequisite(s):** SOCW 431.

587 Practice IV: Mental Health  3 hours. Advanced urban mental health practice; diversity issues; focus on children and adolescents and their families; critical application of current mental health diagnosis and classification. **Prerequisite(s):** SOCW 586.

588 Practice III: School Social Work  3 hours. Ecological and strengths-based perspectives on development of basic competencies for urban school social work; diversity issues. **Prerequisite(s):** SOCW 431.

589 Practice IV: School Social Work  3 hours. Advanced interventions in urban school systems; use of groups, consultation, classroom interventions, family empowerment, conflict resolution, and community interventions; diversity issues. **Prerequisite(s):** SOCW 586.

590 Analysis of Social Work Practice Approaches  3 hours. Historical and current developments in the conceptualization of social work practice. Implications of practice approaches for contributing to social justice. Values and ethics addressed. Extensive computer use required. **Prerequisite(s):** Admission to the PhD in Social Work program or consent of the instructor.

591 Social Welfare Policy Analysis and Development  3 hours. Analysis of social welfare policies with particular attention to issues of social and economic justice; conceptual models for analysis; application of models to selected problems. **Prerequisite(s):** Admission to the PhD in Social Work program or consent of the instructor.

592 Models of Social Work Scholarship and Knowledge Development  3 hours. Functions of scholarship in social work; contributors to scholarship to social and economic justice; research methodologies, and knowledge building processes for practice and policy analysis. Extensive computer use required. **Prerequisite(s):** Admission to the PhD in Social Work program or consent of the instructor.

593 Quantitative Methods in Social Work Research  3 hours. Selected statistical and analytical methods as applied to social issues. Use of computerized tools, sampling, hypothesis testing, descriptive and inferential procedure, introduction to multivariate analysis. Extensive computer use required. **Prerequisite(s):** Admission to the PhD in Social Work program or consent of the instructor.

594 Dissertation Proseminar in Social Work  3 hours. Preparation in development of dissertation focus and planning of dissertation research. Readings are assigned and discussed in class. Emphasis on ideas for dissertation topic, its formulation, operationalization, and research design. **Prerequisite(s):** SOCW 592 and SOCW 593.

595 Seminar in Social Work Education  3 hours. Preparation for roles as social work educators. Historical development of social work education with special emphasis on relation between curriculum design and the accreditation process. Pedagogical issues such as selecting educational objectives, teaching methods, and evaluation of student performance. Students must participate in a teaching laboratory. **Prerequisite(s):** Admission to the PhD in Social Work program.

596 Proseminar on Selected Topics and Issues in Social Work  2 TO 4 hours. Review and critique of selected areas of social work content, theory or practice. State of current knowledge and needed research stressed. May be repeated. **Prerequisite(s):** Admission to the PhD in Social Work program.

599 PhD Thesis Research  0 TO 16 hours. Individual research, under faculty direction, on social work doctoral dissertation. Satisfactory/ Unsatisfactory grading only. May be repeated. **Prerequisite(s):** Consent of the instructor.

400 Sociology (SOC) Sociological Analysis  0 TO 4 hours. Procedures for analyzing original or secondary research data; writing literature reviews, proposals, data summaries, and research reports; computer-assisted data analysis and text preparation. 3 undergraduate hours. 4 graduate hours. **Prerequisite(s):** SOC 201 and SOC 202 or 6 hours of upper-division courses in the social sciences, including at least one course in introductory statistics and research methods, or consent of the instructor.

401 Sociological Statistics  0 TO 4 hours. Descriptive and inferential statistics for graduate and advanced under-graduate sociology majors and related fields. Tests of means, regression, correlation, analysis of variance, and related topics. 3 undergraduate hours. 4 graduate hours. **Prerequisite(s):** SOC 201 and SOC 202, or consent of the instructor.

402 Intermediate Sociological Statistics  0 TO 4 hours. The general linear model emphasizing regression. Analysis of variance and covariance. Simple structural equation models. Simple categorical methods. Elementary matrix algebra. 3 undergraduate hours. 4 graduate hours. **Prerequisite(s):** SOC 401.

405 Writing in the Social Sciences  3 OR 4 hours. Leads to effective, clear writing for a social science audience. Teaching how to organize ideas, avoid jargon, and write with precision. 3 undergraduate hours. 4 graduate hours. **Prerequisite(s):** 6 hours of upper-division social science courses.

424 Sociology of Gender  3 OR 4 hours. Variety and change in gender roles; patterns and consequences of gender inequality; gender and sexuality; gender and social institutions such as family, economy. **Same as** GWS 525. 3 undergraduate hours. 4 graduate hours. **Prerequisite(s):** 6 hours of upper-division sociology or consent of the instructor.

425 Race and Ethnic Relations  3 OR 4 hours. Critical examination of the conceptual frameworks and empirical findings in the study of race and ethnic relations. 3 undergraduate hours. 4 graduate hours. **Prerequisite(s):** 6 hours of upper-division sociology, including SOC 225, or consent of the instructor.

426 Topics in Race and Ethnic Relations  3 OR 4 hours. Intensive examination of a specialized topic announced when the class is scheduled. 3 undergraduate hours. 4 graduate hours. May be repeated to a maximum of 12 hours. Students may register in more than one section per term. **Prerequisite(s):** 6 hours of upper-division sociology, or consent of the instructor.

440 Topics in Organizations and Institutions  3 OR 4 hours. Intensive examination of a specialized topic announced when the class is scheduled. 3 undergraduate hours. 4 graduate hours. May be repeated to a maximum of 12 hours. Students may register in more than one section per term. **Prerequisite(s):** 6 hours of upper-division sociology, or consent of the instructor.

441 Social Stratification  3 OR 4 hours. The nature of systems of differentiation and ranking in societies and their consequences; emphasis on class structure in the United States; prestige, status, power, and social mobility in the United States and other societies. 3 undergraduate hours. 4 graduate hours. **Prerequisite(s):** 6 hours of upper-division sociology or consent of the instructor.

445 Sociology of the Family  3 OR 4 hours. Variety and change in family patterns; family formation and break-up; parents’ and children’s effects on each other; influences of culture and political economy; consequences for other institutions. 3 undergraduate hours. 4 graduate hours. **Prerequisite(s):** 6 hours of upper-division sociology or consent of the instructor.
446 Race, Ethnicity, and Gender in American Religion 3 OR 4 hours.
Religious institutions in the U.S. as a crucible for racial, ethnic, and gender identities, group formation, and intergroup relations; major world religions represented in the U.S. Same as RELS 446. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): SOC 100 and junior standing or above; or consent of instructor.

447 Organizations 3 OR 4 hours.
Characteristics of business, government, and not-for-profit organizations; approaches used to study organizations; theoretical and empirical analysis of organizational processes. Same as MGMT 447. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): 6 hours of upper-division sociology, management, or political science; or consent of the instructor.

448 Sociology of Development 3 OR 4 hours.
Historical, economic, political, social, and geographic factors shaping national and international development experiences and outcomes. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): 6 hours of upper-division sociology courses or consent of the instructor.

451 Medical Sociology 3 OR 4 hours.
Survey of major topics in sociology of health and medicine, including social definitions of health and illness, patient practitioner interaction, the organization of health institutions and professions. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): 6 hours of upper-division sociology or consent of the instructor.

455 Topics in Medical Sociology 3 OR 4 hours.
Intensive examination of a specialized topic announced when the class is scheduled. 3 undergraduate hours. 4 graduate hours. May be repeated to a maximum of 12 hours. Students may register in more than one section per term. Prerequisite(s): SOC 451 or consent of the instructor.

465 Topics in Sociology of Politics 3 OR 4 hours.
Intensive examination of a specialized topic announced when the class is scheduled. Same as POLS 465. 3 undergraduate hours. 4 graduate hours. May be repeated to a maximum of 12 hours. Students may register in more than one section per term. Prerequisite(s): 6 hours of upper-division sociology or consent of the instructor.

488 Theories in Social Psychology 3 OR 4 hours.
In-depth treatment of major theoretical traditions in social psychology. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): 6 hours of upper-division sociology or consent of the instructor.

496 Independent Study or Research 1 TO 9 hours.
Intensive analysis of specialized topics. May be repeated to a maximum of 12 hours. Students may register in more than one section per term.

500 Sociological Research Methods I 4 hours.
Introduction to research design, data gathering, and data reduction; logic of problem formulation, units of analysis, measurement, data analysis. Prerequisite(s): 18 hours of sociology, excluding SOC 296 and SOC 299, consent of the instructor, and approval of the department.

501 Sociological Research Methods II 4 hours.
Review and evaluation of research in the following health areas: healthcare systems, social epidemiology and health and illness behavior. Prerequisite(s): SOC 451.

509 Seminar: Sociological Research Methods 1 TO 7 hours.
Evaluating sociological research, data analysis and reporting; proposal writing and evaluation; professional issues including research ethics; student presentation of master's research proposals. Prerequisite(s): SOC 500.

511 Sociological Research Methods II 4 hours.
Evaluating sociological research, data analysis and reporting; proposal writing and evaluation; professional issues including research ethics; student presentation of master's research proposals. Prerequisite(s): SOC 500.

528 Societal Analysis of Aging, Health, and Healthcare 3 hours.
Analysis of aging, health, and healthcare issues mainly from sociological and public health perspectives. Review and application of appropriate concepts, theories, and methods. Same as CHSC 528. Prerequisite(s): CHSC 425 or consent of instructor.

540 Seminar: Social Institutions 1 TO 7 hours.
Intensive analysis of specialized topics. May be repeated to a maximum of 12 hours. Students may register in more than one section per term.

547 Seminar: Social Organization 1 TO 7 hours.
Intensive analysis of specialized topics. May be repeated to a maximum of 12 hours. Students may register in more than one section per term.

548 Seminar: Comparative Societies 1 TO 7 hours.
Intensive analysis of specialized topics. May be repeated. Students may register in more than one section per term.

Review and critique of current research in the following health areas: healthcare systems, social epidemiology and health and illness behavior. Prerequisite(s): SOC 451.

551 Seminar: Sociology of Health and Medicine 1 TO 7 hours.
Intensive analysis of specialized topics. May be repeated to a maximum of 12 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

555 Seminar: Political Sociology 1 TO 7 hours.
Intensive analysis of specialized topics. May be repeated to a maximum of 12 hours. Students may register in more than one section per term.

571 Seminar: Population and Human Ecology 1 TO 7 hours.
Intensive analysis of specialized topics. May be repeated to a maximum of 12 hours. Students may register in more than one section per term.

572 Sociology of Education 4 hours.
Education as a social institution in interaction with other institutions, such as the economy. Topics include the emergence of national systems of education, purposes of education,
inequality and educational reform. 
Same as PS 572.
Prerequisite(s): Enrollment in the 
PhD in Policy Studies in Urban 
Education program or consent of 
the instructor.
585 
Seminar: 
Sociological 
Theory 1 TO 7 hours. 
Intensive analysis of specialized top- 
ics. May be repeated to a maximum 
of 12 hours. Students may register 
in more than one section per term.
593 
Colloquium on 
College Teaching 
of Sociology 0 TO 4 hours. 
Sociological analysis of contempo- 
rary university teaching; strategies 
and techniques for presentation of 
sociology at the college level. May 
be repeated.
595 
Departmental 
Seminar 1 TO 4 hours. 
Presentation and discussion of issues 
of professional concern to sociologists, including current 
research, consulting, teaching, and 
applied sociology. Satisfactory/ 
Unsatisfactory grading only. May 
be repeated. Students may register 
in more than one section per term.
596 
Independent 
Study 1 TO 12 hours. 
Research on special problems not 
included in the graduate thesis. May 
be repeated. Students may register 
in more than one section per term.
Prerequisite(s): Consent of 
the instructor and approval of 
the department.
597 
Project 
Research 0 TO 16 hours. 
Supervised writing and research on 
topic of the master’s paper. 
Satisfactory/Unsatisfactory grading 
only. May be repeated to a maxi- 
mum of 6 hours. Prerequisite(s): 
SOC 501 and consent of the 
instructor.
599 
Thesis 
Research 0 TO 16 hours. 
Research and writing of the PhD 
thesis. Satisfactory/Unsatisfactory 
grading only. May be repeated.

Spanish (SPAN) 
400 
History of the Spanish 
Language 3 OR 4 hours. 
Origins and development of Spanish; 
phonological, morphological, syntac- 	ica! development of the language; 
foreign influences; origin of dialects. 
3 undergraduate hours. 4 graduate 
hours. Prerequisite(s): SPAN 
205 or SPAN 300 or consent of the 
instructor.
402 
Spanish 
Syntax 3 OR 4 hours. 
Structure of the grammatical system 
of Spanish. Analysis of the most 
important syntactic phenomena with 
emphasis on the meaning and func- 
tion of grammatical forms. 3 under- 
graduate hours. 4 graduate hours. 
Prerequisite(s): SPAN 305 or 
consent of the instructor.
403 
Advanced 
Spanish 
Syntax 3 OR 4 hours. 
Structure of the grammatical system 
of Spanish. In-depth analysis of 
selected syntactic phenomena. 3 
undergraduate hours. 4 graduate 
hours. Prerequisite(s): SPAN 
402 or the equivalent or consent of 
the instructor.
404 
Spanish 
Phonology and 
Morphology 3 OR 4 hours. 
Analysis of the phonological and 
morphological structure of Spanish. 
Emphasis on the production and 
mental representation of sounds. 3 
undergraduate hours. 4 graduate 
hours. Prerequisite(s): SPAN 
205 or the equivalent.
405 
Advanced Spanish 
Phonology and 
Morphology 3 OR 4 hours. 
Advanced and detailed study of the 
phonological and morphological 
structure of Spanish. Emphasis on 
current theories. 3 undergraduate 
hours. 4 graduate hours. 
Prerequisite(s): SPAN 404 or 
the equivalent or consent of the 
instructor.
406 
Spanish 
Sociolinguistics 3 OR 4 hours. 
Past and current theoretical and 
empirical sociolinguistics applied 
to the study of variation within 
Spanish and U.S. Hispanic commu- 
nities. 3 undergraduate hours. 4 
graduate hours. Prerequisite(s): 
SPAN 404 or SPAN 404 or consent 
of the instructor.
408 
Hispanic 
Dialectology 3 OR 4 hours. 
Descriptive and historical analysis of 
the most salient linguistic phenom- 
ena of peninsular and American 
Spanish dialects. 3 undergraduate 
hours. 4 graduate hours. 
Prerequisite(s): SPAN 300 or 
SPAN 404 or the equivalent.
409 
Linguistics 3 OR 4 hours. 
Analysis of the grammatical system 
of Spanish. Emphasis on the meaning 
and function of grammatical forms. 
3 undergraduate hours. 4 graduate 
hours. Prerequisite(s): SPAN 305 or 
consent of the instructor.
410 
Spanish 
Medieval 
Literature 3 OR 4 hours. 
Literary, social, and cultural devel- 
opments in Medieval Spain, as 
reflected in Cantar de mio Cid, Libro 
de buen amor, El conde Lucanor, 
and La Celestina. 3 undergraduate 
hours. 4 graduate hours. 
Prerequisite(s): SPAN 310.
412 
Literary Forms in 
the Early Spanish 
Golden Age 3 OR 4 hours. 
Renaissance and sixteenth-century 
lyric poetry; examples of picar-esque, 
pastoral, and mystical prose. 3 
undergraduate hours. 4 graduate 
hours. Prerequisite(s): SPAN 310.
413 
Literary Forms in 
The Later Spanish 
Golden Age 3 OR 4 hours. 
The comedia, culteranism and con- 
cceptismo; the prose of Quevedo and 
Gracián. 3 undergraduate hours. 4 
graduate hours. Prerequisite(s): 
SPAN 310.
414 
Don Quijote 3 OR 4 hours. 
Detailed study of the text; novelistic 
techniques and influence on the 
development of the novel. 3 under- 
graduate hours. 4 graduate hours. 
Prerequisite(s): SPAN 310.
421 
Modern Spanish 
Literature II: From 
Unamuno to 
Garcia Lorca 3 OR 4 hours. 
Representative authors and tenden- 
cies from the end of the nineteenth 
century to the outbreak of the Civil 
War. 3 undergraduate hours. 4 
graduate hours. Prerequisite(s): 
SPAN 311.
422 
Contemporary Spanish 
Literature: From Cela to the 
Present 3 OR 4 hours. 
The most important authors and 
tendencies in twentieth-century 
Spanish. 3 undergraduate hours. 4 
graduate hours. Prerequisite(s): 
SPAN 311.
427 
Studies in Language 
Policy and Cultural 
Identity 3 OR 4 hours. 
Focuses on the United States and 
the Spanish language, although 
other countries and languages are 
included. Same as LALS 427. 3 
undergraduate hours. 4 graduate 
hours. Taught in English. 
Prerequisite(s): Junior standing.
430 
Spanish American 
Literature of the 
Colonial Period 3 OR 4 hours. 
Conquest to Independence. From 
the narrative of Discovery, 
Conquest, and indigenous tradi- 
tions, to Renaissance epic, Baroque 
poetry and the literature of the 
Enlightenment. 3 undergraduate 
hours. 4 graduate hours. 
Prerequisite(s): SPAN 312.
431 
Modern 
Spanish American 
Literature I 3 OR 4 hours. 
Nineteenth-century literary trends 
from the beginnings of the novel 
through Romanticism and Realism 
to Modernismo. Prose and poetry. 3 
undergraduate hours. 4 graduate 
hours. Prerequisite(s): SPAN 312.
432 
Modern Spanish 
American 
Literature II 3 OR 4 hours. 
Representative authors and move­ 
mements from post-modernismo 
through Vanguardism and the ten- 
dencies of the last twenty years. 
Emphasis on poetry. 3 undergraduate 
hours. 4 graduate hours. 
Prerequisite(s): SPAN 312.
433 
Modern Spanish 
American 
Narrative 3 OR 4 hours. 
The development of fiction in 
Spanish America from the Romantic 
era to the neo-realistic novel and short 
story of the 1930s. 3 undergraduate 
hours. 4 graduate hours. 
Prerequisite(s): SPAN 312.
434 
Contemporary 
Spanish American 
Narrative 3 OR 4 hours. 
Emergence of the New Fiction. 
Representative works of the 1940s 
from South and Central America, 
Mexico, and the Caribbean, through 
contemporary developments of the 
“Boom.” 3 undergraduate hours. 4 
graduate hours. Prerequisite(s): 
SPAN 312.
435 
Advanced Topics in 
Hispanic 
Literature 3 OR 4 hours. 
Intensive study of a particular genre, 
theme, author, or period within 
Spanish, Latin American, or Latino 
literature with emphasis on literary 
analysis and critical writing. 3 
undergraduate hours. 4 graduate 
hours. Prerequisite(s): SPAN 
210 and SPAN 211; and consent of 
the instructor.
436 Special Topics in the Teaching of Spanish 1 TO 4 hours. 
Course content is announced prior to each term in which course is given. May be repeated. Students may register in more than one section per term. Taught in English. 
Some semesters may be taught in Spanish. Prerequisite(s): Approval of the department.

448 Foundations of Second Language Teaching 3 OR 4 hours. 
Provides an introduction to second language acquisition research and its implications for communicative language teaching. Emphasis is on creating activities to develop high school students’ communicative abilities in speaking and listening. 
Same as FR 448 and GER 448. 3 undergraduate hours. 4 graduate hours. Taught in English. Prerequisite(s): Junior standing or above; and consent of the instructor and three courses at the 200- and 300-levels.

449 Teaching Second Language Literacy and Cultural Awareness 3 OR 4 hours. 
Examines the nature of literacy as a reciprocal relationship between readers, writers, texts, and culture. Students learn the practical and theoretical foundations of classroom teaching of second language reading and writing skills. 
Same as FR 449 and GER 449. 3 undergraduate hours. 4 graduate hours. Taught in English. Prerequisite(s): Junior standing or above; and consent of the instructor.

451 Educational Practice with Seminar I 6 hours. 
The first half of a two-segment sequence of practice teaching, including seminar, to meet certification requirements for teaching in grades six through twelve. Graduate credit only with approval of the department. Prerequisite(s): Good academic standing in a teacher education program, completion of 100-clock hours of pre-student-teaching field experiences, credit or concurrent registration in SPAN 451, and approval of the department.

494 Special Topics 3 OR 4 hours. 
Topics will vary from term to term and may cover such areas as literary theory or culture. Same as FR 494 and TAL 494. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Taught in English. Prerequisite(s): Junior standing or above; and approval of the department.

500 Research in Hispanic Studies 4 hours. 
Basic concepts of linguistic and literary theory; introduction to areas of research in linguistics and literature. May be repeated to a maximum of 8 hours. Prerequisite(s): Admission to the graduate program in Hispanic studies or consent of the instructor.

502 Theoretical and Research Foundations of Communicative Language Teaching 4 hours. 
Introduces students to contemporary theory and research on second language acquisition. Emphasis is on understanding the research and examining classroom practice. 
Same as FR 502. Credit is not given for FR 502/SPAN 502 if the student has credit for SPAN 450 or FR 450 or GER 407. Taught in English. Prerequisite(s): Appointment as a teaching assistant. For students outside the department consent of the instructor.

505 Seminar in Spanish Descriptive Linguistics 4 hours. 
Topics in phonology, morphology, syntax, semantics, or pragmatics of Spanish. May be repeated to a maximum of 8 hours. Prerequisite(s): One 400-level Spanish course, and one from SPAN 402, SPAN 404, SPAN 408, or consent of the instructor.

507 Seminar in Second Language Acquisition and Bilingualism 4 hours. 
Current theoretical and research directions of bilingualism and second language acquisition by non-natives. May include original empirical research projects. May be repeated to a maximum of 8 hours.

510 Seminar in Spanish Medieval Literature 4 hours. 
An intensive study of relevant genres, periods, figures, and movements of Spanish medieval literature. May be repeated to a maximum of 8 hours.

512 Seminar in Golden Age Literature 4 hours. 
Particular areas, genres, works, or figures, in sixteenth- and seventeenth-century Spanish literature. 
May be repeated to a maximum of 8 hours.

520 Seminar in Modern Spanish Literature 4 hours. 
Particular areas, genres, works, or figures in Modern Spanish literature. May be repeated to a maximum of 8 hours.

530 Seminar in Spanish American Literature 4 hours. 
Intensive study of relevant genres, periods, figures, and movements in Spanish-American literature. 
May be repeated to a maximum of 8 hours.

535 Concepts and Methodologies in Hispanic Interdisciplinary Studies 4 hours. 
Inception and development of Latin American society from interdisciplinary perspectives. Cultural evolution from the encounter of European values and indigenous cosmogony to New World syncretism. 
May be repeated to a maximum of 8 hours.

540 Seminar on Language in Context 4 hours. 
Past and current theoretical and empirical directions as applied to the study of oral and written discourse and its social context. 
Prerequisite(s): One 400-level Spanish course and two from SPAN 402, SPAN 404, SPAN 406, and SPAN 408.

556 Second Language Learning 4 hours. 
An introduction to research findings and methods in second language learning. 
Same as LING 556. Prerequisite(s): Consent of the instructor.

557 Theories in Second Language Acquisition 4 hours. 
Review of current linguistic, cognitive, and sociocultural theories with the following in mind: what do these theories purport to explain? What methodologies are used by researchers working within the theories? Taught in English. 
Recommended background: LING 556.

570 Seminar in Literary Theory and Criticism 4 hours. 
Studies of literary production and reception; their application to the practice of literary criticism. Specific themes and topics vary. 
Same as FR 570. May be repeated to a maximum of 8 hours with approval. 
Approval to repeat course granted by the instructor. Taught in English.

594 Special Topics in Hispanic Studies 4 hours. 
Topics which involve multiple approaches to problems in linguistics and literature, or which cross the chronological and geographical boundaries established in the seminars. May be repeated to a maximum of 8 hours.

596 Independent Study 1 TO 4 hours. 
Provides for areas of study not regularly covered by departmental offerings. Study proposals must conform to departmental guidelines. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

598 MA Thesis Research 0 TO 16 hours. 
Students enrolled in thesis research and writing are assigned to the course at the discretion of the graduate committee. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Approval of the graduate committee.

599 PhD Thesis Research 0 TO 16 hours. 
The writing of a PhD thesis based on original research in the area of the candidate’s major specialization (literature, linguistics, or culture). Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 24 hours. Prerequisite(s): Admission to candidacy for the doctoral degree and consent of director of graduate studies.
Special Education (SPED)

410 Survey of Characteristics of Learners with Disabilities 3 hours. Fulfills requirements for Illinois House Bill 150. Field experience required. Learning and personality characteristics of exceptional learners. Diagnostic processes and educational approaches are examined. Prerequisite(s): ED 210 or ED 421 or graduate standing and consent of the instructor.

415 Characteristics of Exceptional Learners 3 hours. Provides a foundation for the understanding of the exceptional learner in an inclusive environment. No graduation credit for students enrolled in a secondary education, social work, or any graduate degree program. Prerequisite(s): Junior standing or above and admission to the Bachelor of Arts in Elementary Education program or consent of the instructor.

416 Methods of Instruction for Exceptional Learners 2 hours. The purpose of this course is to address issues of instruction for individuals with special needs. Topics include effective instructional and accommodative practices and strategies in multiple areas (math, literacy, science, social studies, art). Prerequisite(s): Junior standing or above and Admission to the Bachelor of Arts in Elementary Education program. Successful completion of SPED 415.

422 Assessment of Monolingual and LEP Children with Disabilities 4 hours. Psychoeducational assessment of monolingual and limited English proficient children with learning disabilities. First and second language development. Theoretical and practical aspects of measurement and testing. Prerequisite(s): Graduate standing; and SPED 410 or the equivalent.

424 Assessment of Students with Special Needs 3 OR 4 hours. Theoretical and practical application of standardized and alternative testing of children with learning and behavior difficulties. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): SPED 410.

426 Curricular/Behavioral Considerations for Learners with Special Needs 3 OR 4 hours. Instructional practices related to academic, classroom management, individualized and group instruction for students with special needs. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): SPED 424 or the equivalent or consent of the instructor.

427 Curricular and Behavioral Considerations for LEP Learners with Special Needs 4 hours. Exploration of best practice instruction and behavior management for limited English proficient students with learning disabilities, behavioral disabilities, and/or mild cognitive delays. Prerequisite(s): Graduate standing; and SPED 410 or the equivalent or consent of the instructor.

442 Language Development and Disorders 3 OR 4 hours. Theory and research on the acquisition of phonology, syntax, semantics, and pragmatics in children with and without disabilities. Models for language assessment and intervention. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): SPED 410.

444 Assistive Technology for Literacy, Learning, and Participation in Pre-K through High School 3 hours. Use of communication systems, computers, adapted equipment, and strategies to foster participation and inclusion of children in grades preschool through high school. Same as DHK 444.

448 Topics in Special Education 1 TO 4 hours. Course or workshop on preannounced topic on the education of handicapped children, adolescents, or adults. May be repeated. Students may register in more than one section per term. Prerequisite(s): SPED 410 and consent of the instructor.

461 Political and Sociocultural Perspectives on Special Education 3 hours. Students will examine issues of access and equity through legislation, litigation, and sociocultural perspectives and be introduced to major theoretical frameworks that influence special education programs. Same as ED 461. Fieldwork required.

462 Assessment of Individuals with Disabilities 3 hours. To prepare students in the use of formal and informal assessment in making decisions regarding placement, instructional planning, and evaluation of students with disabilities. Fieldwork required. Prerequisite(s): SPED 461 or SPED 461 or the equivalent or consent of the instructor.

463 Instructional Adaptations in Reading and Writing I 3 hours. Emphasizes the components of designing, implementing, and assessing reading and writing instruction for individuals with disabilities at the elementary level. Fieldwork required. Prerequisite(s): SPED 461 or SPED 461 or the equivalent or consent of the instructor.

465 Cognitive Development and Disabilities 3 hours. Theory and research on cognitive development in children with disabilities from infancy through adolescence, in the context of typical development. Models for cognitive assessment and intervention. Same as ESY 465. Fieldwork required. Prerequisite(s): SPED 461 or SPED 461 or the equivalent or consent of the instructor.

466 Language Development, Diversity, and Disabilities 3 hours. Theory and research on language development in children with disabilities, in the context of typical development. Models for language assessment and intervention. Same as ESY 466. Fieldwork required. Prerequisite(s): SPED 461 or SPED 461 or the equivalent or consent of the instructor.

467 Social and Emotional Development and Disabilities 3 hours. Exploration of the risk factors and different theoretical approaches associated with the social and emotional development of youth ages 5–21 with and without disabilities. Same as EPSY 467. Fieldwork required. Prerequisite(s): SPED 461 or SPED 461 or the equivalent or consent of the instructor.

471 Curricular Adaptations for Learners with Significant Disabilities 3 hours. Addresses methods of instruction, assessment, planning for instruction, development and evaluation of learning environments, and instructional delivery for students with significant disabilities. Fieldwork required. Prerequisite(s): SPED 465 and SPED 466 and SPED 467; or consent of the instructor.

472 Promoting Academic and Prosocial Behavior I 3 hours. The importance of school-wide and classroom structure and climate in the educational process. Strategies to promote academic success and desired social behavior. Same as ED 472. Fieldwork required. Prerequisite(s): SPED 461 or ED 461 or the equivalent or consent of the instructor.

473 Teaching Math and Science with Adaptations 3 hours. Provides prospective teachers with assessment strategies and a range of adaptations, modifications, and interventions in math and science for students with disabilities. Same as ED 473. Fieldwork required. Prerequisite(s): SPED 461 or ED 461 or the equivalent or consent of the instructor.

480 Technology and Multimedia: Learning Tools in the Classroom 3 OR 4 hours. New technologies to support teaching and learning in precollege classrooms. Same as CE 480. 3 undergraduate hours. 4 graduate hours.

481 Theoretical Foundations of Bilingual/ESL Special Education 4 hours. Overview of historical, political, pedagogical, and theoretical issues involved in the education of students with special learning needs and who are secondary language learners. Prerequisite(s): Graduate standing; and SPED 410 or the equivalent or consent of the instructor.

500 Research Methods in Special Education 4 hours. Research strategies and statistical methods for the assessment of applied and theoretical research studies in special education. Prerequisite(s): SPED 410 or consent of the instructor.
506 Characteristics and Assessment of Young Children with Disabilities 4 hours.
Biological and environmental factors in infancy may cause developmental disabilities. Impact of such factors on child development will be reviewed. Appropriate assessment techniques are reviewed. Fieldwork required.

507 Children with Disabilities and the Family 4 hours.
Strategies for working with families of young children with disabilities. Focus on parents and siblings within community context. Design and implementation of individual family service plans. Prerequisite(s): SPED 506 or SPED 511 or SPED 513 or SPED 515.

508 Methods of Instruction & Assessment of Young Children with Disabilities 4 hours.
Intervention and assessment methods for infants and young children at-risk for or showing developmental delays. Systems perspective on utilizing family and community to support intervention. Fieldwork required. Prerequisite(s): Grade of B or better in SPED 506; or consent of the instructor.

511 Characteristics of Learning Disabilities 3 hours.
Characteristics of and educational implications for cognitive, language, academic, and social-emotional development in students with learning disabilities. Fieldwork required. Prerequisite(s): SPED 500.

512 Instructional Methods for Students with Learning Disabilities 3 hours.
Development and evaluation of individualized educational programs for learning disabled students, including instructional methods and materials. Fieldwork required. Prerequisite(s): SPED 511.

513 Characteristics of Mental Retardation 3 hours.
The nature, characteristics, and educational implications for the cognitive, social, and physical development of persons with mental retardation. Fieldwork required. Prerequisite(s): SPED 500.

514 Instructional Methods for Students with Mild Mental Retardation 2 hours.
Instructional theory, methods, and techniques, and behavioral and academic objectives for students with mild mental retardation. Field experience. Prerequisite(s): SPED 513 and concurrent registration in SPED 515.

515 Instructional Methods for Students with Moderate to Profound Mental Retardation 2 hours.
Instructional theory and techniques, instructional methods and materials, and behavioral and academic objectives for students with moderate, severe, and profound mental retardation. Fieldwork required. Prerequisite(s): SPED 513 and concurrent registration in SPED 514.

516 Characteristics of Students with Emotional and Behavioral Disorders 3 hours.
Exploration of the risk factors and different theoretical approaches associated with the development and prevention of serious emotional and behavioral disorders. Fieldwork required. Prerequisite(s): SPED 424 and SPED 426.

517 Instructional Methods for Students with Emotional and Behavioral Disorders 3 hours.
Instructional programming for the academic and social development of students with serious emotional and behavioral disorders. Strategies for effective classroom and behavioral management. Fieldwork required. Prerequisite(s): SPED 516.

522 Special Educator as Consultant 4 hours.
Training for consultants in educational and employment settings: consultation models, observation, and coaching skills to use with educators, parents, employers, and community-agency personnel. Prerequisite(s): SPED 410 or the equivalent or consent of the instructor.

537 Special Education Practicum 6 TO 12 hours.
Practicum in special education. Fieldwork required. Prerequisite(s): Completion of 100-clock hours of pre-student-teaching field experiences, completion of a sequence in an area of special education, and consent of the adviser. Applications are due two semesters in advance.

538 Internship in Special Education 1 TO 8 hours.
Clinical, research, or field-based internship experiences for special education majors. May be repeated. Students may register in more than one section per term. Prerequisite(s): SPED 424 and SPED 426 and SPED 500 and consent of the instructor.

539 Proseminar in Special Education 4 hours.
Various areas of special education research are reviewed. Topics include areas of faculty research. Prerequisite(s): SPED 500 or consent of the instructor; and admission to PhD in Special Education program.

556 Comprehensive Examination in Special Education 4 hours.
Field-based internship experiences for special education majors. Fieldwork required. Prerequisite(s): SPED 573 or the equivalent of the instructor.

561 Teaching in Special Education 6 hours.
Practice teaching in the field of special education. Fieldwork required. Prerequisite(s): SPED 463 and SPED 471 and SPED 473 and SPED 512 and SPED 573 and SPED 576 and SPED 577 and approval of the program faculty.

570 Internship in Special Education 3 hours.
Students work on a specific research project under the direction of a faculty member. Fieldwork required. Prerequisite(s): SPED 539.

572 Promoting Academic and Prosocial Behavior II 2 hours.
Provides an in-depth examination of serious problem behavior and the skills to develop individualized programs to address the academic and social needs of challenging students. Fieldwork required. Prerequisite(s): SPED 472; or consent of the instructor.

583Forging Collaborations with Family and Community 3 hours.
Develops skills necessary to work in partnership with the families of children with disabilities, and community members. Same as EPSY 582. Prerequisite(s): SPED 461 or SPED 461 or the equivalent or consent of the instructor.

584 Understanding Research in Special Education 3 hours.
Overview of research methodology appropriate for teachers of special populations with emphasis on developing skills in critically reading research reports. Prerequisite(s): SPED 461 or SPED 461 or the equivalent or consent of the instructor.

585 Internship in Assessment 3 hours.
Internship experiences in an assessment clinic for special education majors. Fieldwork required. Prerequisite(s): SPED 462 or the equivalent or consent of the instructor.

587 Field Teaching Internship Experience 3 hours.
Field-based internship experiences for special education. Fieldwork required. Prerequisite(s): Approval of the program faculty.

588 Classroom-Based Inquiry Internship 3 hours.
Field-based internship experiences in special education classrooms. Fieldwork required. Prerequisite(s): Approval of the program faculty.
Satisfactory/Unsatisfactory grading only. Prerequisite(s): STAT 564.

596 Independent Study 1 TO 4 hours. Students independently study related topics not covered by courses, under faculty supervision. May be repeated to a maximum of 12 hours. Students may register in more than one section per term. Prerequisite(s): SPED 500 or the equivalent, and consent of adviser and instructor.

599 Thesis Research 0 TO 16 hours. Research on the topic of the student's dissertation. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the dissertation adviser.

Statistics (STAT)

407 Introduction to Probability 3 OR 4 hours. Probability spaces, random variables and their distributions, conditional distribution and stochastic independence, special distributions, sampling distributions, limit theorems. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in STAT 401.

411 Statistical Theory 3 OR 4 hours. Estimation, tests of statistical hypotheses, best tests, sufficient statistics, Rao-Cramer inequality, sequential probability ratio tests, the multivariate normal distribution, non-parametric methods. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in STAT 401.

416 Nonparametric Statistical Methods 3 OR 4 hours. Distribution free tests for location and dispersion problems, one-way and two-way layouts, the independence problem, regression problems involving slopes, detecting broad alternatives, resampling methods. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in STAT 401.

431 Introduction to Survey Sampling 3 OR 4 hours. Simple random sampling; sampling proportions; estimation of sample size; stratified random sampling; ratio estimators; regression estimators; systematic and cluster sampling, 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in STAT 401 or consent of the instructor.

461 Applied Probability Models I 3 OR 4 hours. Computing probabilities and expectations by conditioning, Markov chains, Chapman-Kolmogorov equations, branching processes, Poisson processes and exponential distribution, continuous-time Markov chains, reversibility, unification, 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in STAT 401.

462 Applied Probability Models II 3 OR 4 hours. Renewal theory, regenerative processes, semi-Markov processes, queuing theory, exponential models, M/G/1 and G/M/1 systems, reliability bounds on the reliability function, system life, Brownian motion, stationary processes. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in STAT 461.

471 Linear and Nonlinear Programming 3 OR 4 hours. Linear programming, simplex algorithm, duality, duality theorem sensitivity analysis, convexity, network simplex methods, assignment problems. Constrained and unconstrained minima. Quasi-Newton methods. Ellipsoidal methods of Kachan. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in STAT 461.

473 Game Theory 3 OR 4 hours. Games in extensive and normal form. Minimax theorem. Solving matrix games via linear programming. Nash equilibria for nonzerosum games, Shapley value, bargaining models. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in STAT 471.

477 Introduction to Reliability Theory 3 OR 4 hours. Structural and probabilistic properties of coherent systems, notions of aging and classes of life distributions, preservation properties, dependent components, optimal allocation models. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in STAT 401 or consent of the instructor.

481 Applied Statistical Methods I 3 OR 4 hours. Linear regression, introduction to model building, analysis of variance, analysis of categorical data, non-parametric statistics, product and system reliability, quality control, SAS and SPSS/SAS applications. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in STAT 481.

486 Statistical Consulting 3 OR 4 hours. Introduction to statistical consulting methods and techniques. Handling and transformation of raw data sets in CMS. Statistical analysis of data sets with SAS and SPSSX. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in STAT 481.

494 Special Topics in Statistics, Probability, and Operations Research 3 OR 4 hours. Course content announced prior to each semester in which it is given. Topics drawn from areas, such as distribution theory, Bayesian inference, discrete optimization, applied probability models, resampling techniques, biostatistics, environmental sampling. 3 undergraduate hours. 4 graduate hours. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.

496 Independent Study 1 TO 4 hours. Reading course supervised by a faculty member. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the instructor and approval of the department.

501 Probability Theory I 4 hours. Abstract measure theory, probability measures, Kolmogorov extension theorem, sums of independent random variables, the strong and weak laws of large numbers, the central limit theorem, characteristic functions, law of iterated logarithm, infinitely divisible laws. Prerequisite(s): STAT 534 or consent of the instructor.

502 Probability Theory II 4 hours. Radon-Nikodym theorem, conditional expectations, martingales, stationary processes, ergodic theorem, stationary Gaussian processes, Markov chains, introduction to stochastic processes, Brownian motion. Prerequisite(s): STAT 501.

511 Advanced Statistical Theory I 3 OR 4 hours. Statistical models, criteria of optimum estimation, large sample theory, optimum tests and confidence intervals, best unbiased tests in exponential families, invariance principle, likelihood ratio tests. Prerequisite(s): STAT 411.

512 Advanced Statistical Theory II 3 OR 4 hours. Basic concepts in decision theory, prior and posterior distributions, Bayesian decision theory, hierarchical models, robustness, minimax analysis, invariance principles, sequential analysis, completeness. Prerequisite(s): STAT 511.

521 Linear Statistical Inference 4 hours. Estimation and testing in linear models, generalized inverses of matrices, d-dimensional normal distribution, quadratic forms, likelihood ratio tests, best invariant tests, analysis of variance. Prerequisite(s): STAT 411.

522 Multivariate Statistical Analysis 4 hours. Multivariate normal distribution, estimation of mean vector and covariance matrix, T-square statistic, discriminant analysis, general linear hypothesis, principal components, canonical correlations, factor analysis. Prerequisite(s): STAT 521.

531 Sampling Theory I 4 hours. Foundations of survey design and inference for finite populations; the Hotell-Thompson estimator; simple random, cluster, systematic survey designs; auxiliary size measures in design and inference. Prerequisite(s): STAT 411.

532 Sampling Theory II 4 hours. Uses of auxiliary size measures in survey sampling; cluster sampling; systematic sampling; stratified sampling; superpopulation methods; randomized response methods; resampling; nonresponse; small area estimation. Prerequisite(s): STAT 531.

535 Optimal Design Theory I 4 hours. Gauss-Markov theorem, optimality criteria, optimal designs for 1-way, 2-way elimination of heterogeneity models, repeated measurements, treatment-control; Equivalence theorem, approximate designs for
595 Research Seminar 1 hour. Current developments in research with presentations by faculty, students, and visitors. Researchers and practitioners from academia, industry, and government will present talks on topics of current interest. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.

596 Independent Study 1 TO 4 hours. Reading course supervised by a faculty member. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the instructor and the department.

598 Master's Thesis Research 0 TO 16 hours. Research work under the supervision of a faculty member leading to the completion of a master's thesis. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Approval of the department.

599 Doctoral Thesis Research 0 TO 16 hours. Research work under the supervision of a faculty member leading to the completion of a doctoral thesis. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.

597 Project Research 0 TO 16 hours. Research investigation of problems in surgery. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

598 Master's Thesis Research 0 TO 16 hours. Research investigation of problems in surgery. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

593 Graduate Student Seminar 1 hour. For graduate students who wish to receive credit for participating in a learning seminar whose weekly time commitment is not sufficient for a reading course. This seminar must be sponsored by a faculty member. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Approval of the department.
major requirements.

Prerequisite(s): 12 hours of upper-division courses in theater, with a 3.00 grade point average in those courses; recommendation of two faculty members and approval of department obtained in semester prior to internship.

475 Audition Technique 3 OR 4 hours.
Selection and staging of audition pieces from both classical and modern drama, 3 undergraduate hours. 4 graduate hours.
Prerequisite(s): Grade of B or better in THTR 261 and grade of B or better in THTR 452 and grade of B or better in THTR 210; or graduate standing.

491 Study Abroad in Theatre 0 TO 16 hours.
Study abroad within an approved foreign exchange program or department-sponsored program. May be repeated without approval. Approval to repeat course granted by the department.
Prerequisite(s): Approval of the department.

498 Independent Study 1 TO 4 hours.
Individual investigation of special problems that may be student-initiated or related to faculty research. May also be used for special university-sponsored projects, such as interdisciplinary seminars. May be repeated to a maximum of 6 hours. Students may register in more than one section per term.
Prerequisite(s): Senior or graduate standing and approval of the department.

502 Introduction to Research in Theatre 4 hours.
Focuses on the research directors and scholars need to make informed choices.

522 Theories of Theatre 4 hours.
Nature of the theatrical experience. Emphasis on topics varies. For example, theory of comedy; semiotics of theater; dada, surrealism, expressionism, futurism. May be repeated to a maximum of 12 hours. Prerequisite(s): At least three of the following: THTR 209; THTR 245; THTR 262; THTR 284; THTR 425; or consent of the instructor.

523 Special Topics in Dramatic Criticism 4 hours.
Intensive analysis of an individual critic or school, or critical history of an important play. May be repeated to a maximum of 12 hours.

596 Independent Research 1 TO 4 hours.
Department approved research projects not included in thesis research. May be repeated to a maximum of 6 hours. Students may register in more than one section per term.
Prerequisite(s): Consent of the director of graduate studies.

597 Thesis 0 TO 8 hours.
Under the guidance of an advisor and committee, the student creates a theatre or video production, together with a written explanation of the work's intended significance. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Approval of faculty thesis production committee.

598 Thesis 0 TO 16 hours.
Under the guidance of an advisor and committee, the student develops and contacts a research project addressing a theatre problem of a basic or applied nature. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term.
Prerequisite(s): Approval of thesis research committee.

Urban Planning and Policy (UPP)

403 Introduction to Urban Planning 3 OR 4 hours.
Patterns of city growth, physical, socioeconomic, and environmental issues, Contemporary planning issues, Future of cities, 3 undergraduate hours. 4 graduate hours.
Prerequisite(s): Advanced undergraduate standing or consent of the instructor.

420 Great Cities: London and Chicago 1 TO 8 hours.
Comparative investigation of urban, economic, social, and political issues in the two global cities. Includes classes, study, and living in London. Fieldwork required.
Prerequisite(s): Junior standing or above and selection by the Office of Study Abroad Admission Committee.

470 Cohort Seminar for Urban Developers 0 TO 4 hours.
Application of the financial calculators, use of spreadsheets, and other tools commonly used in real-estate-based urban development projects.

3 undergraduate hours. 4 graduate hours. Prerequisite(s): Consent of the instructor.

471 Housing and Community Development for Urban Developers 3 OR 4 hours.
Housing policy at federal, state, and local levels affecting urban housing markets. Emphasis on assessment of market conditions affecting community development decisions, 3 undergraduate hours. 4 graduate hours. Prerequisite(s): UPP 470 or consent of the instructor.

472 Development Finance for Urban Developers 3 OR 4 hours.
Key financial principles of real estate development, particularly those related to the financing of affordable housing. How to develop a real estate pro forma. 3 undergraduate hours. 4 graduate hours.
Prerequisite(s): Consent of the instructor.

473 Organizational Essentials for Urban Developers 3 OR 4 hours.
Theory and practice of management in public and nonprofit settings. Focus on developing leadership, and legal skills for each step in development, 3 undergraduate hours. 4 graduate hours.
Prerequisite(s): Consent of the instructor.

474 Community Development Process for Urban Developers 3 OR 4 hours.
Developing affordable housing, development team, acquisition strategy, legal issues, construction management, and project sustainability, as it pertains to different types of housing developments, 3 undergraduate hours. 4 graduate hours.
Prerequisite(s): Consent of the instructor.

475 Sustaining the Housing for Urban Developers 3 OR 4 hours.
Introduces students to a range of management issues: property management and maintenance, resident relations and services, and financial/asset management as it relates to sustaining affordable housing, 3 undergraduate hours. 4 graduate hours.
Prerequisite(s): Consent of the instructor.

500 History and Theory of Urban Planning 4 hours.
Analysis of the development of the planning field and of the theories that have been developed for planning for change in the urban community. Prerequisite(s): Admission to the Urban Planning and Policy program or consent of the instructor.

501 Urban Space, Place, and Institutions 4 hours.
Political and economic approaches to urban structure and change. Includes intergovernmental relations, administrative organization, and planning initiatives in urban space and institutions. Prerequisite(s): Graduate standing in the Urban Planning and Policy program, Master of Arts in Real Estate, or consent of the UPP program director.

502 Planning Skills: Computers, Methods, and Communication 4 hours.
Focuses on the use of computers to learn methods and communication skills commonly used in planning practice. Prerequisite(s): Graduate standing in the Urban Planning and Policy program or consent of the UPP program director.

503 Data Analysis for Planning and Management I 4 hours.
Basic introduction to data analysis techniques most commonly used in urban planning. Addresses issues of decision making based on limited or imperfect information.
Prerequisite(s): Admission to the Urban Planning and Policy program or consent of the UPP program director.

504 Economic Analysis for Planning and Management 4 hours.
Basic micro, macro, and welfare economics theory; related analytical concepts, including input-output, economic base, benefit-cost, Economic forces which shape urban areas and affect public policy.
Prerequisite(s): Admission to the Urban Planning and Policy program or consent of the UPP program director.

507 Computer Topics in Urban Planning 4 hours.
Specialized computational applications for various planning areas, including database, project scheduling, statistics, graphics, and simulations. Topics will vary each semester.
Prerequisite(s): Graduate standing in the Urban Planning and Policy program.
508 Geographic Information Systems for Planning 4 hours. Applications of Geographic Information Systems to urban planning and policy making. Same as GEOG 589. Prerequisite(s): Graduate standing in Urban Planning and Policy or consent of the instructor.

516 Issues of Class and Race in Planning 4 hours. Critically examines the significant role of race, class, ethnicity, and gender as factors in planning public policy formation, implementation, and evaluation. Prerequisite(s): Consent of the instructor.

517 Regional and Metropolitan-Wide Planning 4 hours. History of regional planning. Prerequisite(s): UPP 500.

520 Globalization and International Planning I: Theory and Applications 4 hours. Overview of international development theories and their practical applications. Particular emphasis is placed on globalization. Urban versions and applications of these theories. Prerequisite(s): Consent of the instructor.

521 Globalization and International Planning II: Comparative Planning and Policies 4 hours. Policies and practice of public sector planning and development in three regional areas of the world: Europe, South America, and Asia. Prerequisite(s): UPP 520 or consent of the instructor.

525 Globalization and International Planning: Special Topics 1 TO 4 hours. Special topics selected for intensive analysis in international development planning. May be repeated to a maximum of 8 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

531 Economic Development I: Planning 4 hours. Overview of development strategies, including financing, business development, industry, and human resources; implementation and evaluation. Prerequisite(s): UPP 530.

532 Development Finance Analysis 4 hours. Financial feasibility analysis for residential, commercial, and industrial projects. Financial valuation and accounting principles, legal interests in real estate, and tax issues affecting cash flow and returns on investment. Prerequisite(s): UPP 504.

536 Urban Employment Planning 4 hours. The importance of employment as a focus in planning and policy making. History, theories, and methodologies of urban markets; labor market analysis methodologies and emerging public policies. Prerequisite(s): UPP 504 or consent of the instructor.

537 Economic and Environmental Planning 4 hours. Analytical and economic methods for environmental planning and management. Applications to selected problems. Prerequisite(s): UPP 504 or UPP 554.

540 Community Development: Theory 4 hours. Critically examines community development as a field of practice, policy intervention, implementation and analysis; emphasis on community and social dynamics of disadvantaged groups. Prerequisite(s): Admission to the Urban Planning and Policy program or consent of the UPP program director.

541 Community Development: Practice 4 hours. Examines the methods and techniques used or adapted in community development as a field of planning practice, analysis and evaluation: emphasis on community-based settings, applications and tools. Prerequisite(s): Consent of the instructor.

542 Metropolitan Housing Planning 4 hours. Urban housing market structure and dynamics; impacts of government housing policy on market; development of local housing plans. Prerequisite(s): UPP 504 or consent of the instructor.

543 Planning for Healthy Cities 4 hours. Investigates the needs of special populations such as the elderly or mentally ill, the role of the planner in serving these groups, and community-based strategies to meet needs.

544 Urban Revitalization and Gentrification 4 hours. Urban change in U.S. cities since World War II that is associated with socioeconomic structure under globalization. The course examines restructuring under the new global order and its impact on cities and urban planning and different social groups.

545 Community Development: Special Topics 1 TO 4 hours. Special topics selected for intensive analysis in community development. May be repeated to a maximum of 8 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

550 Physical Planning I: Theoretical Foundations 4 hours. Physical form, economic characteristics, social qualities, and government structure of cities, suburbs, and regions; theories of urban spatial organization and planning. Prerequisite(s): Admission to the Urban Planning and Policy program or consent of the UPP program director.

552 Physical Planning III: Studio 4 hours. Analysis, evaluation, and development of land use and urban design plans for selected projects and clients. Prerequisite(s): UPP 551.

554 Environmental Planning 4 hours. The relationship of federal and state environmental policies and legislation to urban and regional planning efforts. Prerequisite(s): Consent of the instructor.

555 Physical Planning: Special Topics 1 TO 4 hours. Special topics selected for intensive analysis in such areas as housing and urban design. May be repeated to a maximum of 6 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

556 Urban Design Studio 8 hours. Methods and tools for analysis, policy making and evaluation of urban spaces, including theoretical approaches and trends, design elements, social dimensions, methods, policy formulation, computer applications, and project examples. Prerequisite(s): Consent of the instructor.
Course Descriptions

Women's Health Nursing (NUWH)

450 Women and Mental Health Nursing 3 hours. Theories of female psychology; women's daily lives and mental health; gender differences in mental illness; strategies for improving women's mental health. Same as GWS 450 and NUH 450.

Prerequisite(s): Consent of the instructor. Students enrolled in the College of Liberal Arts and Sciences must have credit in PSY 101 and either PSY 210 or PSY 315 or GWS 315.

455 Women's Health: A Primary Healthcare Approach 3 hours. Health promotion and disease prevention in women's health. Includes community experience with community women. Primary healthcare approaches examined. Same as CHSC 456 and NUH 456.

Prerequisite(s): Consent of the instructor.

507 Biological Basis for Women's Health and Perinatal Nursing I 2 hours. Focuses on the anatomy and physiology of reproductive function, pregnancy, parturition, the perinatal period, and menopause as the biological basis for women's health and perinatal nursing. Same as MUHC 507.

557 Site Planning 4 hours. Quantitative and qualitative tools for analysis and evaluation of site plans, including standards of site plans, spreadsheet computer models, elements of site design, landscape architecture, and red pencil site plans.

558 Land Use Planning 4 hours. Urban land use planning strategies and various land use control techniques which can be employed to carry out development policies; social implications of land use policy and practice. Prerequisite(s): Consent of the instructor.

560 Urban Transportation I: Introduction 4 hours. Transportation planning and linkages between it and urban land use and regional economic development. Recent trends, traditional problems, and emerging issues.

561 Urban Transportation II: Policy and Methods 4 hours. Formation and implementation of transportation policy at the national, regional, and local levels. Students will prepare an in-depth study of a major policy issue. Prerequisite(s): UPP 560 or consent of the instructor.

562 Urban Transportation III: Laboratory 4 hours. Software packages for urban transportation planning, transportation GIS, and air quality modeling. Heavy reliance on case studies. Prerequisite(s): UPP 561 or consent of the instructor.

563 Transportation Management 4 hours. Transit system planning, scheduling, pricing policy, and management; traffic control techniques and demand management; paratransit alternatives. Prerequisite(s): UPP 560.

565 Transportation: Special Topics 1 TO 4 hours. Examination of specific and current problems in urban and regional transportation. Topics to be determined at the time the course is offered. May be repeated to a maximum of 8 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

569 Infrastructure Management 4 hours. Integrated approach to the management of infrastructure systems: design, construction, operations, maintenance, and rehabilitation of facilities. Performance of facilities, approaches to management, and available tools and developing technologies. Same as CME 580.

Prerequisite(s): IE 201 or the equivalent or consent of instructor. Recommended background: Familiarity with computer spreadsheets.

580 Dissertation Proposal Workshop 1 hour. Faculty-led workshop to assist students in developing dissertation proposals in identifying their relevant literature, selecting appropriate methods, and demonstrating the significance of their original research. Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 2 hours. Prerequisite(s): Completion of the first year of the program; and consent of the instructor. PhD in Urban Planning and Policy students will generally take this course after or just before completing the preliminary examination.

583 Advanced Planning Theory 4 hours. Study of theoretical ideas and debates about planning; the rational model and its competitors; critical review of planning methods and practice; composing alternative plans. Prerequisite(s): Consent of the instructor.

584 Methods of Policy Analysis 4 hours. Analytic, allocative and evaluative techniques in public policy analysis. Preparation of case studies in problem analysis and policy recommendations. Same as PPA 584.

Prerequisite(s): Consent of the instructor.

586 Topics in Urban Planning Research 4 hours. Course highlights research activities and opportunities related to research centers. May be repeated.

587 Planning and Policy Research Practicum 4 hours. PhD students work with a faculty member on engaged research related to their discipline. The topic and scope is determined by mutual agreement.

Prerequisite(s): UPP 586 and consent of the instructor. Open only to PhD degree students.

588 Research Design and Evaluation 4 hours. Methods used to evaluate policies and programs; quasi-experimental designs, evaluation problems, and emerging evaluation methods. Prerequisite(s): Consent of the instructor.

589 Data Analysis for Planning and Management II 4 hours. Advanced topics in data analysis and model building including specific models used in urban planning. Prerequisite(s): UPP 503.

591 Professional Practice Experience 4 hours. Reviews issues and problems in professional practice; analyzes prerequisites for rational, strategic, and ethical planning; considers career options; defines professional goals. Includes professional experience for students without professional planning experience. Prerequisite(s): Graduate standing in Urban Planning and Policy and an approved internship agreement or waiver of the internship.

593 Independent Research in Urban Planning and Policy 1 TO 8 hours. Advanced study and analysis of a topic selected by a student under the guidance of a faculty adviser. Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

594 Topics in Urban Planning and Policy 1 TO 4 hours. Intensive analysis of selected planning problems or policy issues. May be repeated to a maximum of 12 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

596 Independent Study in Urban Planning and Policy 1 TO 4 hours. Advanced study and analysis of topic selected by student under the guidance of faculty adviser. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

597 Master's Project Research 0 TO 4 hours. Preparation of plan, research report, or other document which demonstrates readiness for professional planning responsibility. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Open only to degree candidates, upon approval of student's faculty adviser.

598 Master's Thesis Research 0 TO 16 hours. Preparation of a major research paper under the guidance of a faculty committee. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Open only to degree candidates, upon consent of the director of graduate studies.

599 PhD Thesis Research 0 TO 16 hours. Individual study and research. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Open only to degree candidates, upon approval of topic by the dissertation committee.

PhD Thesis Research 0 TO 16 hours. Individual study and research. Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Open only to degree candidates, upon approval of topic by the dissertation committee.

Women's Health Nursing (NUWH)
507. **Prerequisite(s):** Consent of the instructor.

517 **Healthcare of Women I** 4 hours.
Healthcare of women through the life span with an emphasis on health promotion and disease prevention, fertility control, and pregnancy care. **Same as NUMC 517.**

**Prerequisite(s):** Credit or concurrent registration in NUMC 507 or credit or concurrent registration in NUWH 507, and consent of the instructor.

517 **Healthcare of Women II** 4 hours.
Healthcare of women through the life span with an emphasis on the parturition, the puerperium, and common health and pregnancy problems. **Same as NUMC 518.**

**Prerequisite(s):** NUMC 508; and NUMC 517 or NUWH 517, or consent of the instructor.

517 **Healthcare of Women III** 4 hours.
Healthcare of women through the life span with an emphasis on gynecologic and primary care. **Same as NUMC 519.**

**Prerequisite(s):** NUMC 518 or NUWH 518; and NUSC 531 and NUSC 532 and NUSC 535.

550 **Issues for Research and Practice in Women’s Health** 3 hours.
Analysis of gender-related definitions of health and illness in theory issues and research evaluation criteria for women’s healthcare practice are developed as a basis for research. **Same as NUSC 550.**

**Prerequisite(s):** Consent of the instructor.

555 **Theories and Methods in Women’s Health Nursing Research** 3 hours.
Critical analysis of theoretical and methodological approaches in women’s health nursing research. Emphasis on evaluation schema useful to researchers. **Same as NUSC 555.**

**Prerequisite(s):** NUSC 550 or NUWH 550, and consent of the instructor.

565 **Advanced Research in Women’s Health** 1 TO 2 hours.
Advanced seminar for doctoral students in graduate nursing concentration in women’s health. Faculty and students present and critique ongoing and developing research. **Same as NUSC 565.**
Index

A

Academic calendar (inside front cover)
Academic Grievance
Procedures, 27
Academic integrity, 27
Academic year, 15
Accounting
Courses, 163–164
Degree programs, 67
Faculty, 35
Accreditation, 9–10
Adding/dropping courses, 20
Adding programs, 18
Administration, 10
Administrative Studies in Nursing
Courses, 164
Admissions, 16
Advisers, 20
African-American Studies Courses, 164–165
Faculty, 38
Anatomy and Cell Biology
Courses, 165
Degree programs, 131
Faculty, 43
Ancient Greek Courses, 165
Animal research, 29
Anthropology
Courses, 165–168
Degree programs, 103–104
Faculty, 39
Application procedures, 16–18
Applied Health Sciences, College of
Degree programs, 49–58
Faculty, 34
Architecture
Courses, 168–170
Degree program, 59–60
Faculty, 34
Architecture and the Arts, College of
Degree programs, 49–58
Faculty, 34
Art and Design
Courses, 171–173
Faculty, 34
Art History
Courses, 173–174
Degree programs, 60–61
Faculty, 34–35
Asian Studies
Courses, 174–175
Assistantships, 19
Associated Health Sciences Courses, 175

B

Biochemistry and Molecular Genetics
Courses, 175–176
Degree programs, 132
Faculty, 43
Bioengineering
Courses, 176–178
Degree programs, 87–88
Faculty, 37
Bioinformatics
Degree programs, 88–89
Biological Sciences
Courses, 178–180
Degree programs, 104–105
Faculty, 39
Biomedical and Health Information Sciences
Courses, 180–181
Faculty, 34
Biomedical Visualization
Courses, 181–182
Degree program, 49
Biopharmaceutical Sciences
Courses, 182–184
Degree programs, 145
Faculty, 46
Biophysics. See Physiology and Biophysics
Biostatistics
Courses, 184–185
Board of Trustees Tuition and Service Fee Waiver, 19
Business Administration
Courses, 185
Degree program, 68
Business Administration, College of
Degree programs, 67–73
Faculty, 35
Calendary, academic (inside front cover)
Campus Certificate Programs, List of, 8
Changing programs, 18
Chemical Engineering
Courses, 185–186
Degree programs, 89–90
Faculty, 37
Chemistry
Courses, 186–189
Degree programs, 105–106
Faculty, 39
Civil Engineering
Courses, 189–191
Degree programs, 90
Faculty, 37
Classics
Courses, 191–192
Faculty, 39
Committee on Institutional Cooperation
Courses, 192
Traveling Scholar Program, 20
Communication
Courses, 192–193
Degree program, 106–107
Faculty, 39
Community Health Sciences
Courses, 193–195
Computer Science
Courses, 195–197
Degree programs, 91–92
Faculty, 37
Confidentiality of records, 27–28
Course descriptions, 161–307
Course loads, 21–22
Criminal Justice
Courses, 197–199
Degree programs, 107–108
Faculty, 39–40
Curriculum and Instruction
Courses, 199–202
Degree program, 77–79

D

Degree programs, List of, 6–8
Degree requirements, 24–27
Dentistry, College of
Degree programs, 75–76
Faculty, 35–36
Directions to campus, 311
Directors of Graduate Studies (DGS), 15
Disabilities, students with, 29
Disability and Human Development
Courses, 203–204
Degree program, 50
Faculty, 34
Disability Studies
Courses, 204–205
Degree program, 51
Discipline of students, 30
Dissertation, 27
Doctoral degrees
List of, 6–8
Requirements, 25–27
Dropping/adding courses, 20
Earth and Environmental Sciences
Courses, 205–207
Degree programs, 108–109
Faculty, 40
Economics
Courses, 207–209
Degree programs, 69–70
Faculty, 35
Education, College of
Courses, 209–210
Degree programs, 77–85
Faculty, 36
Educational Psychology
Courses, 210–212
Degree program, 78–79
Electrical and Computer Engineering
Courses, 212–215
Degree programs, 92–94
Faculty, 37–38
Electronic Visualization
Degree program, 61–62
Engineering, College of
Courses, 215
Degree programs, 87–97
Faculty, 37–38
English
Courses, 215–219
Degree programs, 109–111
Faculty, 40
English as a Second Language (ESL)
Courses, 220
Enrollment, 20–22
Entrepreneurship
Courses, 220
Environmental and Occupational Health Sciences
Courses, 220–222
Environmental and Urban Geography
Degree program, 111–112
Epidemiology
Courses, 222–223
Examinations
Doctoral, 26
Master’s, 25
Faculty, List of graduate, 34–48
Fees and tuition, 30–32
Fellowships, 19
Film/Animation/Video
Degree program, 62–63
Finance
Courses, 223–224
Faculty, 35
Financial aid, 18–20
Financial obligations, 30, 32–33
Forensic Science
Degree program, 145–146
French
Courses, 224–226
Degree program, 112–113
Faculty, 42
Gender and Women’s Studies
Courses, 226–227
Faculty, 40
Interdepartmental Concentration, 113
Geography
Courses, 227–229

F

Faculty, 34–35
Finance
Courses, 223–224
Faculty, 35
Financial aid, 18–20
Financial obligations, 30, 32–33
Forensic Science
Degree program, 145–146
French
Courses, 224–226
Degree program, 112–113
Faculty, 42
Gender and Women’s Studies
Courses, 226–227
Faculty, 40
Interdepartmental Concentration, 113
Geography
Courses, 227–229
Germanic Studies
Courses, 229–230
Degree programs, 114–115
Faculty, 40
Grades, 22
Graduate College
Courses, 231
Degree programs, 99–100
General information, 15–33
Interdepartmental Concentrations, 100–101
Graduate Education in Medical Sciences (GEMS)
Degree programs, 133
Graduate study
By undergraduates, 16
Graphic Design
Degree program, 63–64
Grievance procedures, 27, 28–29
Health
Health Informatics
Degree programs, 51–53
Health Policy and Administration
Courses, 231–233
Health Professions Education
Degree program, 133–134
Healthcare Administration
Degree program, 151
Hispanic Studies. See also Latin American and Latino Studies
Degree program, 115–116
Histology
Courses, 233–234
History
Courses, 234–236
Degree programs, 116–118
Faculty, 40–41
Honors College
Courses, 236
Hours, campus, 15
Human Nutrition
Courses, 237
Degree programs, 53–54
Faculty, 34
Human research, 29
Illinois Veterans Scholarship, 20
Immunization requirements, 28
Immunology. See Microbiology and Immunology
Industrial Design
Degree program, 64
Industrial Engineering
Courses, 237–239
Degree programs, 94–95
Faculty, 38
Information and Decision Sciences. See also Management Information Systems
Courses, 239–242
Faculty, 35
Instructional Leadership
Degree program, 79–81
Interdisciplinary Public Health Sciences
Courses, 242
Interdisciplinary Studies in the Arts
Courses, 242
International applicants, 17–18
Italian
Courses, 242–243
Jane Addams College of Social Work. See Social Work
Jewish Studies
Courses, 243
Joint degree programs, List of, 8
Latin
Courses, 243
Latin American and Latino Studies. See also Hispanic Studies
Courses, 243
Faculty, 41
Interdepartmental Concentration, 118
Leave of absence, 22–23
Liberal Arts and Sciences, College of
Courses, 243
Degree programs, 103–130
Faculty, 38–42
Interdepartmental concentrations, 113, 118, 126–127
Life Sciences, Graduate College
Courses, 231
Limited status, 16
Linguistics
Courses, 243–244
Degree program, 119
Lithuanian. See also Slavic Languages and Literatures; Slavic Studies
Courses, 244–245
Loans, 20
Management Information Systems. See also Information and Decision Sciences
Degree programs, 70–72
Managerial Studies
Courses, 245–246
Faculty, 35
Maps of campus, 312–315
Marketing
Courses, 246–248
Master of Business Administration
Courses, 248
Joint degree programs, List of, 8
Master’s degrees
List of, 6–8
Requirements, 25
Materials Engineering
Courses, 189–191
Degree programs, 95–96
Faculty, 37
Maternal-Child Nursing
Courses, 248–249
Mathematical Computer Science
Courses, 249–251
Mathematics. See also Computer Science; Statistics
Courses, 251–254
Degree programs, 120–122
Faculty, 41
Mathematics Teaching
Courses, 254–255
MD/PhD Training Program
Degree program, 134–135
Mechanical Engineering
Courses, 255–258
Degree programs, 96–97
Faculty, 38
Medical Biotechnology
Courses, 258–259
Degree program, 135–136
Medical Education
Courses, 259
Faculty, 43
Medical Humanities
Courses, 259
Medical immunization requirements, 28
Medical Laboratory Sciences
Courses, 259–260
Medical-Surgical Nursing
Courses, 260–261
Medicinal Chemistry
Courses, 261
Degree programs, 146–147
Faculty, 46
Medicinal Chemistry and Pharmacognosy. See also Pharmacognosy
Courses, 261–262
Faculty, 46
Medicine, College of
Degree programs, 131–139
Faculty, 43–45
Microbiology and Immunology
Courses, 262
Degree programs, 136–137
Faculty, 43–44
Military service, 32
Movement Sciences
Courses, 262–264
Degree programs, 54–55
Faculty, 34
Music
Courses, 264
N
Native American Studies
Courses, 264
Natural Sciences
Courses, 264
Neuroscience
Courses, 264
Degree programs, 99–100
Faculty, 38
Interdepartmental Concentration, 100
Nondegree admissions, 18
Nondiscrimination policy, 28
Nursing, College of
Degree programs, 141–144
Faculty, 45–46
Interdepartmental Concentration, 144
Nursing Science
Courses, 265–267
Degree programs, 141–144
Faculty, 45–46
Occupational Therapy
Courses, 267–270
Degree programs, 55–57
Faculty, 34
Oral and Maxillofacial Surgery
Courses, 270
Faculty, 36
Oral Medicine and Diagnostic Sciences
Courses, 270
Faculty, 36
Oral Sciences
Courses, 270–271
Degree programs, 75–76
Orthodontics
Courses, 271
Faculty, 36
P
Parking facilities, 311
Pathology
Courses, 271–272
Faculty, 44
Pediatric Dentistry
Courses, 272
Faculty, 36
Petitions, 23
Pharmacognosy
Courses, 272–273
Degree programs, 148–149
Faculty, 46
Pharmacology
Courses, 273
Degree programs, 137–138
Faculty, 44
Pharmacy
Courses, 273–274
Degree programs, 149
Faculty, 46
Pharmacy, College of
Degree programs, 145–150
Faculty, 46
Pharmacy Administration
Courses, 274
Faculty, 46
Pharmacy Practice
Courses, 274
Faculty, 46
PharmD/PhD, Joint program
Degree program, 149–150
Philosophy
Courses, 275–277
Degree programs, 122–123
Faculty, 41
Photography
Degree program, 65
Physical Therapy
Courses, 277–278
Degree program, 58
Faculty, 34
Physiology and Biophysics
Courses, 279–280
Degree programs, 138–139
Faculty, 44
Policy Studies in Urban Education. See also Urban Education Leadership
Courses, 280–282
Degree program, 81–82
Polish. See also Slavic Languages and Literatures; Slavic Studies
Courses, 282
Political Science
Courses, 282–284
Degree programs, 124–125
Faculty, 42
Postsecondary credentials, 17
Probation, 20–21
Programs, Adding or changing, 18
Prosthodontics
Courses, 284
Psychiatric Nursing
Courses, 284–285
Psychology
Courses, 285–288
Degree programs, 125–126
Faculty, 42
Public Administration
Courses, 288–291
Degree programs, 157–158
Faculty, 47
Public Formal Grievance Procedures, 28–29
Public Health Nursing
Courses, 291
Public Health, School of
Degree Programs, 151–154
Faculty, 46–47
Public Health Sciences
Degree Programs, 152–154
Faculty, 46–47
Public Policy Analysis
Courses, 291–292
Real Estate
Degree program, 73
Refunds, 32–33
Registration, 23–24
Religious Studies
Courses, 292
Research centers and institutes, 14
Research on humans or animals, 29
Rubrics, List of, 161–162
Russian. See also Slavic Languages and Literatures; Slavic Studies
Courses, 292
Second Language Teaching
Interdepartmental Concentration, 126–127
Sexual harassment policy, 29–30
Slavic Languages and Literatures
Courses, 293
Degree program, 127–128
Faculty, 42
Slavic Studies
Courses, 293
Degree program, 128–129
Faculty, 42
Social Work, Jane Addams
College of, 155
Courses, 294–296
Degree program, 155
Faculty, 47
Sociology
Courses, 296–298
Degree programs, 129–130
Faculty, 42
Spanish. See also Hispanic Studies
Courses, 298–299
Faculty, 42
Special Education
Courses, 300–302
Degree programs, 82–84
Statistics. See also Mathematics
Courses, 302–303
Student Disciplinary Procedures, 30
Studio Arts
Degree program, 65–66
Surgery
Courses, 303
Degree program, 139
Faculty, 45
Survey Research Methodology
Interdepartmental Graduate Concentration, 101
T
Teaching,
by doctoral students, 27
Test of English as a Foreign Language (TOEFL), 16, 17, 18
Theatre
Courses, 303–304
Thesis, 25
Traineeships, 19
Transcripts, 33
Transfer credit, 24
Tuition and fees, 30–32
U
Undergraduates, graduate study by, 16
University Library
Faculty, 48
University regulations, 27–30
Urban Education Leadership. See also Policy Studies in Urban Education
Degree program, 84–85
Urban Planning and Policy
Courses, 304–306
Degree programs, 159–160
Faculty, 47–48
Urban Planning and Public Affairs, College of
Degree programs, 157–160
Faculty, 47–48
V
Veterans, 20
W
Withdrawal from the university, 32
Women’s Health
Interdepartmental Graduate Concentration, 144
Women’s Health Nursing
Courses, 306–307
Work study, 20
Z
Zero hours, 23