Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

Accounting (ACCT)

- 401 - 3 **Advanced Financial Accounting** - Accounting principles and procedures related to special entities, including: governmental units, partnerships, and multi-corporate entities; and foreign transactions. Primary emphasis on business combinations and consolidated financial statements. Prerequisite: Undergraduate level ACCT 302 Minimum Grade of D
- 421 - 3 **Advanced Taxation - Individual** - U.S. federal taxes for individuals. Includes compliance, tax research and tax planning strategies for individual taxpayers. Prerequisite: Undergraduate level ACCT 321 Minimum Grade of C
- 431 - 3 **Principles of Auditing** - Auditor's decision process; understanding client's business; development of working papers, audit tests, statistical sampling applications, and EDP systems; preparation of audit report and current pronouncements. Prerequisites: Good standing in Accountancy Program.
- 441 - 3 **Data Analytics for Accounting** - A user approach to accounting data analytics. Internal controls. Creating, importing, safeguarding, exporting and analyzing data. Data analysis for decision making using various software platforms. Prerequisite: Undergraduate level ACCT 315 Minimum Grade of C
- 490 - 1 to 6 **Independent Study in Accounting** - Topical areas in greater depth than regularly titled courses permit; individual or small group readings or research projects. May be repeated up to a maximum of 6 hours provided no topic is repeated. Requires consent of Instructor and Department Chairperson; and good standing in Accountancy Program. Prerequisite: None
- 510 - 3 **Accounting and Its Environment** - Prerequisite: Undergraduate level ACCT 303 Minimum Grade of C
- 524 - 3 **Accounting for MBAs** - Understanding and analysis of financial and managerial accounting information to enable internal/external users to make informed business decisions. Prerequisite: None
- 531 - 3 **Seminar in Financial Accounting Theory** - Theoretical examination of measurement and reporting issues related to external financial reporting. Prerequisite: Undergraduate level ACCT 303 Minimum Grade of D
- 541 - 3 **Seminar in Advanced Managerial Accounting** - Practical and theoretical aspects of management decision making and related information needs. Examination of quantitative and behavioral issues and approaches, and review of current literature. Prerequisite: Undergraduate level ACCT 312 Minimum Grade of D
- 550 - 3 **Tax Research** - Advanced study in tax research; analyze and discover solutions and alternatives to tax problems and refine technical problem-solving and communication skills. Prerequisite: Undergraduate level ACCT 321 Minimum Grade of D
- 553 - 3 **Taxation of Flow-Through Entities** - Federal income taxation of flow-through entities; partnerships, corporations, and limited liability corporations. Prerequisite: Undergraduate level ACCT 321 Minimum Grade of D
- 556 - 3 **Personal Tax Planning** - Concepts of statutory, regulatory, and judicial rules relating to transfer taxes and income taxes as they affect family tax planning; non-tax aspects of transactions also will be examined. Prerequisite: Undergraduate level ACCT 321 Minimum Grade of D
- 557 - 3 **Corporate Taxation** - Topics include the policy motivations, technical rules, and management of decision-making implications of federal income taxation of corporations and their shareholders. Prerequisite: Undergraduate level ACCT 321 Minimum Grade of D
- 561 - 3 **Seminar in Advanced Auditing Topics** - Role, environment, and philosophy of auditing; legal, ethical, and moral issues; problems of audit planning, sampling, and testing considerations; examination of audit research. Prerequisite: Undergraduate level ACCT 431 Minimum Grade of D
- 565 - 3 **Internal Auditing** - Nature of internal auditing; operational auditing. Prerequisite: Undergraduate level ACCT 431 Minimum Grade of D
- 567 - 3 **Information Systems Auditing and Assurance** - Risk assessment and assurance methods used in an IT environment. Prerequisite: Undergraduate level ACCT 431 Minimum Grade of D
- 580 - 3 **Research in Accounting** - Examination of accounting research methodologies and issues. Completion of a major individual research project resulting in a written report. Prerequisite: None
- 596 - 3 **Professional Accounting Experience** - The student works in an accounting internship or accounting position that requires skills related to the graduate accounting program. The firm must sponsor the position. The supervisor's credentials will typically include a graduate accounting degree, CPA, other accounting designations or commensurate accounting experience. Prerequisite: None
- 597 - 3 **Independent Study in Accounting** - Topics in greater depth than regularly titled courses permit; individuals or small groups may work with assigned faculty. May be repeated to a maximum of 3 hours. Requires consent of department chair or program director. Prerequisite: None

Adult Education (ADED)

- 522 - 3 **Program Planning in Adult and Continuing Education** - Design and evaluation of educational programs; emphasizes needs assessment, planning techniques, and evaluation procedures. Prerequisite: None
- 523 - 3 **Curriculum & Instruction in Adult & Continuing Education** - Process of designing and conducting learning activities and instruction strategies as they relate to specific curriculum models. Prerequisite: None

Anthropology (ANTH)

- 404 - 3 **Anthropology and the Arts** - Analyzes global cultures' visual and material art forms in museum collections with focus on form, process, meaning, function and value. Prerequisite: Consent of instructor.
- 405 - 3 **Alternative Tourisms** - Explores tourism practices, with an emphasis on alternative forms, such as adventure tourism, ecotourism, dark tourism, and ‘staycations’, with emphasis on ethics and sustainability issues. Prerequisite: None
- 408 - 3 **Anthropological Theory** - Development of central ideas and schools of thought in anthropology, and their relevance to anthropological topics and methods today. Prerequisite: Undergraduate level ANTH 111B Minimum Grade of C
- 420 - 3 **Museum Anthropology** - Through case studies and exhibit analysis, this course examines historical developments, theoretical approaches, and contemporary ethical issues in museological approaches to anthropology's four fields. Prerequisite: Consent of instructor.
- 430 - 3 **Zooarchaeology** - The archaeology of animal remains. Methods and theories for investigating human use of animals in the past. Emphasis on identification of animal bone. Prerequisite: Undergraduate level ANTH 111A Minimum Grade of D and Undergraduate level ANTH 360B Minimum Grade of D

432 - 3 **Prehistory of Illinois** - The history and archaeology of Native Americans in Illinois, will include examination of artifacts and artifact casts, and field trips to archaeological sites. Prerequisite: None

435 - 3 **Living Cultural Heritage** - Exploration of interpretive and promotional strategies of living history, material culture and intangible cultural heritage at house museums and heritage sites in America and internationally. Prerequisite: None

436 - 3 **Public Archaeology** - In-depth exploration of the relationship between archaeology and the public, with an emphasis on experiential learning through outreach and community archaeology project development. Prerequisite: None

469 - 3 **Forensic Anthropology Applications** - Combined lecture-lab course on human skeletal material analysis, including training in techniques for identifying sex, age, ancestry, trauma, disease, and taphonomic considerations. Prerequisite: Undergraduate level ANTH 369 Minimum Grade of D

473 - 3 or 6 **Ethnographic Field School** - Students participate in an original field-based research project in linguistic or cultural anthropology directed by the instructor. Emphasizes data collection/analysis/write-up. Prerequisite: Undergraduate level ANTH 111B Minimum Grade of C

474 - 3 or 6 **Biological Anthropology Field School** - Research design, data collection and analysis in primatology, skeletal biology, forensic anthropology, or paleoanthropology requiring an independent project or participation in joint project. Requires consent of instructor. Prerequisite: Undergraduate level ANTH 111A Minimum Grade of C

475 - 3 or 6 **Archaeological Field School** - Students engage in original archaeological research directed by instructor. Methods of archaeological survey and excavation, learned through active participation in archaeological field and lab work. Prerequisite: Undergraduate level ANTH 111A Minimum Grade of C

476 - 3 **Cultural Resource Management** - Examination of cultural resource management (CRM) history and laws. Students will gain a practical experience in background research, field survey, evaluation, mitigation, report preparation, and curation. Prerequisite: Undergraduate level ANTH 475 Minimum Grade of C

570 - 1 to 9 **Special Topics in Cultural Heritage and Resource Management** - Significant problems and issues in cultural heritage and resources management not treated in other courses. Focus is restricted; content varies and is announced in advance. May be repeated to a maximum of 9 hours as long as no topic is repeated. Prerequisite: None

575 - 3 or 6 **Archaeology Field Directorship: Mitigation** - Co-direct original archaeological research with instructor. Methods of directing archaeological excavation and report preparation, learned through active participation in archaeological field and associated lab. Prerequisite: None

576 - 3 or 6 **Archaeology Field Directorship: Survey** - Gain practical experience directing a cultural resource survey. Experience will include background research, field survey, evaluation, report preparation, and curation. Prerequisite: None

586 - 3 to 6 **Individualized Study in Anthropology** - Guided study on anthropological topics supervised by faculty mentor; specific course content and requirements developed in consultation with faculty mentor. May be repeated up to a maximum of 6 hours. Prerequisite: None

589 - 1 to 9 **Archaeology Internship** - Professional experience in aspects of cultural resource management, such as archaeological survey, mitigation, lab management, artifact analysis, collections management, report preparation, or report review. Prerequisite: None

590 - 3 to 6 **Museum Internship** - Professional experience in aspects of museum work, such as exhibition, interpretation, collections management, or administration. Prerequisite: permission of instructor.

Applied Communication Studies (ACS)

- 403 - 3 **Organizational Communication Theory and Applications** - Diagnosing communication problems in organizations and implementing solutions. Research methods and theoretical applications in organizational communication. Prerequisite: Undergraduate level SPC 203 Minimum Grade of D or Undergraduate level ACS 203 Minimum Grade of D

410 - 3 **Rhetorical Theory and Criticism** - Classical and contemporary theories and methods for analyzing and evaluating public address and other significant forms of communication. Prerequisite: None

411 - 3 **Analysis of Political Communication** - Role of communication in politics. Topics include speech preparation, delivery, image promotion, public opinion formation, lobbying behavior as factors in political communication strategies. Prerequisite: None

413 - 3 **Case Studies in Public Relations** - Strategies and critical analyses of ethical issues and approaches in the social and political atmosphere of public relations. Prerequisite: Undergraduate level ACS 213 Minimum Grade of C or Undergraduate level ACS 203 Minimum Grade of C

415 - 3 **Public Relations Campaigns II: Implementation and Evaluation** - Implementation and evaluation stages of public relations campaign, culminating with organization of special event and formal presentations to faculty. Fulfills part of the Senior Project requirement. Prerequisite: (Undergraduate level ACS 414 Minimum Grade of D or Undergraduate level SPC 414 Minimum Grade of D)

416 - 3 **International Public Relations** - Upper level course providing opportunities to gain hands-on experience in public relations by undertaking and or reflecting on study abroad experiences. Examination of the impact of cultural and socio-political differences on public relations practices. Prerequisite: None

419 - 3 **Special Topics in Speech Communication** - Variable content course emphasizing pertinent contemporary communication issues. May be repeated for total of 9 hours as long as no topic is repeated, 3 of which may count toward an ACS major. Contact the Department of Applied Communication Studies for current topic. Prerequisite: None

423 - 3 **Topics in Interpersonal Communication** - Rotating topic course addressing current topics in interpersonal communication. May be repeated to total of 9 hours as long as no topic is repeated. Prerequisite: None

425 - 3 **Communicative Aspects of Death and Dying** - This course focuses on communicative aspects of death and dying. This includes the bereavement process, grief work, coping, and components of social support. Prerequisite: None

426 - 3 **Communication and Emotion** - Introduces a broad spectrum of concepts, processes, and communication theories on emotions, cognitions, and behaviors and focuses on applying these to daily interactions. Prerequisite: None

430 - 3 **Persuasion and Social Influence** - The study of contemporary persuasion theories and research toward a clear understanding of the process of social influence; application of concepts in analysis of persuasive messages. Prerequisite: None

431 - 3 **Public Relations Visual Communication** - The study of perceptual and cognitive aspects of visual communication useful for awareness and promotion campaigns. Focus on visual literacy and hands-on opportunities to analyze visuals. Prerequisite: None

432 - 3 **Social Media for Public Relations** - Social Media use and measurement in Public Relations campaigns. Prerequisite: None

433 - 3 **Language and Speech Communication** - Role and impact of language in speech communication development, processes and behavior. Relational development and conflict resulting from differences in language usage. Prerequisite: None

434 - 3 **Nonverbal Communication** - Nonverbal theories across varied contexts. Means of transmission and reception of nonverbal cues. Relationship of nonverbal and verbal behavior. Prerequisite: None

500 - 3 **Seminar in Communication Theory** - Various types of approaches to human communication, emphasizing concepts devised to describe, explain, predict and control, or interpret and critique communicative behaviors and contexts. Prerequisite: None

501 - 3 **Communication Research Methods and Tools** - Resources, paradigms, methods and tools for quantitative and qualitative communication research. Logic of experimental and quasi-experimental designs and statistical analysis. Prerequisite: None

502 - 3 **Qualitative Research Methods in Communication** - This course will focus upon the use of qualitative methods for research. methods including interviewing, participant observation, and textual analysis will be taught and practiced. Prerequisite: None

509 - 3 **Special Topics in Communication Theory & Research** - Variable content course emphasizing contemporary issues in communication theory construction and research methods. May be repeated for a total of 9 hours if topics are not repeated. Prerequisite: None

510 - 3 **Seminar in Group Communication** - Theory and research in the various content areas of small group communication study: decision making, leadership, cohesiveness, norms, task and socio-emotional dimensions of group behavior; interactions among groups with differing values, interests, and needs. Prerequisite: None

511 - 3 **Seminar in Intercultural Communication** - Applications of communication theories and models in the study of cooperation and conflict between and among individuals of different cultures. Prerequisite: None

520 - 3 **Seminar in Interpersonal Communication** - Theory and research relevant to formation, development, maintenance and termination of two-person relationships. Interpersonal attraction, styles and patterns. Prerequisite: None

521 - 3 **Seminar in Computer-Mediated Communication** - This course focuses on relationships and groups formed through computer-mediated interpersonal communication as well as how CMC functions in various contexts (interpersonal, educational, organizational, commerce). Prerequisite: None

522 - 3 **Seminar in Family Communication** - This seminar will take an in-depth look at family communication concepts, theories, skills, and research findings in a variety of family contexts. Prerequisite: None

530 - 3 **Survey of Health Communication Theory and Research** - Overview of health communication, covering theories and research in various health contexts, ranging from interpersonal settings to public health campaigns. Prerequisite: None

531 - 3 **Culture, Health, and Communication** - Explores the interplay between culture and health. More specifically, it examines the impact of culture on health decision making and health communicative behaviors. Prerequisite: None

532 - 3 **Seminar in Health Communication Campaigns** - Examination of the role of communication in public health campaigns and how these campaigns are designed, implemented, and evaluated. Prerequisite: None

533 - 3 **Seminar in Provider/Caregiver-Patient Communication** - Relational communication theory, research, and practice in health care delivery, health education and promotion, and psychological well being. Prerequisite: None

540 - 3 **Survey of Organizational Communication Research** - Survey of current research. Leadership/management, performance, motivation, turnover, organizational identification, worker involvement, gender, power, emotions, and work-life balance. Prerequisite: Undergraduate level SPC 403 Minimum Grade of D or Undergraduate level ACS 403 Minimum Grade of D

541 - 3 **Seminar in Organizational Culture** - Survey and critique of current theory and research. Analysis of methods used to study cultures, case studies in cultural change, and ethical considerations of organizational intervention. Prerequisite: None

542 - 3 **Communication Consulting** - Principles and techniques of communication consulting. Diagnosis of communication problems; formulating proposals for training and development; conducting workshops; measuring results. Prerequisite: Graduate level SPC 540 Minimum Grade of C or Graduate level ACS 540 Minimum Grade of C

550 - 3 **Seminar in Public Relations** - Analysis and criticism of historic and current development of public relations theory. Theory-building approaches; research agendas; worldview constructions; pragmatics of public relations practice. Prerequisite: None

551 - 3 **Nonprofit Public Relations** - Course uses case study approach to engage students in critical examination of strategies employed by public relations practitioners to further the mission/goals of non-profit organizations. Prerequisite: ACS 550 (formerly SPC 550) with minimum grade of C or concurrent enrollment.

552 - 3 **Corporate Social Responsibility** - Students will analyze corporate decisions and communication strategies related to the balance between profit-making and social responsibility. Prerequisite: ACS 550 (formerly SPC 550) with minimum grade of C or concurrent enrollment.

553 - 3 **Issues Reputation Management** - Students will examine issues, theories, and tools in reputation management and explore ways corporations, non-profits, individuals, and countries control or restore their image after a crisis. Prerequisite: None

554 - 3 **Ethics in Public Relations and Communication Management** - Students will analyze ethical dilemmas of public relations and communication management practices. They will also apply ethical principles to professional decision making in organizational settings. Prerequisite: None

557 - 3 **International Public Relations** - Will prepare for students to become practitioners capable pf successfully functioning on the international market. Students will acquire knowledge needed for understanding public relations in international settings, and assess the similarities and differences between U.S. and international public relations principles and practices. Prerequisite: None

560 - 3 **Seminar in Speech Education** - Develop instructional skills of preparation, presentation, and evaluation, and to learn course management skills for instructors of speech communication. Prerequisite: None

590 - 1 to 6 **Individual Research in Applied Communication Studies** - Individual advanced research project in selected communication problems. Assignment to be developed in consultation with ACS graduate faculty member prior to enrollment. Only 3 credits apply toward ACS/SPC program of study. Credit variable. May be repeated to a maximum of 6 hours. Prerequisite: by permit only.

591 - 3 to 9 **Internship in Applied Communication Studies** - Assignment in a business, government or service organization in which students are provided practical application of concepts acquired in the master's program. Specific details of internships are determined by the students, their graduate committee, and the organizational sponsor may be applied toward the minimum 35 hours required for graduation. Requires Graduate standing, consent of graduate adviser, acceptable application packet, acceptance of organizational representative. Prerequisite: None

598 - 1 to 6 **Applied Project** - Applied project on approved topic to satisfy exit requirements. Written proposal and oral defense required. May be repeated to a maximum of 6 hours. Prerequisite: None

599 - 1 to 6 **Thesis** - Supervised research on approved topic to satisfy exit requirements. Written proposal and oral defense required. May be repeated to a maximum of 6 hours. Requires consent of thesis adviser. Prerequisite: None

Art and Design (ART)

- 401 - 3 to 6 **Research in Painting** - Advanced problems in painting. May be repeated for a maximum of 9 hours at the undergraduate level, 12 hours at the graduate level. Complete ART 310A and 310B with a C or better or be at Graduate Standing (GM)

402 - 3 to 9 **Research in Sculpture** - Exploration of current trends in sculpture-making, with emphasis on interaction of technique and idea. May be repeated to a maximum of 12 hours. Complete ART 393A, 393B, 393C with C or better or be at Graduate Standing (GM)

405 - 3 **Seminar** - Preparation for career as studio artist and/or artist-teacher at college level; career analysis, portfolio presentation for graduate school and galleries; visiting professional lecturers in art and law, grant writing, gallery relations, artist's careers, etc. Prerequisite: more than 75+ hours.

408A - 3 **Art Education/Elementary Teaching: Art Education/Disabled Student** - Art Education for the disabled student. Complete ART 300A or be at Graduate Standing (GM)

408B - 3 **Art Education/Elementary Teaching: Development of Motivational & Instructional Materials** - Development of motivational and instructional materials. Prerequisite: Student teaching.

408C - 3 **Art Education for Elementary Teaching: Advanced Materials for the Classroom Teacher** - Advanced materials and methods for classroom teachers. Prerequisite: Student teaching.

410 - 2 to 6 **Research in Printmaking** - Advanced study in traditional or experimental methods. May be repeated for a maximum of 12 credits. Can be taken concurrently with ART 358, ART 359, or ART 360; or graduate standing. Complete ART 358, 359, 360 with C or better or be at Graduate Standing (GM)

412 - 3 **Research in Graphic Design** - Directed practicum in advanced client-based desktop design and publishing. May be repeated to a maximum of 9 hours. Prerequisite: 311, 312 with a grade of C or better, or consent of advisor. Art majors only.

413 - 3 **Conceptual Art and Digital Media** - Conceptual development through computer-based image capture and manipulation and integration of digital technology with traditional studio arts and or electronic media applications. Prerequisite: Undergraduate level ART 302A Minimum Grade of C or Undergraduate level ART 312 Minimum Grade of C

414 - 3 **Graphic Design History Through Studio Projects** - History of visual communication, including historic movements in Graphic Design and Advertising. Coursework combines lecture materials, quizzes, readings, and research into student projects. Prerequisite: Art 225a or Art 225b, and Art 311 and Art 312, with a minimum grade of C or better, or graduate standing or consent of instructor.

415 - 3 **Visual Identity: Logo and Branding Design** - Application of advanced problem-solving skills with planning, organization, and development of design strategies for logos and branding campaigns addressing institutional, corporate, or service industries. Prerequisite 311 and 312, with a minimum grade of C or better, or consent of instructor. May be repeated up to 6 hours.

416 - 3 to 6 **Glassworking** - Basic methods of forming hot and cold glass; development of creative ideas related to use of glass as art medium. May be repeated to a maximum of 12 hours. Requires consent of instructor. Prerequisite: None

420 - 3 to 6 **Advanced Ceramics** - Supervised research in specific ceramic areas of technical and aesthetic interest. May be repeated to a maximum of 9 hours at the undergraduate level, to a maximum of 12 hours for graduate students. Complete ART 305 with a C or better or be at Graduate Standing (GM)

422 - 3 **Research in Photography** - Advanced theory and practice in one of several topics: alternative non-silver processes; large format camera/zone system; artificial lighting. May be repeated to a maximum of 9 hours at the undergraduate level, to a maximum of 12 hours at the graduate level. Complete ART 302a, 302b with a C or better or be at Graduate Standing (GM)

423 - 3 **Advanced Photography Seminar** - Advanced seminar exploring personal portfolio development, contemporary theoretical and conceptual issues, as well as developing critical writing skills as they pertain to the photography medium. May be repeated for maximum of 9 credit hours. Complete ART 302a or 302b with a C or better or be at Graduate Standing (GM)

424 - 3 **Baroque Art** - Major developments in Baroque painting, sculpture, and architecture in seventeenth-century Italy, Spain, France, Flanders, and the Dutch Republic. Complete ART 225B with a C or better or be at Graduate Standing (GM)

430 - 3 to 6 **Studies in Art I** - Advanced work in any studio area or Art Education. May be repeated for a maximum of 9 hours at the undergraduate level, for a maximum of 12 hours at the graduate level. Varied credit 3-6 with consent of instructor. Complete ART 325 or be at Graduate standing (GM). Complete ART 325 or be at Graduate standing (GM).

440 - 3 **Publication and Information Design** - Techniques in the application of grid, image, and text, using traditional and contemporary approaches to complex and integrated layout design. Editorial, magazine, and institutional design. May be repeated to a maximum of 6 hours. Prerequisite: 311 and 312, with a minimum grade of C or better, or graduate standing or consent of instructor.

441 - 3 to 6 **Research in Drawing** - Advanced research in drawing experiences emphasizing individually realized content through development of compositions. May be repeated to a maximum of 12 hours. Prerequisite: ART 331A and ART 331B with a C or better, or BFA status, or consent of advisor. Art majors only.

447A - 3 **Ancient Art - Prehistoric to Greek Late Archaic** - Art and architecture from prehistory through Rome; prehistoric to Greek Late Archaic. Complete ART 225A with a C or better or be at Graduate Standing (GM)

447B - 3 **Ancient Art - Greek High Classic to Rome** - Art and architecture from prehistory through Rome; Greek High Classic to Rome. Complete ART 225A with a C or better or be at Graduate Standing (GM)

448 - 3 **Early Christian and Medieval Art** - Visual Arts of the Early Christian and Medieval periods from the 4th century through Romanesque and Gothic. Complete ART 225A with a C or better or be at Graduate Standing (GM)

449 - 3 **Italian Renaissance Art** - Architecture, sculpture, and painting of the Late Gothic, Renaissance, and Mannerist periods in Italy. Complete ART 225B with a C or better or be at Graduate Standing (GM)

450 - 3 **Early Childhood Art Education** - Art Education practices in Early Childhood Art Education; methods and materials based on developmental needs. Prerequisite: Consent of instructor.

451 - 3 **Northern Renaissance Art** - Architecture, sculpture, and painting of the Renaissance and Mannerist periods in Northern Europe. Prerequisites: 225a,b with grades of C or better, or graduate standing.

452 - 3 **Art Education for Older Adults** - Physical, artistic, and creative development of older adults; development of specific instructional approaches for older learners. Prerequisite: None

453 - 3 **Introduction to Museology** - Museum ethics, collections policies, security, administration and organization, public law, sources of funding, grant preparation. Prerequisite: None

454 - 3 **Curatorship: Exhibition Mgmt and Design** - Exhibition design, preparation, labeling, security, hanging and display techniques and construction, lighting, traffic flow, docent training. Complete ART 453 or be at Graduate Standing (GM)

455 - 3 **Documentation of Collections** - Accessioning and deaccessioning processes, research, collection management, use of computers, narrative, photo documentation. Complete ART 453 or be at Graduate Standing (GM)

467 - 3 **Islamic Art and Architecture** - Art and architecture of the Islamic world from 650 to the present. Prerequisites: 225a,b with grades of C or better.

468A - 3 **Native Arts of the Americas: Pre-Columbian Art** - Arts of indigenous societies of the Americas presented in cultural and geographical sequence, ancient to 19th century. Complete ART 225a, 225b with a C or better or be at Graduate Standing (GM)

468B - 3 **Native Arts of the Americas: North America** - Arts of indigenous societies of the Americas presented in cultural and geographical sequence, ancient to 19th century native arts of North America. Complete ART 225a, 225b with a C or better or be at Graduate Standing (GM)

469A - 3 **Primitive Art - Africa** - Arts of indigenous societies of sub-Saharan Africa presented in cultural and geographical sequence. Complete ART 225a, 225b with a C or better or be at Graduate Standing (GM)

469B - 3 **Primitive Art - Oceania** - Arts of indigenous societies of Oceania: Polynesia, Micronesia, and Melanesia, presented in cultural and geographical sequence. Complete ART 225a, 225b with a C or better or be at Graduate Standing (GM)

470 - 3 **Topics in Art History** - Topics may include: seminars on specific artist or area; investigations of branches of art historical inquiry; major trends and issues in art since 1970. May be repeated to a maximum of 9 hours as long as no topic is repeated. Prerequisites: 225a,b with grades of C or better or graduate standing.

471 - 3 **Topics in Renaissance and Baroque Art** - Variable content course in the history of Renaissance and Baroque Art. May be repeated maximum of 9 hours as long as no topic is repeated. Complete ART 225b with a C or better or be at Graduate Standing (GM)

472 - 3 **Topics in Modern Art** - Variable content course in the history of modern art. May be repeated to 9 hours as long as no topic is repeated. Complete ART 225b with a C or better or be at Graduate Standing (GM)

473 - 3 **Women in Art** - History of women artists from the Renaissance to the present. Complete ART 225b with a C or better or be at Graduate Standing (GM)

474 - 3 **Topics in Public Art** - Variable content course in the history of public art. May be repeated to 9 hours as long as no topic is repeated. Complete ART 225a, 225b with a C or better or be at Graduate Standing (GM)

475 - 3 **History of Photography** - Principal technical and stylistic developments in photography from the early 19th century to the present. Prerequisites: 225a with grades of C or better or graduate standing.

476 - 3 **History of Modern Architecture & Design** - Principal technical and stylistic developments in architecture and design from the early 19th century to the present. Prerequisites: 225b with grades of C or better or graduate standing.

480 - 3 **American Art** - Survey of the history of art in the U.S. from the colonial period to the present day. Prerequisite: 225b with a grade of C or better.

481 - 3 **Modern Art** - Principle movements and theories of art in the modern period. Complete ART 225b with a C or better or be at Graduate Standing (GM)

482 - 3 **Contemporary Art** - Principle movements and theories of contemporary art, ca. 1950 to the present. Complete ART 225b with a C or better or be at Graduate Standing (GM)

483 - 3 **Research in Art History** - Individual research in painting, sculpture, architecture, and related arts of various periods. May be repeated to a maximum of 9 hours provided no topic is repeated. Prerequisites: 225a,b with grades of C or better or consent of instructor.

484 - 3 to 6 **Research in Fibers** - Individual exploration of advanced fiber concerns in technique and mixed media approaches; concepts emphasizing integration of technical and aesthetic ideas. May be repeated to a maximum of 12 hours; consent of instructor for over 3 hours per semester. Complete ART 384 with a grade of C or better or be at Graduate Standing (GM).

485 - 3 **Art History Methods & Research** - Study of primary methods of research, interpretation, and writing in art history. Complete ART 225a, 225b with a C or better or be at Graduate Standing (GM)

486 - 2 to 6 **Research in Metalsmithing** - Concentrated research in advanced metalsmithing techniques and concepts. May be repeated to a maximum of 12 hours. Complete ART 386 with a C or better or be at Graduate Standing (GM)

498 - 3 to 6 **Internship in the Arts** - Involvement in work, study, or research designed and supervised by selected faculty members and cooperating institutions. Varied credit 3-6 credit hours with consent of instructor. May be repeated for a maximum of 9 hours. Prerequisite: 6 hours of study in chosen discipline or consent of advisor.

501 - 2 to 6 **Graduate Painting** - Research in specialized areas of personal development of style and technique. May be repeated to a maximum of 12 hours. MFA candidates only Prerequisite: None

502 - 2 to 6 **Graduate Sculpture** - Research in sculpture with emphasis on development of individual three-dimensional art-making styles and studio techniques. May be repeated for a maximum of 12 hours. MFA candidates only. Prerequisite: None

503 - 2 to 6 **Studio in Painting** - Research in specialized areas of personal development of style and technique. May be repeated to a maximum of 18 hours. MFA candidates only. Prerequisite: None

504 - 2 to 6 **Studio in Sculpture** - Research in sculpture with emphasis on development of individual three-dimensional art-making styles and studio techniques. May be repeated to a maximum of 18 hours. MFA candidates only. Prerequisite: None

505 - 3 **Graduate Theory** - Theoretical and critical issues in art and their relationship to students personal work in the contemporary art world. This course may be repeated to a maximum of 6 hours. Prerequisite: None

506 - 3 **Professional Practices** - Will address key issues for graduate students in teaching and/or professional art practices. Prerequisite: None

511 - 2 to 6 **Graduate Printmaking** - Development of individual form and technique. May be repeated to a maximum of 12 hours. Prerequisite: None

512 - 2 to 6 **Studio in Printmaking** - Continued development of individual form and technique leading towards thesis and graduate exhibition. May be repeated to a maximum of 12 hours. Prerequisite: None

513 - 3 to 6 **Research in Digital Arts** - Research in computer-based digital fine art techniques at the graduate level and their application to traditional studio arts and/or electronic media. May be repeated up to 15 hours. Prerequisite: Undergraduate level ART 413 Minimum Grade of D or Graduate level ART 413 Minimum Grade of C

514 - 3 to 6 **Advanced Graphic Design** - Research in computer-based techniques in graphic design at the graduate level in both traditional print media and newly emerging techniques in Internet home-page design. May be repeated to a maximum of 15 hours. Prerequisite: None

520 - 2 to 6 **Graduate Ceramics I** - Self-directed research in aesthetic and technological aspects of ceramics. Individual development of technique and form in clay. May be repeated to a maximum of 12 hours. Prerequisite: None

521 - 2 to 6 **Graduate Ceramics II** - Self-directed research in aesthetic and technological aspects of ceramics. Individual development of technique and form in clay. May be repeated to a maximum of 18 hours. Prerequisite: Graduate level ART 520 Minimum Grade of C

522 - 3 to 6 **Graduate Photography** - Intensive study and exploration of photographic techniques, approaches, and aesthetics on the graduate level. May be repeated to a maximum of 18 hours. Prerequisite: ART 422 with a minimum grade of C or concurrent enrollment.

523 - 3 **Graduate Research Photography** - In depth study of historical and contemporary issues as they pertain to the photography medium. A wide range of theoretical and conceptual topics will be explored. May be repeated for a maximum of 12 hours as long as no topic is repeated. Prerequisite: ART 423 with a minimum grade of C or concurrent enrollment.

530 - 2 to 6 **Studies in Art II** - Advanced work in area of specialization or under supervision of two or more areas. May be repeated to a maximum of 9 hours. Prerequisite: None

541 - 2 to 6 **Graduate Drawing I** - Intensive study with emphasis on concept development and symbolization. May be repeated to a maximum of 12 hours. Prerequisite: None

542 - 2 to 6 **Graduate Drawing II** - Continued study with emphasis on various aspects of the medium. May be repeated to a maximum of 12 hours. Prerequisite: None

549 - 3 **Special Topics in Art Therapy** - Special topics of interest to art therapists. Approaches to therapy not covered in depth in other courses. May be repeated to a maximum of 9 hours provided no topic is repeated. Requires consent of instructor. Prerequisite: Graduate level ART 550 Minimum Grade of C and Graduate level ART 552 Minimum Grade of C

550 - 3 **Counseling Techniques in Art Therapy** - Theoretical foundations and professional skills for using art therapy and counseling techniques with variety of client populations. Practice of active listening, reflection, and empathic skills. Prerequisite: None

551 - 3 **The Creative Process** - Creative tools and applications for professional and personal development to expand perception, innovative problem solving and ways of looking at one's creative work. Prerequisite: Graduate level ART 550 Minimum Grade of C

552 - 3 **Appraisal of Individuals and Families** - Appraisal and evaluation of individuals and families through a variety of measures. Includes selecting, conducting and interpreting of art therapy and counseling assessments. Prerequisite: None

553 - 3 **Advanced Art Therapy Counseling: Diagnosis and Techniques with Children and Adolescents** - Application of art therapy and counseling principles and practice for diverse child and adolescent populations. Development of appropriate interventions for varied DSM diagnoses. Prerequisite: Graduate level ART 550 Minimum Grade of C and Graduate level ART 552 Minimum Grade of C

554 - 3 **Advanced Art Therapy Counseling: Diagnosis and Techniques with Adults** - Application of art therapy and counseling theories and practice for diverse adult populations. Development and advanced practice of art therapy counseling skills for trauma based, culturally competent therapy work. Prerequisite: Graduate level ART 550 Minimum Grade of C and Graduate level ART 552 Minimum Grade of C

555 - 3 **Art Therapy Counseling with Groups** - Theory and application of art therapy counseling techniques to facilitate ethically and culturally responsive groups. Prerequisite: Graduate level ART 550 Minimum Grade of C

556 - 3 **Family Art Therapy** - Principles of family therapy theory; family art assessment and treatment using art therapy interventions. May be repeated to a maximum of 6 hours. Prerequisite: Graduate level ART 550 Minimum Grade of C and Graduate level ART 552 Minimum Grade of C

557 - 3 **Developmental Theory and Art Therapy** - Human growth and developmental theory that covers contextual/ecological factors, which exist along a continuum. Review of health across the lifespan. Prerequisite: None

558 - 3 to 9 **Independent Study in Art Therapy** - Topical areas in greater depth than regularly titled courses permit. For advanced art therapy students. May be repeated to a maximum of 9 hours. Prerequisite: Graduate level ART 550 Minimum Grade of C and Graduate level ART 552 Minimum Grade of C

559 - 1 to 6 **Practicum in Art Therapy** - Supervised clinical experience with people across the lifespan in psychiatric, rehabilitation, community, and education settings; Covers preparation, assessment, skills, conferences, record keeping, staffing, and supervision in regard to professional practice of art therapy counseling. Prerequisite: Graduate level ART 550 Minimum Grade of C or Graduate level ART 552 Minimum Grade of C

560 - 3 **Seminar in Reading in Art Ed** - Current issues and trends explored through periodicals, books, and research studies in art education. Prerequisite: None

561 - 3 **Social and Cultural Dimensions** - Focus on socio-cultural dimensions in art therapy counseling and explore ways to work with a wide variety of communities and contexts. Prerequisite: None

562 - 3 **Seminar in Aesthetic Education** - Concepts combining art history, art studio, art criticism, and aesthetics as related to teaching art and curriculum design K-12. Prerequisite: None

563 - 3 **Topics in Art Education** - Selected topics: gerontology; related and interdisciplinary arts; special education; art therapy; elementary and secondary school programs. May be repeated to a maximum of 12 hours provided that no topic is repeated. Prerequisite: None

564 - 3 **Fieldwork** - Introduction to foundational practices of art therapy counseling in a community setting. Prerequisite: None

566 - 3 **Research Methods and Evaluation** - Survey of research methods and program evaluation in art therapy counseling. Prerequisite: None

567 - 3 **Independent Study in Art Education** - Topical areas in greater depth than regularly included in lecture courses. For advanced art education students. Prerequisite: None

570 - 3 **Research in Art History** - Individual research in painting, sculpture, architecture, and related areas of various periods. May be repeated once for a total of 6 hours. Prerequisite: None

571 - 3 **Readings in History** - Guided readings in painting, sculpture, architecture, and related areas of various periods. May be repeated once for a total of 6 hours. Prerequisite: None

572 - 3 **Medical Art Therapy** - This course will explore theory and application of medical art therapy with a focus on clinical interventions across the life span. Prerequisite: None

573 - 3 **Theories of Art Therapy and Counseling** - Intensive study of the basic theories and principles of counseling as applied in art therapy. Includes creativity, psychoanalytic, gestalt, existential, Adlerian, cognitive-behavioral, and brief, solution-focused approaches to therapy. Prerequisite: None

574 - 3 **Career Counseling** - Lifelong processes and influences that lead to work values, occupational choice, decision-making styles, patterns of work adjustment, and creation of career plan. Prerequisite: None

575 - 3 **Professional Orientation, Ethics, and Legal Issues** - Legal issues and responsibilities, orientation to art therapy and counseling professions, professional identity development, and ethics in art therapy and counseling. Prerequisite: None

580 - 3 **Museum Studies** - History, theory, structure, organization of museums, planning and interpretation of exhibits, collections management, and ethical and legal concerns. Prerequisite: None

581 - 3 **Management of Museum Collections** - Professional practices in museum collections management including ethical standards; statutory, regulatory, and judicial rules; risk management; conservation; and development of integrated information systems. Prerequisite: Graduate level ART 580 Minimum Grade of C or Graduate level HIST 580 Minimum Grade of C

582 - 3 **Practicum in Exhibits and Program Development** - Intensive, independent exhibition, educational project, or program related to museum studies. Prerequisite: (Graduate level ART 580 Minimum Grade of C or Graduate level HIST 580 Minimum Grade of C) and (Graduate level ART 581 Minimum Grade of C or Graduate level HIST 581 Minimum Grade of C)

584 - 2 to 6 **Research in Fiber/Fabric** - Studio course allowing individual development in fibers/fabrics leading toward development of thesis problem. May be repeated to a maximum of 12 hours. Prerequisite: None

585 - 2 to 6 **Seminar in Fiber/Fabric** - Group and individual efforts contributing points of view relating to on- and off-loom weaving and textile concepts. Criticism directed toward thesis development. May be repeated to a maximum of 18 hours. Prerequisite: None

586 - 2 to 6 **Graduate Metalsmithing I** - Self-directed research in metalsmithing in aesthetic and technical development. Individual development of personal techniques and artistic concepts through metal. Prerequisite: Graduate level ART 486 Minimum Grade of C

587 - 2 to 6 **Graduate Metalsmithing II** - Self-directed research in metalsmithing in aesthetic and technical development. Individual development of personal techniques and artistic concepts through metal. Prerequisite: Graduate level ART 586 Minimum Grade of C

595 - 3 **Research Projects** - Independent research study and seminar participation under graduate art therapy faculty supervision. Repeatable up to a maximum of 6 hours. Prerequisite: Consent of instructor.

599A - 3 **Thesis** - Preparation of full, first draft of thesis (excluding exhibition chapter). Requires consent of advisor. Prerequisite: None

599B - 3 **Thesis** - Final revision and submission of thesis (including exhibition chapter) coordinated by candidate's thesis committee. Exhibition installation. Requires consent of advisor. Prerequisite: Graduate level ART 599A Minimum Grade of C

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- Biological Sciences (BIOL)
  - 415 - 4 **Techniques in Animal Cell and Tissue Culture** - Theory and techniques of culture growth, differentiation, metabolism and transformation. Two lectures and two labs per week. [GCB elective] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C
  - 416 - 4 **Techniques in Plant Cell and Tissue Culture** - Theory and techniques of culture growth, differentiation, metabolism and transformation. Two lectures and two labs per week. [GCB, MPD electives] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C
  - 417 - 4 **Quantitative Methods in Experimental Biology** - Selection and application of statistical techniques appropriate for biological data. Practical experience using spreadsheets and statistical software. Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C
  - 418A - 3 **Recombinant DNA** - Basic principles of gene cloning including the methods of creating recombinant DNA molecules, transfer of genes into recipient cells, and regulation following gene transfer. [GCB elective] BIOL 220 and 319 with grades of C or better; or GM standing for Graduate students
  - 418B - 3 **Recombinant DNA Lab** - Experiments in gene manipulation using bacterial genes exempt from federal guidelines concerning recombinant DNA. Six lab hours per week. Prerequisite: Undergraduate level BIOL 418A Minimum Grade of C or Graduate level BIOL 418A Minimum Grade of C
  - 421 - 3 **Human Genetics** - Human genetics, human chromosomes; Mendelian characters in man, genetic inference, pedigrees, twins, population-mutation-genetics of races; genetics and medicine. [GCB elective] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C
  - 422A - 3 **Population Genetics** - Unites the fields of molecular genetics and evolutionary biology to explore processes and mechanisms of evolutionary change, provide a theoretical basis for interpreting molecular variation. [EEE, GCB electives] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C and Undergraduate level BIOL 327 Minimum Grade of C
  - 422B - 1 **Population Genetics Lab** - Molecular and analytical techniques commonly employed in basic and applied fields of population genetics. Requires concurrent enrollment in BIOL 422A. Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C and Undergraduate level BIOL 327 Minimum Grade of C
  - 423 - 3 **Forensic Biology** - Principles of human anatomy and physiology, population and molecular genetics, botany, entomology are reviewed in the context of their applications to legal contexts. [EEE, MPD electives] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C
  - 425 - 3 **Developmental Biology** - Embryonic and postembryonic developmental processes in animals. Topics include: fertilization, morphogenesis, pattern formation and the cellular control of these events. [GCB, MPD electives] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C and Undergraduate level BIOL 319 Minimum Grade of C
  - 427 - 3 **Evolutionary Medicine** - Application of evolutionary theory to medical science providing insight into our understanding of challenges as diverse as infectious agents, allergies, cancer, obesity and mental disorder. [EEE] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C
  - 428 - 3 **Biology of Fungi** - An in-depth treatment of fungi including phylogeny, cell biology, reproduction, development, and ecology, emphasizing features not typical of other Eukaryotes, and symbioses. [EEE, DIV electives] BIOL 220 with a grade of C or better, or equivalent or admission to graduate Biology program or instructor persmission.
  - 431 - 3 **Cellular and Molecular Bases of Disease** - Causes and pathophysiology of diseases presented from the cellular and molecular levels. [GCB elective] Prerequisite: Undergraduate level BIOL 319 Minimum Grade of C
  - 432 - 4 **Advanced Cell Biology** - Analysis of advanced topics in cell and molecular biology. Emphasis on laboratory projects and current literature with supporting lectures. [GCB elective] Prerequisite: Undergraduate level BIOL 319 Minimum Grade of C
  - 434 - 3 **Fundamentals of Aquatic Ecotoxicology** - Biological effects of aquatic pollution from the molecular to the ecosystem level; uptake, metabolism, excretion, food chain transfer, environmental fate, aquatic pollutants transport. [EEE. MPD electives] Same as ENSC 434. Prerequisite: (Undergraduate level ENSC 220 Minimum Grade of D and Undergraduate level ENSC 330 Minimum Grade of D) or Undergraduate level BIOL 319 Minimum Grade of D or Undergraduate level BIOL 365 Minimum Grade of D or Undergraduate level CHEM 471 Minimum Grade of D
  - 435 - 3 **Ecological Risk Assessment** - Introduction to science behind environmental policy/regulations. Application of ecology, chemistry, and toxicology application to assess present and future pollution risks to populations, communities, ecosystems. Prerequisite: Undergraduate level BIOL 365 Minimum Grade of D and Undergraduate level ENSC 431 Minimum Grade of D
  - 436 - 3 **Fundamentals of Molecular Toxicology and Pharmacology** - Molecular, biochemical, and cellular mechanisms of toxicity, mode of action, metabolism, and interactions of environmental pollutants, toxic chemicals, and drugs. [EEE, GCB electives] Prerequisite: (Undergraduate level ENSC 220 Minimum Grade of D and Undergraduate level ENSC 330 Minimum Grade of D) or Undergraduate level BIOL 319 Minimum Grade of D or Undergraduate level CHEM 471 Minimum Grade of D
  - 440 - 4 **Functional Human Anatomy** - Systematic and regional study of the human body, including thorax, abdomen, pelvis, back, limbs, head, neck, emphasizing structural, functional, and clinical relationships. [MPD elective] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C
  - 441 - 3 **Advanced Physiology** - Energy procurement and balance, intermediate metabolism, temperature control; advanced topics of cardiovascular and respiratory mechanisms; body fluid regulation, and some environmental adaptations. [MPD elective] Prerequisite: Undergraduate level BIOL 340 Minimum Grade of C
  - 444A - 3 **Fundamentals of Neuroscience** - Integration of cellular and molecular biology, neuroanatomy, neurophysiology in nervous system function and control of behavior. Current mechanisms of learning, memory, drug actions, and motor control. [MPD elective] Prerequisite: Undergraduate level BIOL 319 Minimum Grade of C
  - 451 - 3 **Microbial Pathogenesis** - Analysis of mechanisms of pathogenesis employed by bacteria, fungi, protozoa and viruses, including transmission, invasion, colonization, virulence factors, pathology, epidemiology, and treatment. [GCB elective] Prerequisite: Undergraduate level BIOL 350 Minimum Grade of C
  - 452 - 3 **Molecular Genetics** - Molecular basis of genetics in both prokaryotes and eukaryotes, including structure and replication of DNA, gene expression, transfer of genetic material between organisms. [GCB elective] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C and Undergraduate level BIOL 319 Minimum Grade of C
  - 455A - 3 **Virology** - Biochemical and physical structure of viruses and their mode of replication in infected cells, including latency and viral oncogenesis. [GCB elective] Prerequisite: Undergraduate level BIOL 319 Minimum Grade of C or Undergraduate level BIOL 350 Minimum Grade of C
  - 455B - 1 **Virology Lab** - Basic virology and microbiological techniques used in bacteriophage research. Prerequisite: Undergraduate level BIOL 319 Minimum Grade of C and Undergraduate level BIOL 350 Minimum Grade of C

456 - 4 **Principles of Biophysics** - Interdisciplinary approach to biophysics for students in biology, chemistry, and bioengineering. Weekly labs will include a variety of guest scientists demonstrating biophysical applications. Prerequisite: At least Junior standing, and PHYS 131 and PHYS 132 and either MATH 145 or MATH 150 or instructor consent.

460 - 3 **Wildlife Management** - Wildlife ecology, conservation, and management including effects of habitat, behavior, disease, and predation on populations. Optional field trips. [EEE elective] Prerequisite: Undergraduate level BIOL 365 Minimum Grade of C

463 - 4 **Conservation Biology** - Examination of concepts and principles of conservation biology, leading to an understanding of threats to biodiversity and techniques to minimize ecosystem degradation and biodiversity loss. [EEE elective] Prerequisite: Undergraduate level BIOL 365 Minimum Grade of C

465 - 4 **Aquatic Ecosystems** - Biogeochemistry and community structure of aquatic systems. Three lectures one three-hour laboratory per week. Prerequisite: Undergraduate level BIOL 151 Minimum Grade of C and Undergraduate level CHEM 121B Minimum Grade of C

466 - 3 **Terrestrial Ecosystems** - Energy flow and mineral cycling as they interact with community organization and other processes in terrestrial ecosystems. Three lecture hours per week. Weekend field trips may be required. Prerequisite: BIOL 220 with a grade of C or better, or instructor consent.

467 - 3 **Animal Physiological Ecology** - Examine how an organism's environment affects its physiology. Comparative approach will explore physiological adaptations to a variety of environmental factors. [EEE, MPD electives] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C and (Undergraduate level BIOL 340 Minimum Grade of C or Undergraduate level BIOL 365 Minimum Grade of C)

468 - 3 **Pollution Ecology** - The application of biological, ecological, chemical and physical sciences to understanding the fate and transport of pollutants through ecosystems. [EEE elective] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C and Undergraduate level BIOL 365 Minimum Grade of C

469 - 4 **Ecology of Plants** - Plant adaptations; plant population and community ecology; introduction to landscape ecology. Focuses on primary literature, scientific communication, data analysis, and plant natural history. [EEE, FIELD elective] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C and Undergraduate level BIOL 365 Minimum Grade of C

470 - 4 **Field Biology** - Distribution and ecology of regional biological communities. Natural history and identification of local plants and animals. In class field trips. [EEE, FIELD electives] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C

471 - 4 **Plant Systematics** - Examination of basic processes in vascular plant evolution. Local flora characteristics and identification. [EEE, DIV, FIELD electives] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C

472 - 4 **Topics in Plant Physiology** - Examination of plant cells, tissues, and morphology. Two lectures and two labs per week. [EEE, MPD electives] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C

473 - 4 **Plant Anatomy** - Examination of plant cells, tissues, and morphology. Two lectures and two labs per week. [EEE, MPD electives] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C

474 - 4 **Plant Taxonomy** - A field-oriented course in which students collect and identify plant specimens using professional taxonomic keys. [EEE, DIV, FIELD electives] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C

475 - 4 **Plant Molecular Biology** - Molecular processes underlying a plant's ability to sense its environment, utilize available resources, regulate gene expression and alter development based on environment and resources. [GCB elective] Prerequisite: Undergraduate level BIOL 319 Minimum Grade of C

480 - 4 **Animal Behavior** - Examination of mechanisms, evolution, and ecological consequences of animal behavior. Concepts introduced through lectures, laboratory and field experiments, and independent projects. [EEE, DIV, FIELD electives] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C

481 - 4 **Quantitative Morphology** - Principles of the quantitative analysis of morphology, or an organism's size and shape, and its consequences. [MPD elective] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C

483 - 4 **Entomology and Insect Collection** - An introduction to the life history, ecology, physiology, behavior, forensics, diversity, and taxonomy of insects. [EEE, DIV, FIELD electives] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C

485 - 4 **Ichthyology** - Taxonomy, ecology, distribution, behavior, and anatomy of fishes. Emphasis on local fauna. Saturday field trips required. [EEE, DIV, FIELD electives] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C

486 - 4 **Herpetology** - Living and fossil amphibians and reptiles, evolution, relationships, morphology, behavior. Two lectures and two laboratories per week. Saturday field trips required. [EEE, DIV, FIELD electives] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C

487 - 4 **Ornithology** - Examination of form, function, behavior, ecology and evolution of birds. Emphasis on local fauna. Three lectures and one laboratory per week. Saturday field trips required. [EEE, DIV, FIELD electives] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C

488 - 4 **Mammalogy** - Morphology, systematics, natural history, taxonomy, and evolution of living and fossil mammals. Two lectures and two labs per week. [EEE, DIV, FIELD electives] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C

489 - 4 **Comparative Vertebrate Anatomy** - A systematic study of the vertebrate body. Comparative approach will explore the anatomical similarities and differences among major vertebrate taxonomic groups. [EEE, MPD elective] Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C

490 - 1 to 4 **Topics in Biology** - In-depth examination of an area of Biological Sciences. May be repeated up to 8 credit hours as long as neither topic nor professor is repeated. Prerequisite: None

494 - 3 **Methods of Teaching Science in Secondary Schools** - Teaching and resource materials for secondary science instruction. Planning and presenting lessons, problem solving techniques, controversial topics in the classroom, safety concerns, educational technology, pedagogical content knowledge. Requires consent of instructor. Prerequisite: None

496 - 4 **Rainforest Service Learning for Educators** - Service learning course for educators investigates sustainable development issues in rainforest preservation through study of culture, language, ecology, and geography. Consent of instructor required. Prerequisite: None

501 - 2 **Introduction to Graduate Study** - An introduction to the requirements and expectations of graduate study, strategies for success, and options for students after earning degree. Prerequisite: None

502 - 2 **Experimental Methods in Biological Sciences** - The logic behind and the application of common techniques in Biological Sciences. Covers material from across the spectrum of the discipline. Prerequisite: None

503 - 2 **Scientific Writing in Biological Science** - Formation and practice of scientific writing in biology, with an emphasis on compilation and critical review of the scientific literature. Prerequisite: Graduate level BIOL 502 Minimum Grade of C

514 - 3 **Molecular Biology Laboratory** - Enzyme activity measurements; purification of biological molecules; isolation of cell organelles; centrifugation, chromatography, and electrophoresis. Students will present reports writing in a style suitable for publication. Prerequisite: Undergraduate level BIOL 319 Minimum Grade of C

516 - 3 **Environmental Impact Analysis** - Implications and applications of National Environmental Policy Act (NEPA) and related environmental legislation. Methodology for environmental inventory and environmental impact statement preparation. Prerequisite: None

530A - 3 **Biochemistry and Molecular Biology** - Structures and functions of protein, carbohydrates and lipids. Prerequisite: Undergraduate level CHEM 241A Minimum Grade of C and Undergraduate level CHEM 241B Minimum Grade of C

530B - 3 **Biochemistry and Molecular Biology** - Control of metabolism and structures; and functions of nucleic acids in the control of protein synthesis. Prerequisite: Graduate level BIOL 530A Minimum Grade of C

533 - 3 **Biomembranes** - Structural organization of biological membranes. Dynamic properties as studied by biophysical techniques. Selected topics of membrane functions related to structural organization. Prerequisite: Undergraduate level BIOL 319 Minimum Grade of C and Undergraduate level BIOL 332 Minimum Grade of C or Undergraduate level BIOL 430A Minimum Grade of C or Undergraduate level BIOL 430B Minimum Grade of C or Undergraduate level CHEM 241A Minimum Grade of C or Undergraduate level CHEM 241B Minimum Grade of D or Undergraduate level CHEM 451A Minimum Grade of D or Undergraduate level CHEM 451B Minimum Grade of D

539 - 3 **Nucleic Acids** - Physical, chemical and biological properties of nucleic acids in terms of their structure and function. Primary, secondary and tertiary structure. Prerequisite: None

567 - 3 **Environmental Education** - Environmental education history, practices, curriculum, organization, evaluation, project development and research required of successful practitioners in the field. Requires consent of instructor. Prerequisite: None

575 - 3 **Statistics for Environment Science** - Characterization of the steps, processes and statistical analysis necessary for a well-planned experiment. Theory and application of experimental design. Prerequisite: None

583A - 2 **Entomology** - Structure, function, development, evolution and ecology of insects. Prerequisite: Undergraduate level BIOL 220 Minimum Grade of C

583B - 1 **Insect Morphology Lab** - Dissection or representatives of major insect orders; introduction to insect collecting. Prerequisite: None

583C - 1 **Insect Collection Lab** - Field collection, identification and pinning of insects. Prerequisite: None

590 - 3 to 5 **Topics in Biology** - In-depth examination of an area of Biological Sciences. May be repeated to a maximum of 12 hours as long as no topic is repeated. Requires Graduate standing. Prerequisite: None

591 - 1 to 8 **Readings in Biology** - Supervised readings in specialized areas. May be repeated to a maximum of 8 hours. Requires consent of instructor. Prerequisite: None

591F - 1 to 4 **Readings in Biology: Developmental Biology** - Readings in Biology (F) Developmental Biology. Supervised readings in specialized areas. Each segment may be repeated to a maximum of 4 hours. Requires consent of Instructor. Prerequisite: None

592 - 1 **Graduate Colloquium in Biology** - Attendance in the weekly colloquium seminar series. Students will critique colloquium presentations and will engage in group discussions of presentations. May be repeated to a maximum of 4 hours. Prerequisite: None

593 - 1 to 8 **Special Problems in Biology** - Research on biological problems. May be repeated to a maximum of 8 hours. Requires consent of instructor. Prerequisite: None

595 - 2 **Topics in Cellular and Molecular Biology** - Examination in depth of topics in cellular and molecular biology by means of seminars, discussions, readings and papers. May be repeated to a maximum of 6 hours, provided no topic is repeated. Requires consent of Instructor. Prerequisite: None

596 - 2 **Topics in Organismal Biology** - Examination in depth of topics in organism biology by means of seminar, discussions, readings, and papers. May be repeated to a maximum of 6 hours, provided no topic is repeated. Requires consent of instructor. Prerequisite: None

598A - 3 **Internship** - Supervised work experience in research or business organization. Requires 150 hours of work time per 3 hours of credit. Written report required. Requires consent of department chair or program director. Prerequisite: None

598B - 3 **Internship** - Supervised work experience in research or business organization. Requires 150 hours of work time per 3 hours of credit. Written report required. Requires consent of department chair or program director. Prerequisite: None

599 - 1 to 6 **Research and Thesis** - May be repeated to a maximum of 6 hours. Requires consent of Instructor. Prerequisite: None

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- Chemistry (CHEM)
  - 410 - 3 **Bioinorganic Chemistry** - Exploration of the principles of inorganic reactivity through the structure, stability and reactivity of metal ion-biomolecule complexes, as revealed through appropriate physical methods. Prerequisite: Undergraduate level CHEM 451A Minimum Grade of C or Graduate level CHEM 451A Minimum Grade of C
  - 411 - 3 **Inorganic Chemistry** - Modern inorganic chemistry including: bonding theory; symmetry and group theory; stereochemistry of complexions; reaction mechanisms; main group chemistry; transition metal chemistry; and organometallic chemistry. Three lecture hours per week. Prerequisite: Undergraduate level CHEM 361A Minimum Grade of D
  - 419 - 1 to 3 **Special Topics in Inorganic Chemistry** - Selected advanced topics. May be repeated up to 6 hours so long as no topic is repeated. Prerequisite: Undergraduate level CHEM 361A Minimum Grade of D
  - 431 - 3 **Instrumental Analysis** - Theory and methods of modern instrumental analytical techniques and instrumentation. Three lecture hours per week. Prerequisite: Undergraduate level CHEM 331 Minimum Grade of D and (Undergraduate level CHEM 361A Minimum Grade of D or Undergraduate level CHEM 461A Minimum Grade of D)
  - 432 - 3 **Forensic Chemistry** - Forensic chemical and instrumental analysis methods for trace ecidence including drugs of abuse, fibers, explosives, coatings, and polymers. Prerequisite: Undergraduate level CHEM 331 Minimum Grade of D and Undergraduate level CHEM 335 Minimum Grade of D and Undergraduate level CHEM 361A Minimum Grade of D
  - 435 - 1 **Instrumental Analysis Lab** - Laboratory practice in spectroscopic and other instrumental techniques. One - four hour laboratory per week. Prerequisite: None
  - 439 - 1 to 3 **Advanced Topics in Analytical Chemistry** - Selected advanced topics. May be repeated for up to 6 hours as long as no topic is repeated. Requires consent of instructor. Prerequisite: Undergraduate level CHEM 331 Minimum Grade of D and Undergraduate level CHEM 335 Minimum Grade of D and Undergraduate level CHEM 361A Minimum Grade of D
  - 441 - 3 **Physical Organic Chemistry** - Chemical equilibria, kinetics, and structure-reactivity relationships as methods for determining mechanisms of organic reactions. Prerequisite: Undergraduate level CHEM 241B Minimum Grade of D and Undergraduate level CHEM 361B Minimum Grade of D
  - 444 - 3 **Organic Reaction** - Emphasis on mono-functional compounds. Topics not covered in elementary courses. Three lecture hours per week. Prerequisite: Undergraduate level CHEM 241B Minimum Grade of D
  - 445 - 2 **Nuclear Magnetic Resonance Operation, Experimental Design, and Analysis** - Current practices in the operation, experimental design, and analysis of modern NMR spectroscopy. Prerequisite: Undergraduate level CHEM 241B Minimum Grade of D and Undergraduate level CHEM 361B Minimum Grade of D
  - 446 - 1 **Organic Spectral Analysis** - Use of modern spectral techniques to analyze the structure of organic compounds. Various types of spectroscopy along with computer techniques will be employed. Requires consent of instructor. Prerequisite: Undergraduate level CHEM 241B Minimum Grade of D and Undergraduate level CHEM 361B Minimum Grade of D
  - 449 - 1 to 3 **Special Topics in Organic Chemistry** - Selected advanced topics. May be repeated for up to 6 hours so long as no topic is repeated. Requires consent of instructor. Prerequisite: Undergraduate level CHEM 241B Minimum Grade of D and Undergraduate level CHEM 361A Minimum Grade of D
  - 451A - 3 **Biochemistry** - Life processes at the molecular level. Structure and function of biomolecules. Prerequisite: Undergraduate level CHEM 241B Minimum Grade of C and Undergraduate level CHEM 300 Minimum Grade of C
  - 451B - 3 **Biochemistry** - Life processes at molecular level. Intermediary metabolism, transmission of hereditary information. Must be taken in sequence. Prerequisite: 451a with grade of C or better.
  - 451C - 3 **Biochemistry** - Life processes at molecular level. Advanced topics including proteomics, genomics, cellular and molecular techniques, bioanalytical, biophysical and bioorganic chemistry. Must be taken in sequence. Prerequisite: 451b with grade of C or better.
  - 455 - 2 **Experimental Methods in Biochemistry** - Current practice in enzyme isolation and assessment. Microcomputer-assisted data treatment, graphics, statistical methods, and data acquisition. Four laboratory hours per week. Prerequisite: Undergraduate level CHEM 241B Minimum Grade of D
  - 459 - 1 to 3 **Special Topics in Biochemistry** - Selected topics such as enzymology, metabolism, and nucleic acids. May be repeated for a total of 6 hours provided no topic is repeated. Prerequisite: Undergraduate level CHEM 361A Minimum Grade of D
  - 461A - 3 **Biophysical Chemistry 1** - Examination of biophysical chemistry principles of thermodynamics and kinetics and the understanding of biological systems using physical chemistry. Prerequisite: (Undergraduate level PHYS 132 Minimum Grade of C or Undergraduate level PHYS 152 Minimum Grade of C) and (Undergraduate level CHEM 451B Minimum Grade of C or Graduate level CHEM 451B Minimum Grade of C) and (Undergraduate level MATH 145 Minimum Grade of C or Undergraduate level MATH 150 Minimum Grade of C)
  - 461B - 3 **Biophysical Chemistry II** - Course will examine the biophysical chemistry principles of quantum mechanics and spectroscopy and the understanding of biological systems using physical chemistry. Prerequisite: Undergraduate level CHEM 461A Minimum Grade of C or Graduate level CHEM 461A Minimum Grade of C
  - 465 - 2 **Biophysical Chemistry Lab** - Investigations of biophysical chemical phenomena. Emphasis on computer aided data analysis, rigorous preparation of written reports, introduction to chemical literature. Six hours of laboratory per week. Prerequisites: CHEM 461A with minimum grade of C or concurrent enrollment.
  - 469 - 1 to 3 **Special Topics in Physical Chemistry** - Selected advanced topics. May be repeated for up to 6 hours provided no topic is repeated. Requires consent of instructor. Prerequisite: Undergraduate level CHEM 361B Minimum Grade of D
  - 471 - 3 **Principles of Toxicology** - Chemical and biological effects of toxic substances in living organisms at the molecular and cellular level. Topics include: routes of entry, mechanism of action, effects, and antidotes. Same as ENSC 431. Prerequisite: (Undergraduate level CHEM 120A Minimum Grade of D and Undergraduate level CHEM 120B Minimum Grade of D) or (Undergraduate level CHEM 121A Minimum Grade of D and Undergraduate level CHEM 121B Minimum Grade of D) and Undergraduate level BIOL 150 Minimum Grade of D and Undergraduate level BIOL 151 Minimum Grade of D
  - 479 - 1 to 3 **Special Topics in Environmental Chemistry** - Selected advanced topics. May be repeated to a maximum of 6 hours provided no topic is repeated. Requires consent of instructor. Prerequisite: Undergraduate level CHEM 241B Minimum Grade of D

480 - 2 **Principles of Fermentation Chemistry and Biochemistry** - Covers the basic principles of the historical, scientific, technological, and cultural aspects of fermentation chemistry and biochemistry in biofuels, fermented beverages, and food production. Year of high school chemistry or permission of instructor. Prerequisite: Undergraduate level RA 101 Minimum Grade of D

481 - 2 **Principles of Fermentation Chemistry and Biochemistry Laboratory** - Covers various aspects of fermentation with an emphasis on the basic chemical and biochemical changes that occur during the fermentation process. Prerequisite: Undergraduate level CHEM 480 Minimum Grade of C

482 - 2 **Intermediate Fermentation Chemistry and Biochemistry** - Covers the intermediate principles of the historical, scientific, technological, and cultural aspects of fermentation of chemistry and biofuels, fermented beverages, and food production. Prerequisite: Undergraduate level CHEM 480 Minimum Grade of C and Undergraduate level CHEM 481 Minimum Grade of C

483 - 2 **Intermediate Fermentation Chemistry and Biochemistry Laboratory** - Will cover various aspects of fermentation with an emphasis on the intermediate chemical and biochemical changes that occur during the fermentation process. Prerequisite: Undergraduate level CHEM 482 Minimum Grade of C

484 - 2 **Advanced Fermentation Chemistry and Biochemistry** - Covers advanced principles of the historical, scientific, technological, and cultural aspects of fermentation chemistry and biochemistry in biofuels, fermented beverages, and food production. Prerequisite: Undergraduate level CHEM 482 Minimum Grade of C and Undergraduate level CHEM 483 Minimum Grade of C

485 - 2 **Advanced Fermentation Chemistry and Biochemistry Laboratory** - Will cover various aspects of fermentation with an emphasis on the advanced chemical and biochemical changes that occur during the fermentation process. Prerequisite: Undergraduate level CHEM 482 Minimum Grade of C and Undergraduate level CHEM 483 Minimum Grade of C

494 - 3 **Methods of Teaching Science in Secondary Schools** - Teaching and resource materials for secondary science instruction. Planning and presenting lessons, problem solving techniques, controversial topics in the classroom, safety concerns, educational technology, pedagogical content knowledge. Requires consent of instructor. Prerequisite: None

511 - 3 **Advanced Inorganic Chemistry** - Modern treatment of recent theoretical and experimental advances in interpretation of bonding and reactivity in inorganic compounds. Requires consent of instructor. Prerequisite: None

519 - 1 to 3 **Advanced Topics in Inorganic Chemistry** - Magnetic resonance; rare earths; and inorganic reaction mechanisms. May be repeated up to a maximum of 6 hours provided no topic is repeated. Requires consent of instructor. Prerequisite: None

531 - 3 **Advanced Analytical Chemistry** - Phenomena utilized; acid-base equilibria; activity; nonaqueous solvents; multiple equilibria; complexation precipitation; electrochemistry. Requires consent of instructor. Prerequisite: None

539 - 1 to 3 **Advanced Topics in Analytical Chemistry** - Chelation; chromatography; electrochemistry and analytical spectroscopy. May be repeated up to a maximum of 6 hours provided no topic is repeated. Requires consent of instructor. Prerequisite: None

541 - 3 **Advanced Organic Chemistry** - Covalent bonding; structure; stereochemistry; reactions; reaction mechanisms; substituent effects; correlation of physical and chemical properties; and physical methods. Requires consent of instructor. Prerequisite: None

549 - 1 to 3 **Advanced Topics in Organic Chemistry** - Topics selected by instructor (photochemistry, heterocyclic chemistry, steroid chemistry, etc). May be repeated up to a maximum of 6 hours as long as no topic is repeated. Requires consent of instructor. Prerequisite: None

551 - 3 **Advanced Biochemistry** - Modern treatment of biological chemistry including three-dimensional structure of enzymes; mechanism of co-enzymatic action; allosteric effects; physical methods for studying biological systems. Requires consent of instructor. Prerequisite: None

559 - 1 to 3 **Advanced Topics in Biochemistry** - Enzymology, metabolism, nucleic acids, etc. May be repeated up to a maximum of 6 hours as long as no topic is repeated. Requires consent of instructor. Prerequisite: None

561 - 3 **Advanced Physical Chemistry** - Modern concepts and applications selected from thermodynamics, quantum chemistry, spectroscopy, kinetics, molecular modeling, and macromolecular perspective. Requires consent of instructor. Prerequisite: None

569 - 1 to 3 **Advanced Topics in Physical Chemistry** - Topics selected by instructor: molecular modeling, phase diagrams, surface chemistry, etc. May be repeated to a maximum of 6 hours as long as no topic is repeated. Requires consent of instructor. Prerequisite: None

575 - 1 **Graduate Seminar** - Two advanced level talks required by all graduate students. Attendance at seminar is required of all full-time students. Must be repeated once for credit. Prerequisite: None

594 - 3 **Chemistry Teaching Methods for Secondary Schools** - Current teaching and resource materials. Ways to teach different chemical topics, problem solving techniques and societal issues. Preparing for inquiry and laboratory activities. Safety concerns. Requires consent of instructor. Prerequisites: CI 315A with minimum grade of D or concurrent enrollment.

596 - 1 to 4 **Advanced Chemical Problems** - Individual study of problem under direction of graduate faculty member; should be completed in one or two semesters. May be repeated to a maximum of 4 hours. Requires consent of instructor. Prerequisite: None

597 - 1 to 9 **Chemical Research** - Directed research on significant problem, normally to extend over more than two semesters. May be repeated without limit, but only 9 hours will be accepted toward minimum 30 required for MS degree. Requires consent of instructor. Prerequisite: None

599 - 1 to 6 **Thesis** - Directed research to satisfy thesis requirement for MS degree. Topic and thesis advisor must be approved by graduate committee. May be repeated to a maximum of 6 hours. Requires consent of thesis advisor. Prerequisite: None

- Civil Engineering (CE)
  - 416 - 3 **Engineering Hydrology** - Hydrological processes and their relationship to design of structures for control and management of water resources, rainfall-runoff relationship, probability and frequency analysis, surface water hydrology. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level CE 315 Minimum Grade of D and Undergraduate level CE 354 Minimum Grade of D and Undergraduate level STAT 380 Minimum Grade of D
  - 435 - 3 **Pavement Design** - Analysis and design for highways and airports. Factors affecting pavement performance and code requirements. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level CE 330 Minimum Grade of D and Undergraduate level CE 343 Minimum Grade of D and Undergraduate level CE 354 Minimum Grade of D
  - 441 - 3 **Design of Timber Structures** - Design and analysis of timber structures and timber design code. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level CE 343 Minimum Grade of D
  - 443 - 3 **Design of Masonry Structures** - Design and analysis of masonry structures and masonry design code. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level CE 343 Minimum Grade of D
  - 445 - 3 **Advanced Structural Analysis** - Analysis of indeterminate two- and three-dimensional trusses and frames, with emphasis on matrix methods. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level CE 343 Minimum Grade of D
  - 446 - 3 **Advanced Concrete Design** - Advanced topics in reinforced concrete design, design of pre-stressed concrete beams, and code design requirements. Requires completion of stated prerequisites or consent of instructor. Prerequisite: Undergraduate level CE 343 Minimum Grade of D and Undergraduate level CE 445 Minimum Grade of D
  - 449 - 3 **Advanced Steel Design** - Plastic analysis of steel structures. LRFD design. Stability theory applied to structural design. Composite beams and columns. Introduction to seismic design. Code requirements. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level CE 342 Minimum Grade of D and Undergraduate level CE 343 Minimum Grade of D
  - 455 - 3 **Foundation Design** - Design of foundations, retaining walls, cofferdams, and earth embankments; formulation of design problem statements and specifications; and estimates of bearing capacity, settlements, and slope stability values. Requires completion of stated prerequisite or consent of instructor.

Prerequisite: Undergraduate level CE 354 Minimum Grade of D

457 - 3 **Soil Mechanics in Engineering** - Mineralogy and Soil Behavior, Advanced Seepage and Consolidation Analyses, Engineering Applications of Soil Mechanics, Implementation of Numerical Modeling in Soil Mechanics. Requires completion of stated prerequisites or consent of instructor. Prerequisite: Undergraduate level CE 354 Minimum Grade of D

458 - 3 **Geological and Geotechnical Exploration** - Introduces students to the concepts behind testing rocks, soils, and profiles; geophysical testing; and planning a geotechnical investigation and testing program. Prerequisites: upper-division civil engineering standing, 354 with a minimum grade of D or higher, or consent of instructor or graduate standing. Major/School Restriction.

459 - 3 **Soil Improvement** - Instruction will include introduction to problematic geomaterials, geotechnical failures, soil improvement methods, design considerations, construction and quality control/assurance, densification and replacement techniques. CE 354 with minimum grade of D or consent of instructor or Graduate Standing.

460 - 3 **Municipal Infrastructure Design** - Municipal infrastructure analysis and design; water distribution networks; wastewater collection; street systems; and engineering processes of municipal designs. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level CE 315 Minimum Grade of D and Undergraduate level CE 376 Minimum Grade of D

473 - 3 **Travel Demand Forecasting** - Transportation engineering principles for estimating the impact of new development on specific facilities and on a region using travel demand forecasting tools. Additional Prerequisite: Major/School Restriction.

474 - 3 **Computer Simulation in Traffic Engineering** - Highway capacity software (HCS), signal timing software (SYNCHRO), and micro-simulation software (TSIS). Additional Prerequisite: Major/School Restriction.

475 - 3 **Transportation Planning** - Covers the basis for transportation planning process; modeling transportation demand and supply; project evaluation for decision making, and transportation sustainability. Additional Prerequisite: Major/School Restriction.

476 - 3 **Traffic Studies** - Acquisition, evaluation, statistical analysis and reporting of traffic engineering data used to design, evaluate and operate transportation systems. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level CE 376 Minimum Grade of D

478 - 3 **Transportation Engineering Facilities Design** - Transportation facilities geometric design and structural design of load-carrying elements; and human factors as related to physical design criteria. Prerequisite: Undergraduate level CE 473 Minimum Grade of D

480 - 3 **Environmental Analysis** - Analytical methods for examining water and wastewater. Sources of parameters, laboratory methods and limitations, data analysis, and correlation of parameters with environmental effects. Lectures and laboratory. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level CE 380 Minimum Grade of D

482 - 3 **Water Resources Engineering and Management** - Excessive water use have adverse impacts on environment and natural water resources. Sustainable management is a necessity. Course focuses on demand analysis and management of water resources for different use. Prerequisite: Undergraduate level CE 416 Minimum Grade of C

486 - 3 **Wastewater Treatment Design** - Design of wastewater treatment systems including: preliminary, primary, and secondary treatment processes and biosolids treatment and disposal. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level CE 380 Minimum Grade of D

487 - 3 **Water Treatment Design** - Design of potable water treatment processes with emphasis on chemical and physical unit operation. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level CE 380 Minimum Grade of D

488 - 3 **Hazardous Waste Management** - Major aspects of managing hazardous waste, including regulation, pollution prevention, treatment, disposal, spill clean-up, and site remediation. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level CE 380 Minimum Grade of D

492 - 1 to 5 **Topics in Civil Engineering** - Selected topics of special interest. May be repeated to a maximum of 6 hours provided no topic is repeated. Additional Prerequisite: Major/School Restriction.

501 - 4 **Project Management** - Application of technical principles to modern methods of construction, construction planning, scheduling by critical path method, contract documents, estimating and bidding, and construction materials. Prerequisite: None

530 - 3 **Advanced Civil Engineering Materials** - Design specifications and methods for using high-strength concrete; zero-slump concrete; concrete masonry; pozzolanic-stabilized base materials; bituminous concrete and geosynthetic materials in construction. Prerequisite: None

541 - 3 **Bridge Engineering** - Major aspects of bridge engineering. Analysis, design, detailing and construction using AASHTO LRFD bridge design specifications. Prerequisite: None

545 - 3 **Structural Dynamics** - Dynamic response of single and multi-degree of freedom structural systems. Mode superposition and structural damping. Prerequisite: None

546 - 3 **Plates and Shells** - Membrane theory of shells; bending of shells and circular and rectangular plates; and indeterminate shell problems. Prerequisite: Undergraduate level CE 445 Minimum Grade of D and Undergraduate level ME 470 Minimum Grade of D

547 - 3 **Elastic Stability** - Elastic stability of columns and simple frames; lateral and torsional buckling of beams; buckling of plates; and design code considerations of buckling. Prerequisite: Undergraduate level CE 445 Minimum Grade of D and Undergraduate level ME 470 Minimum Grade of D

548 - 3 **Finite Elements** - Rayleigh-Ritz method, piecewise approximation, nodal load calculations, derivation of two-and three dimensional elements, and bending elements. Finite element computer programs. Prerequisite: Undergraduate level CE 445 Minimum Grade of C

549 - 3 **Earthquake Engineering** - Structural design and detailing for earthquake loads; lateral load resistant systems; and building and bridge code requirements. Prerequisite: Graduate level CE 545 Minimum Grade of

550 - 3 **Advanced Soil Mechanics** - Learn about slope stability, slide stability, drained and undrained shear strength of sands and clays, and shear strength tests. Prerequisite: None

551 - 3 **Design of Levees and Floodwalls** - Instruction will include the design of levees, small embankments, floodwalls; as well as the stabilities and maintenance of these facilities. Prerequisite: None

574 - 3 **Transportation Infrastructure Security using Intelligent Transportation Systems** - Protection and recovery from security incidents using the integration outlined in the security areas of the National ITS Architecture and the capabilities of new technologies. Prerequisite: None

575 - 3 **Advanced Geometric Design of Highways** - Proportioning of the physical element of the highways such as horizontal curves, vertical curves, lane width, and cross section. Prerequisite: Undergraduate level CE 376 Minimum Grade of D

578 - 3 **Intelligent Transportation Systems** - Intelligent transportation systems combine traffic flow principles, computer and communication technologies, and management strategies to improve travel efficiency, safety, and security, thus sustainability. Prerequisite: None

579 - 3 **Transportation Safety Systems** - Implementation, operation and evaluation of transportation safety systems for highway and non-highway modes analysis, remediation strategies, and case studies. Prerequisite: Undergraduate level CE 376 Minimum Grade of D

581 - 3 **Advanced Wastewater Treatment** - Theory and design of advanced wastewater treatment systems, including natural treatment systems, nutrient removal and other tertiary treatment processes. Prerequisite: Undergraduate level CE 486 Minimum Grade of D

582 - 3 **Water Quality and Treatment** - Study of water quality and advanced drinking water treatment processes, with an emphasis on rationale, fundamentals, and advanced technologies to removed special contaminants. Prerequisite: Undergraduate level CE 487 Minimum Grade of D

587 - 3 **Air Pollution Control** - Study of sources, effects, regulation, monitoring, and control of air pollution. Prerequisite: Undergraduate level CE 380 Minimum Grade of D

588 - 3 **Solid Waste Management** - Perspectives, engineering principles, and management issues governing solid waste management, including sustainability. Prerequisite: Undergraduate level CE 380 Minimum Grade of D

589 - 3 **Industrial Materials & Waste** - Management of hazardous industrial materials and wastes including: regulations, handling, minimization and prevention of waste generation; recycling/reuse; and treatment and disposal. Prerequisite: Undergraduate level CE 380 Minimum Grade of D

591 - 1 to 4 **Independent Study** - Individual investigation of a topic in civil engineering to be agreed upon with the instructor. May be repeated for a maximum of 6 hours provided no topic is repeated. Prerequisite: None

592 - 1 to 5 **Topics in Civil Engineering** - Topic of special interest. Course schedule will include name of topic. May be repeated to a maximum of 9 hours so long as no topic is repeated. Requires consent of instructor. Prerequisite: None

593 - 1 **Research Paper** - Independent research for the non-thesis option final research paper. Prerequisite: None

596 - 3 **Sustainable Engineering** - Concepts and principles of sustainable engineering for infrastructure design and their application to analyze the impact of engineering design on resources consumption and the environment. Prerequisite: Undergraduate level CE 380 Minimum Grade of D

599 - 1 to 6 **Research** - Independent research at master's level. May be repeated to a maximum of 6 hours. Requires consent of advisor. Prerequisite: None

- Computer Mgmt. & Info. Systems (CMIS)
  - 422 - 3 **Information Security** - Provides an introduction to the various technical and administrative aspects of Information Security and Assurance. CMIS 310 with a C or higher or Graduate Standing.

424 - 3 **Information Technology Audit and Controls** - Provides an overview of IT Audit and Controls including IT audit methods, methodologies, and procedures and how IT controls serve business needs. CMIS 310 with a grade of C or higher or graduate standing.

430 - 3 **Advanced JAVA Programming** - Development of applications, applets, and advanced GUI, including advanced object-oriented programming in JAVA, multithreading, files, multimedia, database use and networking concepts used for application. Prerequisite: Undergraduate level CMIS 234 Minimum Grade of C

460 - 3 **ASP.NET Programming** - Advanced event-driven programming, object-oriented programming techniques for on-line web applications including web database programming (ADO.NET), security, web services and application deployment. Prerequisite: Undergraduate level CMIS 232 Minimum Grade of C

462 - 3 **Unix and Server Systems** - UNIX and Windows server operating systems to include scripting language plus server software installation and configuration. Prerequisite: Undergraduate level CMIS 310 Minimum Grade of D

468 - 3 **Business Telecommunications** - Concepts and terminology dealing with data communication and distributed systems with emphasis on business applications. Prerequisite: Undergraduate level CMIS 310 Minimum Grade of D

472 - 3 **End User Systems Support** - Application of knowledge, skills and abilities necessary in the user support industry to include software and hardware support related to small computer environments as a standalone or network setting. Prerequisite: Undergraduate level CMIS 342 Minimum Grade of D

488 - 3 **Information Systems Internship** - Application of information systems knowledge in a structured work environment with a written report of the work experience. Not for graduate credit. Requires consent of instructor. Prerequisite: None

490 - 3 to 6 **Independent Study in Information Systems** - Investigation of topical CMIS area resulting in deliverable unit. May be repeated to a maximum of 6 hours. Requires consent of department chair or program director. Prerequisite: None

495 - 3 to 6 **Seminar: Information Systems** - Current issues related to business aspects of dealing with information systems. May be repeated to a maximum of 6 hours if topics differ. Prerequisite: None

515 - 3 **Project Management Standard Processes for Healthcare Informatics** - Framework of standard processes based on the Project Management Body of Knowledge, including processes for managing scope, time, quality, cost, HR, communications, risk and procurement. Prerequisite: None

517 - 3 **Systems Analysis Methodologies for Healthcare Informatics** - Tools, techniques, and methodologies used for information systems analysis and design in the healthcare field. Prerequisite: None

518 - 3 **Information Security for Healthcare Informatics** - Introduction to technical/administrative aspects of information security and assurance. Provides an understanding of key issues with protecting information and designing effective information security systems. Prerequisite: None

526 - 3 **Information Systems and Technology** - Information systems and state-of-the-art information technology with a middle-level managerial focus. Prerequisite: None

528 - 3 **Strategic Management of Information Technology** - Management of the IT (information technology) function and emerging technologies with a strategic-level focus. Prerequisite: Graduate level CMIS 526 Minimum Grade of C or Graduate level CMIS 515 Minimum Grade of C

540 - 3 **Project Management Fundamentals and Best Practices** - Theory and techniques for managing technology projects within constraints of time, resources and functionality. Topics include project initiation, planning, executing, controlling and closing. Prerequisite: None

546 - 3 **Project Procurement and Risk Management** - Examination of procurement management and risk management in projects. Topics include strategies for supplier evaluation and contract administration as well as risk identification, analysis, response planning, and control strategies. Prerequisite: None

548 - 3 **Program and Project Portfolio Management** - Management of program and project portfolios from a strategic organizational perspective, including selection and prioritization, performance measurement, and optimization. Prerequisite: CMIS 540 with minimum grade of C or concurrent enrollment.

549 - 3 **Project Management Standard Processes** - A framework of standard processes based on the Project Management Body of Knowledge and other resources. Includes processes for managing scope, time, quality, cost, human resources, communications, risk, and procurement. Prerequisite: level CMIS 540 Minimum Grade of

557 - 3 **Enterprise Resource Planning** - The role of Enterprise Resource Planning (ERP) software in the e-Business environment will be explored using SAP. A risk management approach will be emphasized. Prerequisites: ACCT 524 and admission into any graduate program in business.

563 - 3 **Oracle SQL for Business Analytics** - This course is primarily designed for Business students who are interested in Business Analytics (BA) or Business Intelligence (BI) and gaining an intermediate-level of expertise in Structured Query Language (SQL) to manipulate and analyze data from a Relational Database Management System (RDMS), namely Oracle DBMS. Prerequisite: Graduate level CMIS 526 Minimum Grade of C or Graduate level CMIS 515 Minimum Grade of C or CMIS 515 Placement 1

564 - 3 **Database Design** - Enterprise-wide data modeling. Conceptual database design, entity-relationship and object-oriented models. Physical database design, relational model, and normalization theory. Prerequisite: Graduate level CMIS 526 Minimum Grade of C or Graduate level CMIS 515 Minimum Grade of C or CMIS 515 Placement 1

565 - 3 **Oracle Database Administration** - Seminar in oracle database administration including database creation, maintenance, backup, recovery, and user account administration. Prerequisite: Graduate level CMIS 564 Minimum Grade of C

566 - 3 **Introduction to Business Analytics Intelligence and Analytics** - Introduction to the concepts and applications of business analytics to support data driven decision making in organizations. Prerequisite: (Graduate level MBA 521 Minimum Grade of C or Graduate level ECON 515 Minimum Grade of C or Graduate level FIN 515 Minimum Grade of C or Graduate level MKTG 546 Minimum Grade of C) and (Graduate level CMIS 526 Minimum Grade of C or Graduate level ECON 517 Minimum Grade of C or Graduate level FIN 517 Minimum Grade of C or Graduate level ACCT 561 Minimum Grade of C or Graduate level MKTG 544 Minimum Grade of C)

567 - 3 **Business Analytics Capstone** - Overview of business analytics and business intelligence using SAP tools, including how to assess and use data, determine data needs, and generate and process reports. Complete all the following with grade of C or better. CMIS 566; 2 of the following Electives: CMIS 563, 564, 588, MKTG 560, 561, 595, ECON 581.

568 - 3 **Advanced Database Programming in Oracle** - This course is primarily designed for students who are interested in Database Programming, namely in Oracle DBMS, and will introduce a variety of advanced concepts. Prerequisite: (Undergraduate level CMIS 350 Minimum Grade of or Undergraduate level CS 434 Minimum Grade of or Graduate level CMIS 564 Minimum Grade of) and (Undergraduate level CMIS 130 Minimum Grade of or Undergraduate level CMIS 232 Minimum Grade of or Undergraduate level CMIS 234 Minimum Grade of or Undergraduate level CS 140 Minimum Grade of or Undergraduate level CS 145 Minimum Grade of)

570 - 3 **Software Systems Design** - Techniques and tools for information systems analysis and design. Process-oriented modeling and structured design concepts and techniques; re-engineering business processes; quality-assurance and reliability. Prerequisite: None

587 - 3 **Information Systems Internship** - Industry internship requiring the application of information systems design, development, and/or technical support skills in a structured work environment. Requires consent of department chair or program director. Prerequisite: None

588 - 3 **Seminar in Computer Management and Information Systems** - Current issues; content varies. May be repeated to a maximum of 12 hours if topics differ. Prerequisite: None

589 - 1 **Final Examination** - Final master's examination assesses the ability to think critically, to draw and defend conclusions, and to complete work in a credible manner. Prerequisite: None

597 - 1 to 3 **Independent Study in Computer Management and Information Systems** - Investigation of special topic area. May be repeated to a maximum of 3 hours. Requires consent of department chair or program director. Prerequisite: None

- Computer Science (CS)
  - 423 - 3 **Compiler Construction** - Translation of programming languages. Emphasis on techniques used in construction of compilers, including lexical analysis, syntactical analysis, type checking, and code generation. Prerequisite: Undergraduate level CS 330 Minimum Grade of C
  - 430 - 3 **Information Storage and Retrieval** - Database system concepts, models, languages. Database design using entity/relationship, and relational models; querying using SQL. Prerequisite: None
  - 434 - 3 **Database Management Systems** - Database management system concepts, models, languages. Entity/relationship, relational and object-oriented data models; relational database design and implementation including SQL; and object databases. Prerequisite: Undergraduate level CS 240 Minimum Grade of C and Undergraduate level CS 234 Minimum Grade of C
  - 438 - 3 **Artificial Intelligence** - Principles and programming techniques of artificial intelligence. Intelligent agents, heuristic programming, knowledge representation, expert systems, and machine learning. Prerequisite: Undergraduate level CS 340 Minimum Grade of C
  - 447 - 3 **Networks and Data Communications** - Concepts of networks and data communications. Networking protocols and architecture; data encoding and transmission; network management; and distributed applications. Prerequisite: Undergraduate level CS 340 Minimum Grade of C and (Undergraduate level CS 314 Minimum Grade of C or Undergraduate level CS 414 Minimum Grade of C)
  - 454 - 3 **Theory of Computation** - Theoretical foundations of computer science, including a theory of automata: pushdown automata, Turing machines; and formal languages. CS 330 and MATH 224 with C or better; or Graduate Standing
  - 456 - 3 **Advanced Algorithms** - Advanced algorithms and data structures; basic complexity theory; and approximation algorithms for NP-hard problems. Prerequisite: Undergraduate level CS 340 Minimum Grade of C
  - 482 - 3 **Computer Graphics** - Introduction to2D and 3D graphics, graphics hardware, scan conversion, anti-aliasing, hidden components, transformations, projections, ray tracing, curve and surface modeling, and animation. Prerequisite: Undergraduate level CS 286 Minimum Grade of C and Undergraduate level MATH 152 Minimum Grade of C and Undergraduate level CS 240 Minimum Grade of C
  - 490 - 3 **Topics in Computer Science** - Selected topics in computer science. May be repeated to a maximum of 6 hours for different topics. Requires consent of instructor. Prerequisite: None
  - 495 - 3 **Independent Study** - Reading and research in specific areas of computer science. May be repeated for a maximum of 6 hours. Requires consent of department chair or program director. Prerequisite: None
  - 500 - 1 **Graduate Seminar in Computer Science** - Research topics of faculty; exploration of research facilities and resources; and examination of plagiarism and academic integrity. Requires Graduate standing. Prerequisite: None
  - 501 - 3 **Intensive Computer Science Fundamentals** - An intensive examination of object oriented design, data structures, algorithm analysis, software engineering, and programming in preparation for graduate study in Computer Science. Prerequisite: None
  - 514 - 3 **Operating Systems** - Concurrent programming; support for distributed systems including transaction processing systems; support for high-volume, high-availability applications; scalable programming; and trends. Prerequisite: Undergraduate level CS 314 Minimum Grade of C
  - 516 - 3 **Computer Architecture** - Instruction sets; instruction-level parallelism; memory systems; storage systems; I/O; multiprocessors and multicomputers; and trends. Prerequisite: Undergraduate level CS 314 Minimum Grade of C
  - 525 - 3 **Principles of Simulation** - Survey of systems modeling and simulation techniques; data generation and testing; construction of simulation models; Petri nets and applications; and model experimentation and optimization. Prerequisite: Undergraduate level CS 240 Minimum Grade of C and Undergraduate level STAT 380 Minimum Grade of C
  - 530 - 3 **Software & Systems Management** - Management principles for software engineering and for project and systems development. Includes management of resources and understanding the needs of customers and management. Prerequisite: Undergraduate level CS 340 Minimum Grade of C
  - 534 - 3 **Advanced Database Management Systems** - Study of advanced database management system topics such as programmatic SQL, database administration issues, object databases, distributive databases, semi-structured data and XML, and data warehousing. Prerequisite: Undergraduate level CS 434 Minimum Grade of C
  - 535 - 3 **Software Engineering** - Principles for software development: object-oriented methodologies; advanced topics such as formal methods; component-based, client-server, and computer-aided software engineering; and web engineering. Prerequisite: Undergraduate level CS 325 Minimum Grade of C
  - 537 - 3 **Introduction to Expert Systems** - Design and implementation of expert systems: architecture, knowledge representation, inference methods, uncertainty handling, and knowledge acquisition. Introduction to logic programming and prolog. Prerequisite: Undergraduate level CS 340 Minimum Grade of C
  - 547 - 3 **Network Programming** - Design and implementation of application software for computer networks, including case studies of existing network applications with an emphasis on TCP/IP. Prerequisite: Undergraduate level CS 447 Minimum Grade of C
  - 548 - 3 **Network Security** - Fundamentals in network security to develop skills for preventing security hazards with focus on practical aspects in network security as well as concepts and theories. Prerequisite: Undergraduate level CS 447 Minimum Grade of C and Undergraduate level CS 314 Minimum Grade of C
  - 550 - 3 **Object-Oriented Design and Programming** - Object-oriented programming and design with emphasis on distributed objects. Uses C++ and JAVA, and covers middleware platforms such as cobra. Requires consent of instructor. Prerequisite: None
  - 560 - 3 **Information Discovery in Electronic Healthcare Records** - Analytical techniques for discovering information in electronic healthcare record systems through data mining, text mining, and visual analytics techniques. Prerequisite: Graduate level NURS 510 Minimum Grade of C or Graduate level CMIS 564 Minimum Grade of C or Graduate level CS 434 Minimum Grade of C
  - 582 - 3 **Advanced Computer Graphics** - Advanced rendering techniques; global illumination and radiosity; volume rendering; shadows; reflection detection; fractals; and particle systems. Prerequisite: Undergraduate level CS 482 Minimum Grade of C

583 - 3 **Topics in Programming Languages** - Topics including functional programming, semantic theory of programming language, formal language theory and functional language ML. May be repeated to 6 hours if topics differ. Prerequisite: Undergraduate level CS 330 Minimum Grade of C and Undergraduate level CS 314 Minimum Grade of C

584 - 3 **Topics in Artificial Intelligence** - Selected topics in AI, such as machine learning, model-based reasoning, and intelligent agents. May be repeated up to 6 hours provided no topic is repeated. Requires consent of instructor. Prerequisite: None

587 - 3 **Topics in Computer Networking** - Selected topics in computer networking, such as high performance and optical computer networks. May be repeated to a maximum of 6 hours provided no topic is repeated. Prerequisite: Undergraduate level CS 447 Minimum Grade of C and Undergraduate level ECE 477 Minimum Grade of C

590 - 3 **Topics in Computer Science** - Prerequisite: None

595 - 1 to 6 **Independent Study** - Students organize a program of study and obtain approval for supervision of the study from a member of the computer science faculty. May be taken for a maximum of 6 hours. Requires consent of instructor. Prerequisite: None

596 - 3 **Master's Project** - Special software project, under supervision of the student's project committee. Written and oral project reports are required. Satisfies program exit requirements. Requires consent of student's project committee. Prerequisite: None

596A - 1 **Capstone I** - The student will initiate the information systems design project which includes a feasibility study to determine the project scope and objectives, alternative design options, and cost-effectiveness. Prerequisite: Graduate level NURS 509 Minimum Grade of C and Graduate level CS 434 Minimum Grade of C and Graduate level CMIS 535 Minimum Grade of C and Graduate level CS 560 Minimum Grade of C

596B - 1 **Capstone II** - The student will develop the requirements for the design project including detailed analysis of the existing system and logical systems design for the proposed system. Prerequisite: Graduate level NURS 596A Minimum Grade of C and Graduate level CS 596A Minimum Grade of C and (Graduate level CMIS 596A Minimum Grade of C or Graduate level HCIM 596A Minimum Grade of C)

596C - 1 **Capstone III** - The student will implement the information systems design project focusing on detailed systems design, including program design, configuration, and test planning, and systems implementation. Prerequisite: Graduate level NURS 596B Minimum Grade of C and Graduate level CS 596B Minimum Grade of C and (Graduate level CMIS 596B Minimum Grade of C or Graduate level HCIM 596B Minimum Grade of C)

599 - 1 to 6 **Thesis** - Directed research to satisfy thesis requirement. May be repeated for a maximum of 6 hours. Requires consent of advisor. Prerequisite: None

- Computing and Info Systems (CIS)
  - 590 - 1 to 3 **Independent Study** - Selected topics under faculty supervision. May be repeated to maximum of 3 hours. Requires consent of instructor. Prerequisite: None
  - 595 - 1 to 6 **Special Project** - Independent research in computing and information systems, software design project, or combination of both. May be repeated for a maximum of 6 hours. Requires consent of instructor. Prerequisite: None
- Construction (CNST)
  - 403 - 3 **Planning and Scheduling** - Planning and scheduling construction projects including resource and manpower allocation. CPM and PERT methods; progress reports; and records. Prerequisites: (applies to undergraduates only) CNST 341, CNST 353
  - 425 - 3 **Heavy Civil Construction** - Methods and procedures for estimating, planning and constructing road and bridge projects. Prerequisite: (applies to undergraduate enrollment only) CNST 210
  - 442 - 3 **Building Information Modeling** - Development of 3-D building models for estimating, scheduling and construction planning. Use of technology for recording 3-D information to monitor construction. Prerequisite: None
  - 451 - 3 **Estimating and Bidding** - Methods and procedures for estimating and bidding construction projects. Use of take-off quantities, productivity, and material costs. Prerequisites: (applies to undergraduates only) CNST 341, CNST 353
  - 461 - 3 **Materials Sampling and Testing** - Procedures and methods for developing and evaluating sampling and testing programs for construction. Individual projects required. Available for Graduate Credit. Prerequisite: Undergraduate level STAT 244 Minimum Grade of D
  - 463 - 3 **Concrete Properties** - Concrete construction techniques are analyzed. Emphasis will be on how fundamental properties are used to make project decisions. Individual projects required. Prerequisite: None
  - 464 - 3 **Project Controls** - Discussion of methodology and techniques used typically by the construction industry in the control of project schedule, cost, contract administration and construction quality. Prerequisite: Undergraduate level CNST 341 Minimum Grade of D
  - 501 - 4 **Project Management** - Application of technical principles to modern methods of construction; construction planning; scheduling by critical path methods; contract documents; estimating and bidding; and construction materials. Prerequisite: None
  - 510 - 3 **Program Management of Large Projects** - A study of the complexities involved in management of large construction projects. Prerequisite: Graduate level CNST 501 Minimum Grade of C
  - 515 - 3 **Feasibility Studies for Land Development** - A study of the site selection process for land development projects, emphasizing the links between construction, government regulation, marketing, finance and management. Prerequisite: Graduate level CNST 501 Minimum Grade of C
  - 520 - 3 **Management of Concrete Projects** - A study of the management of concrete construction, including a basic understanding of concrete properties, manufacture, quality control, site management and safety. Prerequisite: Graduate level CNST 501 Minimum Grade of C
  - 525 - 3 **Risk Management of Construction** - A study of the sources of potential risks in the construction process and developing procedures and strategies for managing a risk. Prerequisite: Graduate level CNST 501 Minimum Grade of C
  - 530 - 3 **Legal Aspects of Construction** - A perspective on the legal problems and liability issues in the area of construction contracts, torts, and insurance. Prerequisite: Graduate level CNST 501 Minimum Grade of C
  - 535 - 3 **Case Studies in Construction** - A review of current construction management issues; assessment of construction management failures; and current developments in construction safety. Prerequisite: Graduate level CNST 501 Minimum Grade of C
  - 550 - 3 **Independent Study in Construction** - Independent study on an advanced topic of special interest in construction. May be repeated to a maximum of 6 hours provided no topic is repeated. Requires consent of instructor. Prerequisite: None
  - 552 - 3 **Project Plan Strategies** - Critical path method (DPM) scheduling methods including deterministic and probabilistic methods. Schedule compression and Monte Carlo simulation techniques. The course involves application of primavera to scheduling. Prerequisite: Graduate level CNST 501 Minimum Grade of C
- Criminal Justice Studies (CJ)
  - 408 - 3 **Critical Issues in Law Enforcement** - Examination and analysis of issues in policing including training and socialization; management and organization; deviance; minority recruitment; community based efforts; and use of force. Prerequisite: None
  - 410 - 3 **Judicial Process: The Criminal Court System** - Federal and Illinois criminal courts examined. Application of law, criminal and appellate processes to case scenarios emphasized. Prerequisite: None
  - 420 - 3 **United States Drug Policy** - Examine historical and contemporary drug use and policy efforts, including secondary problems affiliated with drugs; and the war on drugs and its impact nationally and internationally. Prerequisite: None
  - 450 - 3 **Neighborhoods and Crime: Exploring Spatial Dimensions of Crime** - To develop an understanding of the relationship between communities and the way they contribute in shaping and controlling patterns of crime and delinquency. CJ 273 with a grade of C or higher or graduate standing.

464 - 3 **Mental Health and the Criminal Justice System** - Explores treatment of individuals with mental illness by police, courts, and corrections. Insanity defense, competency, commitment, diversion, and CIT discussed. Prerequisite: None

465 - 3 **Theories of the Just Society** - Examines various constructions of the just society and the functions of government. Students consider the role of law and its relationship to justice for citizens. Prerequisite: Undergraduate level CJ 273 Minimum Grade of C

490 - 3 **Cybercrime** - Discusses such issues as defining cybercrime, technology, information and data in security management, types of abuse, attacks and crime, and who commits cybercrime. Prerequisite: None

502 - 3 **Applied Research in Criminal Justice System** - The foundations of inquiry, the various approaches to the study of social phenomena, and several analytical techniques are presented, discussed, and practiced. Prerequisite: an undergraduate statistics course.

505 - 3 **Criminological Theory** - Explores the questions, "Why do people commit crime?" and "Why do people conform?" Examines in detail the extant criminological theories that attempt to address those concerns. Prerequisite: None

508 - 3 **Disparate Treatment in the Criminal Justice System** - Some populations experience the criminal justice system differently than others; women, minorities, LGBT population, and all are studied as offenders, victims, and criminal justice employees. Prerequisite: None

513 - 3 **Criminal Justice Statistics** - Focuses on advanced statistical techniques used in criminal justice research with emphasis on interpreting results; multivariate techniques, particularly regression, are emphasized. Includes theory and practical application to policy issues. Prerequisite: Graduate level CJ 502 Minimum Grade of C

515 - 3 **Criminal Justice Planning & Budgeting** - Discusses criminal justice organizational structure, interagency collaboration, public sector budgets including personnel, operating and capital improvement issues, data communication and organizational change potential. Prerequisite: None

517 - 3 **Policy Analysis in Criminal Justice** - Prerequisite: None

528 - 3 **Civil Liability in Criminal Justice** - Potential civil liability for police, court and corrections officials in processing suspects, defendants, and offenders. Negligence, force, risk, and rights discussed. Prerequisite: None

529 - 3 **Human Trafficking** - Analysis of various forms of domestic and international human trafficking, as well as the legal and social measures being taken to identify and protect survivors while punishing offenders. Prerequisite: None

535 - 3 **Seminar in Juvenile Justice** - Explores current issues in juvenile justice, including girls; gangs; school safety; threat assessment; juvenile sex offenders; and applying the public health model to juvenile justice. Prerequisite: None

540 - 3 **Seminar in Correctional Theory and Practice** - Focuses on the practice and theory of the correctional system. Primary focus is on the institutional environment, but attention will also be paid to corrections in the community. Prerequisite: None

590 - 3 **Special Topics** - Topic will be selected by faculty/instructor of record. Check with Program Director for specific topic in relevant semester. Prerequisite: None

596 - 3 **Readings in Criminal Justice Policy** - Allows students one option to study individualized topic of interest; or option to request prior learning assessment credit for learning outside traditional university. Prerequisite: None

598 - 3 **Capstone I and II** - Requires proposed policy, procedure, or program development to benefit criminal justice agency. Student completes Capstone I and II for 6 credits. Prerequisite: None

599 - 3 **Thesis I and II** - Requires 20-30 page thesis. Must complete twice (as Thesis I and Thesis II) for a total of 6 credit hours. Prerequisite: None

- Curr & Instr in Education (CIED)
  - 433 - 3 **Methods and Materials for Teaching Pre-K and Primary Dual & Second Language Learners** - This course will provide you with the knowledge and skills to implement strategies, methods, approaches, and best practices for teaching Dual Language Learners (DLLs) in pre-kindergarten and primary grades settings. It is intended as an overview course of important concepts of teaching young DLLs, including foundational information, general teaching strategies, and specific strategies for developing language and academic concepts. Prerequisite: None
- Curriculum and Instruction (CI)
  - 407 - 3 **The Middle and Junior High School** - Theoretical background and evolving trends in middle and junior high education; curriculum review; learning theories; methods of practice; management techniques. Prerequisite: None
  - 410 - 3 **Principles of Early Childhood Education** - Examination of national and local programs in early childhood education with overview of issues, trends, and research. Prerequisite: None
  - 414 - 3 **Teaching Mathematics in Early Childhood Education.** - Mathematical concept development for Pre-K through Grade 3 teachers, emphasizing developmentally appropriate methodology and instructional strategies; and employing problem solving and inquiry-based learning. Prerequisite: Undergraduate level CI 301 Minimum Grade of D and Undergraduate level CI 317 Minimum Grade of D and Undergraduate level CI 323 Minimum Grade of D
  - 416 - 3 **Infant & Toddler Development & Education** - Study of current theories, knowledge, and practice concerning the growth and development of infants and toddlers. Prerequisite: None
  - 421 - 3 **Child Family and Community Relationships** - Parent involvement strategies: insight from community agency personnel pertaining to goals of early childhood and elementary programs. Prerequisite: Undergraduate level CI 301 Minimum Grade of D or Undergraduate level CI 410 Minimum Grade of D
  - 422 - 3 **Health and Nutrition for the Young Child** - Nutrition principles related to development of the young child, including food service selection and integration of nutrition concepts into early childhood curriculum. Prerequisite: Undergraduate level CI 301 Minimum Grade of D and Undergraduate level CI 410 Minimum Grade of D
  - 424 - 3 **Literacy Strategies K-3** - Literacy instructional strategies to meet the needs of diverse learners in K through grade three. Application of theory and pedagogy during field placement. Prerequisite: None
  - 433A - 3 **Selected Topics in CI: Curriculum** - Selected topics: Curriculum. Each segment carries 3 credit hours and each segment may be repeated for up to a maximum of 9 hours. Requires consent of instructor. Prerequisite: None
  - 433B - 3 **Selected Topics in CI: Language Arts** - Selected topics: Language arts. Each segment carries 3 credit hours and each segment may be repeated for up to a maximum of 9 hours. Requires consent of instructor. Prerequisite: None
  - 433C - 3 **Selected Topics in CI: Science** - Selected topics: Science. Each segment carries 3 credit hours and each segment may be repeated for up to a maximum of 9 hours. Requires consent of instructor. Prerequisite: None
  - 433D - 3 **Selected Topics in CI: Reading** - Selected topics: Reading. Each segment carries 3 credit hours and each segment may be repeated for up to a maximum of 9 hours. Requires consent of instructor. Prerequisite: None
  - 433E - 3 **Selected Topics in CI: Social Science** - Selected topics: Social studies. Each segment carries 3 credit hours and each segment may be repeated for up to a maximum of 9 hours. Requires consent of instructor. Prerequisite: None
  - 433F - 3 **Selected Topics in CI: Math** - Selected topics: Mathematics. Each segment carries 3 credit hours and each segment may be repeated to a maximum of 9 hours. Requires consent of instructor. Prerequisite: None
  - 433G - 3 **Selected Topics in CI: Early Childhood** - Selected topics: Early childhood. Each segment carries 3 credit hours and each segment may be repeated for up to a maximum of 9 hours. Requires consent of instructor. Prerequisite: None
  - 433H - 3 **Selected Topics in CI: Elementary Education** - Selected topics: Elementary education. Each segment carries 3 credit hours and each segment may be repeated for up to a maximum of 9 hours. Requires consent of instructor. Prerequisite: None

433I - 3 **Selected Topics in CI: Middle School** - Selected topics: Middle School Education. Each segment carries 3 credit hours and each segment can be repeated to a maximum of 9 hours. Requires consent of Instructor. Prerequisite: None

433J - 3 **Selected Topics in CI: Secondary Education** - Selected topics: Secondary education. Each segment carries 3 credit hours and each segment may be repeated to a maximum of 9 hours. Requires consent of instructor. Prerequisite: None

433K - 3 **Selected Topics in CI: Community College** - Selected topics: Community college. Each segment carries 3 credit hours and each segment may be repeated to a maximum of 9 hours. Requires consent of instructor. Prerequisite: None

433L - 3 **Selected Topics in CI: Adult Education** - Selected topics: Adult education. Each segment carries 3 credit hours and each segment may be repeated to a maximum of 9 hours. Requires consent of instructor. Prerequisite: None

433M - 3 **Selected Topics in CI: Environmental Education** - Selected topics: Environmental education. Each segment carries 3 credit hours and each segment may be repeated to a maximum of 9 hours. Requires consent of instructor. Prerequisite: None

433N - 3 **Selected Topics in CI: Organization & Supervision** - Selected topics: Organization and supervision. Each segment carries 3 credit hours and each segment may be repeated to a maximum of 9 hours. Requires consent of instructor. Prerequisite: None

434 - 3 **Teaching Science and Social Studies in Early Childhood** - Instructional strategies for teaching science and social studies in Pre-K through grade 3. Examination of functions, practices, and problematic issues of science and social studies education. Prerequisite: Undergraduate level CI 317 Minimum Grade of D

440 - 3 **Adolescent Literacy** - Instructional theories, practices, and strategies for literacy across content areas in middle and high school; enhancing interest and motivation; and assessment of students' literacy performance. Prerequisite: None

447 - 3 **Reading for Speech Language Pathologists** - Theories and models of reading as related to instruction; connections between reading and speech difficulties; and ways to help children overcome difficulties. Prerequisite: None

471 - 3 **Teaching in the Multicultural Classroom** - Concepts and strategies for developing positive attitudes; increasing knowledge and selecting appropriate materials for teaching children from culturally diverse backgrounds. Prerequisite: None

490A - 1 to 6 **Independent Readings and Projects in CI: Curriculum** - Independent Readings: Curriculum. Requires consent of Instructor. Prerequisite: None

490B - 1 to 6 **Independent Readings and Projects in CI: Language Arts** - Independent Readings: Language Arts. Requires consent of Instructor. Prerequisite: None

490C - 1 to 6 **Independent Readings and Projects in CI: Science** - Independent Readings: Science. Requires consent of Instructor. Prerequisite: None

490D - 1 to 6 **Independent Readings and Projects in CI: Reading** - Independent Readings: Reading. Requires consent of Instructor. Prerequisite: None

490E - 1 to 6 **Independent Readings and Projects in CI: Social Sciences** - Independent Readings: Social Studies. Requires consent of Instructor. Prerequisite: None

490F - 1 to 6 **Independent Readings and Projects in CI: Mathematics** - Independent Readings: Mathematics. Requires consent of Instructor. Prerequisite: None

490G - 1 to 6 **Independent Readings and Projects in CI: Early Childhood Education** - Independent Readings: Early Childhood Education. Requires consent of Instructor. Prerequisite: None

490H - 1 to 6 **Independent Readings and Projects in CI: Elementary Education** - Independent Readings: Elementary Education. Requires consent of instructor. Prerequisite: None

490I - 1 to 6 **Independent Readings and Projects in CI: Middle School Education** - Independent Readings: Middle School Education. Requires consent of instructor. Prerequisite: None

490J - 1 to 6 **Independent Readings and Projects in CI: Secondary School Education** - Independent Readings: Secondary school education. Requires consent of instructor. Prerequisite: None

490K - 1 to 6 **Independent Readings and Projects in CI: Community College** - Independent Readings: Community College. Requires consent of instructor. Prerequisite: None

490L - 1 to 6 **Independent Readings and Projects in CI: Adult Education** - Independent Readings: Adult Education. Requires consent of Instructor. Prerequisite: None

490M - 1 to 6 **Independent Readings and Projects in CI: Environmental Education** - Independent Readings: Environmental Education. Requires consent of Instructor. Prerequisite: None

490N - 1 to 6 **Independent Readings and Projects in CI: Organization and Supervision** - Independent Readings: Organization & Supervision. Requires consent of Instructor. Prerequisite: None

495 - 1 to 6 **Selected Topics** - Varied content; offered as need exists and as faculty interest and time permit. Requires consent of Instructor. Prerequisite: None

506 - 3 **Classroom Corrective Reading Instruction** - Appraisal of reading texts; establishment of instructional program and operation of teaching prescription for less severe reading disabilities. Prerequisite: None

508 - 3 **Recent Issues & Trends in Secondary Education** - Popular and professional criticism of American secondary education. Innovations as they affect social organization of the instructional setting. Requires completion of half or more of the work leading to a Master's degree, consent of instructor. Prerequisite: None

510A - 3 **Analysis of Instruction: P-12** - Teaching and relationship between teaching and learning in the area of P-12. Prerequisite: None

510F - 3 **The Analysis of Instruction: Mathematics** - Teaching and relationship between teaching and learning; impact of specific variables of teacher's role planning in the area of mathematics. Prerequisite: None

510O - 3 **Analysis of Instruction: Culturally Relevant Pedagogy** - Teaching and relationship between teaching and learning in the area of Culturally Relevant Pedagogy. Maximum of 3 credits per area of 510 coursework, maximum of 6 credits in 510 coursework overall. Prerequisite: None

511 - 3 **Differentiated Instruction** - Principles and practices of differentiated curriculum, instruction, and assessment to address the needs and interests of all learners, including the integration of technology. Prerequisite: None

512 - 3 **Issues & Trends in Assessment** - Examination of the multi-faceted role of assessment, issues surrounding assessment practices, including the complexity of evaluating student learning in diverse classrooms. Prerequisite: None

513 - 3 **Literature Across the Curriculum** - Incorporating children's and adolescent literature into content area studies. Prerequisite: Graduate level CI 413 Minimum Grade of C

514A - 1 to 3 **Teaching, Learning, and Assessment in K-8 Mathematics: Addition/Subtraction** - (a) Addition/Subtraction; (b) Multiplication/Division; (c) Fractions, Decimals, Percents; (d) Algebraic Reasoning; (e) Geometry; (f) Measurement; (g) Data Analysis, Probability, Statistics. Max of 3 credits per segment, 9 credits overall. Prerequisite: None

514B - 1 to 3 **Teaching, Learning, and Assessment in K-8 Mathematics: Multiplication and Division** - (a) Addition/Subtraction; (b) Multiplication/Division; (c) Fractions, Decimals, Percents; (d) Algebraic Reasoning; (e) Geometry; (f) Measurement; (g) Data Analysis, Probability, Statistics. Max of 3 credits per segment, 9 credits overall. Prerequisite: None

514C - 1 to 3 **Teaching, Learning, and Assessment in K-8 Mathematics: Fractions, Decimals, Percents** - (a) Addition/Subtraction; (b) Multiplication/Division; (c) Fractions, Decimals, Percents; (d) Algebraic Reasoning; (e) Geometry; (f) Measurement; (g) Data Analysis, Probability, Statistics. Max of 3 credits per segment, 9 credits overall. Prerequisite: None

514D - 1 to 3 **Teaching, Learning, and Assessment in K-8 Mathematics: Algebraic Reasoning** - (a) Addition/Subtraction; (b) Multiplication/Division; (c) Fractions, Decimals, Percents; (d) Algebraic Reasoning; (e) Geometry; (f) Measurement; (g) Data Analysis, Probability, Statistics. Max of 3 credits per segment, 9 credits overall. Prerequisite: None

514E - 1 to 3 **Teaching, Learning, and Assessment in K-8 Mathematics: Geometry** - (a) Addition/Subtraction; (b) Multiplication/Division; (c) Fractions, Decimals, Percents; (d) Algebraic Reasoning; (e) Geometry; (f) Measurement; (g) Data Analysis, Probability, Statistics. Max of 3 credits per segment, 9 credits overall. Prerequisite: None

514F - 1 to 3 **Teaching, Learning, and Assessment in K-8 Mathematics: Measurement** - (a) Addition/Subtraction; (b) Multiplication/Division; (c) Fractions, Decimals, Percents; (d) Algebraic Reasoning; (e) Geometry; (f) Measurement; (g) Data Analysis, Probability, Statistics. Max of 3 credits per segment, 9 credits overall. Prerequisite: None

514G - 1 to 3 **Teaching, Learning, and Assessment in K-8 Mathematics: Data Analysis, Probability, Statistics** - (a) Addition/Subtraction; (b) Multiplication/Division; (c) Fractions, Decimals, Percents; (d) Algebraic Reasoning; (e) Geometry; (f) Measurement; (g) Data Analysis, Probability, Statistics. Max of 3 credits per segment, 9 credits overall. Prerequisite: None

515A - 3 **Issues & Trends in Elementary Math: Computers & Mathematical Learning** - Significant issues and current trends which affect methodology and subject matter with a focus on computer based technologies and how they impact mathematical learning. Prerequisite: None

515B - 3 **Issues & Trends in Elementary Math: Curriculum Development** - Issues & Trends in Elementary Math: Curriculum development. Prerequisite: None

515C - 3 **Issues & Trends in Elementary Math: Problem Solving** - Issues & Trends in Elementary Math: Problem solving. Prerequisite: None

515D - 3 **Issues & Trends in Elementary Math: International Approaches to Mathematics Education** - Issues & Trends in Elementary Math: International approaches to mathematics education. Prerequisite: None

515E - 3 **Issues & Trends in Elementary Math: Research on Children's Mathematical Thinking** - Issues & Trends in Elementary Math: Research on children's mathematical thinking. Up to 3 segments may be taken to a maximum course total of 9 hours. Segments may not be repeated. Prerequisite: Undergraduate level CI 415 Minimum Grade of C or Undergraduate level CIED 441 Minimum Grade of C

518 - 1 to 3 **Supervision of Student Teacher** - Expectations and responsibilities of teachers who supervise student teachers and other clinical experience students. Emphasis given to using clinical supervision model. Prerequisite: None

519 - 3 **An Adventure of the American Mind** - Methods and materials designed for use with pre-service and in-service teachers utilizing primary sources and integrating technology. Requires consent of instructor. Prerequisite: None

519B - 3 **Teaching with Primary Sources** - In-depth study on research and practice of using primary sources and Library of Congress digital collections to enhance K-12 instruction. Prerequisite: Graduate level CI 519 Minimum Grade of C

520 - 3 **Theoretical Foundations in Literacy** - Provides a foundation in literacy education including historical and theoretical perspectives as they pertain to reading, writing, listening, and speaking. Prerequisite: None

521 - 3 **Emergent & Primary Level Literacy** - Advanced application of theory and practice for teaching emergent and primary literacy including assessments, methods, strategies, literature, and materials for diverse and English language learners. Prerequisite: None

522 - 3 **Word Study: Strategies for Phonics, Structural Analysis, Spelling and Vocabulary** - Stages of word knowledge development, including phonemic awareness, phonics, structural analysis, spelling, vocabulary. Effective instruction to understand, read and write words. Prerequisite: None

523 - 3 **Restorative Practice: Working with Students in PK-12** - Explores the fundamental principles, philosophy, theories, practices, models and skills of restorative practices. Special emphasis will be placed on proactive and responsive circles, restorative conferencing and the informal application of these processes. This is for PK-12 educators. Prerequisite: None

525 - 3 **Upper Elementary and Middle Level Literacy** - Advanced application of theory and practice for teaching upper elementary/middle level literacy including assessments, methods, strategies, literature, and materials for diverse and English language learners. Prerequisite: None

526 - 3 **Adult Literacy** - Application of literacy theory and pedagogy to adults seeking to further language arts skills by understanding language, learning language arts, and developing adult literacy curriculum. Prerequisite: None

530 - 3 **Child Development: Classrooms, Families, and Communities** - Extends prior knowledge of child development and curriculum to enhance skills in creating appropriate learning environments and effective teaching strategies for young children and families. Prerequisite: Graduate level CI 410 Minimum Grade of C

532 - 1 to 3 **Readings in Early Childhood Education** - Independent reading; acquaintance with literature and research; conference periods. May be repeated for up to a maximum of 6 hours. Prerequisite: Graduate level CI 410 Minimum Grade of C

536 - 3 **Advanced Early Childhood Studies: Historical Perspectives and Current Issues and Practices** - Explores the history, philosophy, and current trends, issues, and practices that guide the work of early childhood professionals. Prerequisite: None

537 - 3 **Early Childhood Curriculum** - Theory, design, organization, interpretation, and evaluation of early childhood curriculum. Prerequisite: None

538 - 3 **Advanced Assessment Strategies for Early Childhood Classrooms** - Prepares reflective, collaborative early educators who integrate theory and practice while making informed decisions related to assessment within the teaching-learning process. Requires admission to graduate program or consent of instructor. Prerequisite: None

539 - 3 **Poverty in Schools: Working with At-Risk Students (PK-12)** - In this course the nature, causes, and effects of poverty, and how to identify the individual challenges students face as well as their strengths and inner resources to increase individualized support, will be taught. The goals of this course is to have enrolled students have a toolbox of effective strategies for helping students of lower socioeconomic status succeed in the classroom and beyond. Prerequisite: None

540 - 3 **Disciplinary Literacy** - Advanced application of theory and practice for teaching disciplinary literacy including assessments, methods, strategies, literature, and materials for diverse learners including English language learners. Prerequisite: None

541 - 3 **Issues & Trends in Elementary School: Science** - Significant issues and current trends which affect methodology and subject matter. Requires consent of instructor. Prerequisite: None

544 - 3 **Issues & Trends in Elementary School: Social Studies** - Significant issues and current trends which affect methodology and subject matter. Prerequisite: None

545 - 3 **Issues & Trends in Elementary School: Language Arts** - Significant issues and current trends which affect methodology and subject matter. Prerequisite: None

546 - 3 **Environmental Education** - Content and methods of teaching environmental education; and integration of environmental problems into each academic discipline. Prerequisite: None

548A - 3 **Action Research: P-12** - Action research methodology, ethics of research, project planning, and academic research and writing in the area of P-12. Three credit hours per area of 548 coursework, max of 6 credit hours of all 548 coursework. Prerequisite: None

548F - 3 **Study of Classroom Instruction: Mathematics** - Course in action research methodology as applied to classroom instruction; ethics of classroom research; project planning; and academic research and writing in the area of Mathematics. Prerequisite: None

556 - 3 **Classroom Learning Environments** - Theories of human development, learning, motivation, group processes, and culturally relevant pedagogy in relation to the development of productive classroom learning environments for diverse students. Prerequisite: None

557 - 12 **Teaching in Middle/Secondary Schools: Block I** - Curriculum, pedagogy, assessment, classroom learning environments, educational psychology, special education, literacy in content areas, integration of technology, and foundations of education for middle/secondary schools. Requires consent of program director. Prerequisite: None

558 - 12 **Teaching in Middle/Secondary Schools: Block II** - Curriculum, pedagogy, assessment, classroom learning environments, educational psychology, special education, literacy in content areas, integration of technology, and foundations of education for middle/secondary schools. Includes participation in middle/secondary schools. Prerequisite: Graduate level CI 557 Minimum Grade of C

559 - 12 **Teaching in Middle/Secondary Schools: Block III** - Curriculum, pedagogy, assessment, classroom learning environments, educational psychology, special education, literacy in content areas, integration of technology, and foundations of education for middle/secondary. Includes a semester of student teaching. Prerequisite: Graduate level CI 557 Minimum Grade of C and Graduate level CI 558 Minimum Grade of C

561 - 3 **The Elementary School Curriculum** - Reorganization, construction, and administration of elementary school curriculum; installation, adaptation, and administration of revised curriculum. Prerequisite: None

562 - 3 **The Secondary School Curriculum** - Modern curriculum patterns; group processes in curriculum construction; creative project approach to course design in one's major instructional field. Prerequisite: None

563A - 3 **Curriculum Models: Curriculum** - Curriculum Models: Curriculum theories and their associated strategic models; alternative concepts underlying curriculum development; and practical problems of curriculum planning in the area of Curriculum. Prerequisite: None

563C - 3 **Curriculum Models: Science** - Curriculum Models: Curriculum theories and their associated strategic models; alternative concepts underlying curriculum development; and practical problems of curriculum planning in the area of Science. Prerequisite: None

563E - 3 **Curriculum Models: Social Studies** - Curriculum Models: Curriculum theories and their associated strategic models; alternative concepts underlying curriculum development; and practical problems of curriculum planning in the area of Social Studies. Prerequisite: None

563F - 3 **Curriculum Models: Mathematics** - Curriculum Models: Curriculum theories and their associated strategic models; alternative concepts underlying curriculum development; and practical problems of curriculum planning in the area of Mathematics. Prerequisite: None

563G - 3 **Curriculum Models: Early Childhood Education** - Curriculum Models: Curriculum theories and their associated strategic models; alternative concepts underlying curriculum development; and practical problems of curriculum planning in the area of Early Childhood Education. Prerequisite: None

563I - 3 **Curriculum Models: Middle School Education** - Curriculum Models: Curriculum theories and their associated strategic models; alternative concepts underlying curriculum development; and practical problems of curriculum planning in the area of Middle School Education. Prerequisite: None

564A - 3 **NBPTS Certification Support** - This is the first course of a two course sequence offered specifically for teachers seeking the National Board for Professional Teaching Standards certification. Students must be applying for NBPTS certification. Prerequisite: None

564B - 3 **NBPTS Certification Support** - This is the second course in a two course sequence offered specifically for teachers seeking the National Board for Professional Teaching Standards certification. Prerequisite: Graduate level CI 564A Minimum Grade of C

565 - 4 **Beginning Teachers Self Assessment** - Course fulfills the 'course for self-assessment' option for beginning teachers seeking to move from initial to standard teaching certificate. Prerequisites: initial teaching certificate and three years or less teaching experience.

566 - 3 **Approaches to Values Education** - Development of professional competencies in helping others with values growth. Study of theory and practice of methodology of alternative approaches. Prerequisite: None

567 - 3 **Curriculum Design** - Examine relationships between curriculum and instruction, including the design and delivery of curriculum to improve instructional processes and student learning. Prerequisite: None

568 - 1 to 3 **Seminar on Current Issues in Curriculum and Instruction** - Examination of current issues in curriculum and/or instruction. May be repeated to a maximum of 9 hours provided no topic is repeated. Prerequisite: None

570 - 3 **Teaching and Learning in the 21st Century** - Explores curricular and instructional shifts needed in 21st century education, including essential skills and literacies, learning environments, instructional and assessment practices. Prerequisite: None

571 - 3 **Literacy Diagnostics: Assessment and Instruction** - Administration and analysis of formal and informal assessments of cognitive, academic, and literacy development to plan instruction. Writing of diagnostic reports. Requires students to pass the Illinois Content Area Reading Specialist Test (176) or consent of instructor. Prerequisite: Graduate level CI 520 Minimum Grade of C and Graduate level CI 521 Minimum Grade of C and Graduate level CI 525 Minimum Grade of C and Graduate level CI 540 Minimum Grade of C

572 - 3 **Diagnostics Literacy Practicum: Elementary Level** - Supervised clinical practicum for planning and implementing diagnostic lessons linking assessment analysis with appropriate practices to enhance the literacy development of elementary level students. Prerequisite: Graduate level CI 571 Minimum Grade of C

573 - 3 **Diagnostic Literacy Practicum: Middle & Secondary Level** - Supervised clinical practicum for planning and implementing diagnostic lessons linking assessment analysis with appropriate practices to enhance the literacy development of middle/secondary level students. Prerequisite: Graduate level CI 571 Minimum Grade of C

575A - 1 to 3 **Individual Research: Curriculum** - Individual Research: Curriculum. May be repeated for a maximum of 3 hours if no topic is repeated. Prerequisite: None

575B - 1 to 3 **Individual Research: Language Arts** - Individual Research: Language Arts. May be repeated for a maximum of 3 hours if no topic is repeated. Prerequisite: None

575C - 1 to 3 **Individual Research: Science** - Individual Research: Science. May be repeated for a maximum of 3 hours if no topic is repeated. Prerequisite: None

575D - 1 to 3 **Individual Research: Reading** - Individual Research: Reading. May be repeated for a maximum of 3 hours if no topic is repeated. Prerequisite: None

575E - 1 to 3 **Individual Research: Social Studies** - Individual Research: Social Studies. May be repeated for a maximum of 3 hours if no topic is repeated. Prerequisite: None

575F - 1 to 3 **Individual Research: Mathematics** - Individual Research: Mathematics. May be repeated for a maximum of 3 hours if no topic is repeated. Prerequisite: None

575G - 1 to 3 **Individual Research: Early Childhood Education** - Individual Research: Early Childhood Education. May be repeated for a maximum of 3 hours if no topic is repeated. Prerequisite: None

575H - 1 to 3 **Individual Research: Elementary Education** - Individual Research: Elementary Education. May be repeated for a maximum of 3 hours if no topic is repeated. Prerequisite: None

575I - 1 to 3 **Individual Research: Middle School Education** - Individual Research: Middle School Education. May be repeated for a maximum of 3 hours if no topic is repeated. Prerequisite: None

575J - 1 to 3 **Individual Research: Secondary Education** - Individual Research: Secondary Education. May be repeated for a maximum of 3 hours if no topic is repeated. Prerequisite: None

575M - 1 to 3 **Individual Research: Environmental Education** - Individual Research: Environmental education. May be repeated for a maximum of 3 hours if no topic is repeated. Prerequisite: None

578 - 3 **Organization & Administration of Literacy Programs** - Managing literacy instruction for a total school population. Leadership of needs assessment, program planning, curriculum construction, organization, assessment, staff development and program evaluation. Prerequisite: Graduate level CI 571 Minimum Grade of C

580 - 3 **Innovation and Change in Education** - Foundations of change processes, relationships between innovation and change, factors that promote innovation and change, barriers to change. Prerequisite: None

581 - 3 **Foundations of Teacher Leadership** - Examination of the knowledge, skills, and dispostions required of teachers who serve as curriculum and instruction leaders in educational settings. Prerequisite: None

582 - 3 **Becoming a Teacher Leader: Mentor and Coach** - Designed for teachers to build and refine knowledge, skills, and dispositions to support teacher development through instructional coaching in content areas. Prerequisite: Graduate level CI 581 Minimum Grade of C

583 - 3 **Leadership in Prof Development** - Examination of the knowledge, skills, and dispositions needed by teacher leaders who plan, implement, and evaluate professional development experiences in content areas. Prerequisite: Graduate level CI 581 Minimum Grade of C

588 - 0 **Curriculum and Instruction Graduate Co-op** - Education-related work in a school, educational center, or other business or agency under the supervision of a field supervisor. Minimum cumulative GPA of 3.0.

591 - 3 **Issues & Trends in Literacy Instruction** - Current issues and trends in instructional approaches, materials, methodologies, assessment techniques, leadership roles and the impact of political policy on literacy instruction. Prerequisite: Graduate level CI 571 Minimum Grade of C

596A - 1 to 3 **Field Study In Curriculum and Instruction: P-12** - Identify problem, survey pertinent literature, collect and analyze data, draw appropriate conclusions in P-12. Max of 6 credit hours of 596 coursework. Prerequisite: None

596B - 1 to 3 **Field Study in Curriculum and Instruction: English Language Arts** - Identify problem, survey pertinent literature, collect and analyze data, draw appropriate conclusions in English Language Arts. Max of 6 credit hours of 596 coursework. Prerequisite: None

596C - 3 to 7 **Field Study In Early Childhood, Elementary, and Secondary Education: Science** - Selecting the problem; surveying pertinent literature; recording results; and making appropriate summaries and generalizations in the area of Science. May be repeated to a maximum of 7 hours. Prerequisite: None

596D - 1 to 3 **Field Study in Curriculum and Instruction: Literacy** - Identify problem, survey pertinent literature, collect and analyze data, draw appropriate conclusions in Literacy. Max of 6 credit hours of 596 coursework. Prerequisite: None

596F - 3 to 7 **Field Study In Early Childhood, Elementary, and Secondary Education: Mathematics** - Selecting the problem; surveying pertinent literature; recording results; and making appropriate summaries and generalizations in the area of Mathematics. May be repeated to a maximum of 7 hours. Prerequisite: None

596G - 3 to 7 **Field Study In Early Childhood, Elementary, and Secondary Education: Early Childhood Education** - Selecting the problem; surveying pertinent literature; recording results; and making appropriate summaries and generalizations in the area of Early Childhood Education. May be repeated to a maximum of 7 hours. Prerequisite: None

596H - 3 to 7 **Field Study In Early Childhood, Elementary, and Secondary Education: Elementary Education** - Selecting the problem; surveying pertinent literature; recording results; and making appropriate summaries and generalizations in the area of Elementary Education. May be repeated to a maximum of 7 hours. Prerequisite: None

596J - 3 to 7 **Field Study In Early Childhood, Elementary, and Secondary Education: Secondary Education** - Selecting the problem; surveying pertinent literature; recording results; and making appropriate summaries and generalizations in the area of Secondary Education. May be repeated to a maximum of 7 hours. Prerequisite: None

596O - 1 to 3 **Field Study in Curriculum and Instruction: Foreign Language** - Identify problem, survey pertinent literature, collect and analyze data, draw appropriate conclusions in Foreign Languages. Max of 6 credit hours of 596 coursework. Prerequisite: None

596P - 1 to 3 **Field Study in Curriculum and Instruction: Culturally Relevant Pedagogy** - Identify problem, survey pertinent literature, collect and analyze data, draw appropriate conclusions in Culturally Relevant Pedagogy. Max of 6 credit hours of 596 coursework. Prerequisite: None

598 - 0 to 3 **Curriculum and Instruction Graduate Internship** - Education-related work in a school, educational center, or other business or agency under the supervision of a field supervisor. Maximum of 3 hours. Prerequisites: Consent of Instructor.

599 - 1 to 6 **Thesis** - May be repeated for a maximum of 6 hours. Prerequisite: None

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- Economics (ECON)
  - 411 - 3 **Health Economics** - Understanding the economics of health outcomes and in the choice and provision of healthcare. Emphasis on healthcare service and insurance market effectiveness, regulation of these markets, and international comparison of healthcare systems. Prerequisite: Undergraduate level ECON 301 Minimum Grade of C
  - 415 - 3 **Econometrics** - Empirical research methodology and ethics. Hypothesis testing and predicting with OLS regression. Estimation with violations of classical assumptions. Multicollinearity problems; dummy variables; and model specification. Will not count toward MA or MS in Economics and Finance. Prerequisite: Undergraduate level ECON 315 Minimum Grade of C
  - 417 - 3 **Business Forecasting** - Survey of methods to forecast economic and financial conditions and markets for individual products, sectors, or regions. Time series, indicator, judgmental, econometric and Box-Jenkins techniques. Satisfies research requirement for business programs. Will not count toward MA or MS in Economics and Finance. Prerequisite: Undergraduate level ECON 315 Minimum Grade of C
  - 428 - 3 **Applied Microeconomics** - This course applies microeconomic theory to business decision making. Focus is on applications/cases; and understanding how to apply economic tools to variety of business problems. Prerequisite: Undergraduate level ECON 301 Minimum Grade of C
  - 435 - 3 **Competition and Public Policy** - Economic implications of alternative market structures. Investigation of impact of concentration, economies of scale, advertising, and conglomerates on business and society. Prerequisite: Undergraduate level ECON 301 Minimum Grade of D
  - 439 - 3 **Economics of Sports** - Economic analysis applied to issues concerning major professional team sports such as free agency, salary caps, competitive balance, stadium contracts, and franchise relocation. Will not count toward MA or MS in Economics and Finance. Prerequisite: Undergraduate level ECON 111 Minimum Grade of C and Undergraduate level ECON 112 Minimum Grade of C and Undergraduate level MS 250 Minimum Grade of C and Undergraduate level MS 251 Minimum Grade of C
  - 445 - 3 **Economics of the Public Sector: State and Local** - Public expenditure and taxation; intergovernmental fiscal relations; budgeting; grants; and public choice. Prerequisite: Undergraduate level ECON 111 Minimum Grade of D and Undergraduate level ECON 112 Minimum Grade of D
  - 461 - 3 **International Trade Theory and Policy** - Theory of causes and composition of trade; comparative advantage; tariff and non-tariff barriers to trade; economic integration; and commercial policy. Prerequisite: Undergraduate level ECON 301 Minimum Grade of D or Graduate level ECON 518 Minimum Grade of C
  - 490 - 1 to 6 **Independent Study in Economics** - Investigation of topic areas. Individual or small group readings under supervision of faculty member. Requires consent of department chair or program director. Will not count toward MA or MS in Economics and Finance. Prerequisite: None
  - 500A - 1 to 3 **Foundations of Economic Education** - Economic concepts and methodology, and comparison of economic systems. For practicing teachers and graduate students in education or social sciences. Will be counted toward the MA or MS in Economics and Finance. Prerequisite: None
  - 500B - 1 to 3 **Economic Education: Applications and Illustrations** - Analysis of selected national economic issues. Emphasis on teaching and applying basic economic concepts and methodology. For teachers and education or social science graduate students. May be repeated to a maximum of 12 hours provided no topic is repeated. Will be counted toward the MA or MS in Economics and Finance. To a maximum of 12 hours provided no topic is repeated. Will not be counted toward the MA or MS in Economics and Finance. Prerequisite: Graduate level ECON 500A Minimum Grade of C
  - 501 - 3 **Advanced Microeconomic Theory** - Theories of consumer behavior; theories of the firm; welfare economics; and public choice. Prerequisite: Undergraduate level ECON 301 Minimum Grade of D
  - 502 - 3 **Advanced Macroeconomic Theory** - Alternative theories of income, output, and price determination. Domestic and international constraints on macroeconomic policy. Review of relevant empirical research. Prerequisite: Undergraduate level ECON 301 Minimum Grade of D and Undergraduate level ECON 302 Minimum Grade of D and Undergraduate level ECON 415 Minimum Grade of D
  - 515 - 3 **Empirical Research Methods in Economics and Finance** - Stochastic processes and simulation; optimization; estimation methodologies for maximum likelihood, and pooled cross-section time series; simultaneous equations, discrete-limited dependent variable models; and generalized method of moments. Requires admission to Economics and Finance graduate program. Prerequisite: None
  - 517 - 3 **Time-Series Analysis** - Modeling time-series behavior of financial and economic variables to offer practical insights and solutions for particular problems faced by firms, governments and central banks. Prerequisite: Graduate level ECON 515 Minimum Grade of C or Graduate level FIN 515 Minimum Grade of C
  - 528 - 3 **Managerial Economics** - Economic analysis of managerial decisions, business strategy, government policy, and regulation affecting business organizations. Prerequisite: Graduate level MBA 521 Minimum Grade of C
  - 531 - 3 **Labor Economics** - Economic principles associated with employment relationships; wage theory; labor market; employment and unemployment; and economic effect of collective bargaining. Prerequisite: Graduate level ECON 501 Minimum Grade of C
  - 532 - 3 **Health Economics and Policy** - Adapts economic skill and tools to the health care sector. Material includes behavior; costs; insurance; utilization; and economic assessment of public policy issues. Prerequisite: Graduate level ECON 528 Minimum Grade of B
  - 535 - 3 **Economics of Regulations and Antitrust Policy** - Prerequisite: Graduate level ECON 501 Minimum Grade of C
  - 537 - 3 **Behavioral Economics** - Theoretical and empirical study of behavioral aspects of economics. Behavioral aspects of firms, households, governments and international economic agents in alternative market structures; and welfare theory. Prerequisite: Graduate level ECON 501 Minimum Grade of C
  - 543 - 3 **Monetary and Fiscal Policy** - Foundations of monetary and fiscal policy; domestic and international aspects of policy actions; evaluation of policies to influence economic activity and growth; and business cycle analysis. Prerequisite: ECON 502 or consent of instructor; ECON 515 or FIN 515 strongly recommended.
  - 545 - 3 **Economic and Regulatory Environment of E-Business** - Developments in Public Finance Theory. Application of intermediate micro- and macroeconomic theory to issues in government finance and public policy analysis. Prerequisite: ECON 501 and ECON 502 with minimum grade of C or better (concurrent enrollment allowed in ECON 501).
  - 561 - 3 **International Economics and Finance** - Recent advances in theory and empirical analysis of international trade and finance. Forward and spot exchange markets; arbitrage; and speculation. Prerequisite: ECON 501, 502, and FIN 502; or consent of instructor.

563 - 3 **Theory and Policy of Economic Development and Growth** - Recent advances in theory and empirical analysis of economic development and growth. Application of theories and quantitative methods to economic analysis; and policy formulation. Prerequisite: Graduate level ECON 501 Minimum Grade of C and Graduate level ECON 502 Minimum Grade of C

581 - 3 to 6 **Seminar on Selected Economic Topics** - Directed study and analysis of theoretical and policy problems current to frontiers of economic analysis. May be repeated once provided no topic is repeated. Requires consent of instructor. Prerequisite: None

593 - 1 to 6 **Economic Readings: Independent Study and Research** - Economic Topics of current interest. Study program planned in consultation with an economics instructor. Requires consent of department chair or program director. Prerequisite: Graduate level ECON 501 Minimum Grade of C and Graduate level ECON 502 Minimum Grade of C

599 - 1 to 6 **Thesis** - May be repeated to a maximum of 6 hours. Requires consent of department chair or program director. Prerequisite: None

- Educ Psych, Found, & Research (EPFR)
  - 415 - 3 **The Middle School Learner** - Addresses characteristics of young adolescent learners and implications for instruction. Course meets Illinois requirements for middle school endorsement, and is designed for pre-service and in-service teachers. Prerequisites: 315, 320, 321 or graduate standing.
  - 451 - 3 **Gender and Education** - Policies and practices related to sex-role stereotyping; teacher expectations and gender; curricular bias; discrimination; personnel policies; and strategies for change. Same as WMST451 Prerequisite: None
  - 500 - 1 to 3 **Professional Development in Education: Topics Will Vary** - Designed for professional development is education. Topics may vary. Programs may limit the number of credits transferable to a graduate program. May be repeated. Prerequisite: None
  - 501 - 3 **Research Methods** - Analysis of educational research methods. Focus on conceptual, methodological and practical issues addressing both quantitative and qualitative methodologies as related to current educational issues. Knowledge of statistics helpful, but not required. Prerequisite: None
  - 502 - 3 **Qualitative Inquiry in Education** - Qualitative research methods and action research for answering educational questions. Also includes selected quantitative concepts including correlation and test score interpretation. Prerequisite: None
  - 503 - 3 **Research Methods in Higher Education** - Research methods in higher education, with a focus on conceptual, methodological, and practical issues in quantitative and qualitative research. Prerequisite: None
  - 504 - 3 **Seminar On Multicultural Education** - Cultures and subcultures. Role educational institutions and agencies play to either support or depreciate human values and behaviors. Requires consent of instructor. Prerequisite: None
  - 506 - 3 **Assessment and Evaluation in Student Affairs** - Assessment and program evaluation in college student affairs. Prerequisite: None
  - 510 - 3 **The School and the Urban Community** - Crises and conflicts in education in urban areas. Social stratification which has accompanied development of massive urban areas and schools. Requires consent of instructor. Prerequisite: None
  - 514 - 3 **College Student Learning and Development** - Overview of college student development theories, practices, and problems, with a focus on application. Prerequisite: None
  - 515 - 3 **Issues in Learning Theory** - Educational implications arising from major theoretical perspectives on learning. Courses will take an in-depth look at selected topics in the field. Prerequisite: Undergraduate level EPFR 315 Minimum Grade of D or Undergraduate level EDUC 305 Minimum Grade of D
  - 516 - 3 **Individual and Group Dynamics** - Advisement of college students; the design, implementation, and evaluation of developmentally appropriate strategies for individuals and groups. Prerequisite: None
  - 520 - 3 **Analysis of Educational Issues: Philosophical-Historical Foundations** - Selected educational problems and issues. Philosophic-historic perspective. Requires Graduate standing. Prerequisite: None
  - 521 - 3 **Analysis of Educational Issues: Socio-Cultural Foundations** - Selected educational problems and issues. Socio-cultural perspectives. Prerequisite: None
  - 522 - 3 **Diversity in Higher Education** - Equity issues in higher education Prerequisite: None
  - 525 - 3 **Comparative Education** - Cross-cultural analysis of educational dynamics and systems in their social and historical contexts. Emphasis on comparative methodology. Prerequisite: None
  - 563 - 3 **Selected Topics in Foundations of Education** - Contemporary educational issues or problems from perspectives grounded in social theory or political and social philosophy. May be repeated to a maximum of 6 hours if topic is not repeated. Requires Graduate standing. Prerequisite: None
  - 575A - 3 **Individual Research: Philosophy of Education** - Individual Research: Research under supervision of grad faculty member in Philosophy of education. Maximum credit accumulation for any combination of 575A-E is 6 hours. Topics studied may not be repeated. Requires consent of instructor and adviser. Prerequisite: None
  - 575B - 3 **Individual Research: History of Education** - Individual Research: Research under supervision of graduate faculty member in History of education. Maximum credit accumulation for any combination of 575A-E is 6 hours. Topics studied may not be repeated. Requires consent of adviser and instructor. Prerequisite: None
  - 575C - 3 **Individual Research: Intercultural Comparative Education** - Individual Research: Research under supervision of graduate faculty member in Intercultural-comparative education. Maximum credit accumulation for any combination of 575A-E is 6 hours. Topics studied may not be repeated. Requires consent of instructor and adviser. Prerequisite: None
  - 575D - 3 **Individual Research: Sociology of Education** - Individual Research: Research under supervision of graduate faculty member in Sociology of education. Maximum credit accumulation for any combination of 575A-E is 6 hours. Topics studied may not be repeated. Requires consent of instructor and adviser. Prerequisite: None
  - 575E - 3 **Individual Research: Education and Politics** - Individual Research: Research under supervision of graduate faculty member in Education and politics. Maximum credit accumulation for any combination of 575A-E is 6 hours. Topics may not be repeated. Requires consent of advisor. Prerequisite: None
  - 601 - 3 **Quantitative Inquiry** - Quantitative methods for educational issues, including descriptive statistics, visualizing data, making inferences, and exploring relationships in categorical and continuous data. Prerequisite: Graduate level EDAD 555 Minimum Grade of C and Graduate level EDAD 563 Minimum Grade of C and Graduate level EDAD 565 Minimum Grade of C and Graduate level EDAD 570 Minimum Grade of C and Graduate level EDAD 580 Minimum Grade of C and Graduate level EDAD 585 Minimum Grade of C and Graduate level EDAD 591 Minimum Grade of C
  - 605 - 3 **Qualitative Inquiry** - Formulation of research questions derived from P-12 school contexts, employing qualitative data collection and analysis methods in order to find the proper fit between theories, data, and practice. Prerequisite: Graduate level EDAD 555 Minimum Grade of C and Graduate level EDAD 563 Minimum Grade of C and Graduate level EDAD 565 Minimum Grade of C and Graduate level EDAD 570 Minimum Grade of C and Graduate level EDAD 580 Minimum Grade of C and Graduate level EDAD 585 Minimum Grade of C and Graduate level EDAD 591 Minimum Grade of C
- Education (EDUC)
  - 600A - 3 **Seminar in Instructional Process: Learning & Development** - Seminar in Instructional Process: Learning & Development. Core seminar required of all Ed.D. students. Must be taken in sequence with 600B and 600C. Requires admission to Ed.D. program Prerequisite: None
  - 600B - 3 **Seminar in Instructional Process: Curriculum & Instruction** - Seminar in Instructional Process: Curriculum & Instruction. Core seminar required of all Ed.D. students. Must be taken in sequence with 600A & 600C. Requires admission to Ed.D. program Prerequisite: None
  - 600C - 3 **Seminar in Instructional Process: Organization & Leadership** - Seminar in Instructional Process: Organization & Leadership. Core seminar required of all Ed.D. students. Must be taken in sequence with 600A and 600B. Requires admission to Ed.D. program Prerequisite: None

605 - 3 **Perspectives of Educational History in U.S.** - Divergent views, including traditional historical narrative; revisionist interpretations; and contra-revisionist criticism. Requires admission to Ed.D. program and EDFD 505 or equivalent Prerequisite: None

606 - 3 **Classical Liberal Ideology: The Doctrine of Equal Opportunity & Educational Policy** - Contribution of classical liberal ideology to current conceptions of equal opportunity; examination of that conception; and implications for educational and social policy. Requires admission to Ed.D. program and EDFD 506 or equivalent Prerequisite: None

611 - 3 **Instruction as Social Exchange** - Instruction defined as management and teaching. Major concerns of social control, cognitive discourse and teaching functions. Requires admission to Ed.D. program Prerequisite: None

612 - 3 **Nonverbal Behavior in The Instructional Process** - Non-verbal environment. Instructor and learner variables and their interactive effects. Theoretical and applied orientations. Requires admission to Ed.D. Prerequisite: None

619 - 3 **Educational Statistics and Experimental Design** - Conceptual and procedural skills for design and statistical analysis of data for educational research and evaluation; statistical concepts relative to realistic problem applications. Prerequisites: Course in statistics and/or research design, and admission to Ed.D. program

620 - 3 **Advanced Education Evaluation & Research** - Comparative analysis of evaluation models; instructional objectives and evaluation; measurement problems in evaluation; evaluation designs; sampling; strategies; analyzing evaluation data; and reporting evaluation results. Prerequisites: 619 or equivalent, and admission to Ed.D. program

630 - 3 **Cognitive Science and Educational Practice** - Contributions of psychology, linguistics, philosophy, anthropology, neuro-psychology, and artificial intelligence research examined. Emphasis on implications for education. Requires admission to Ed.D. program or consent of instructor Prerequisite: None

675 - 1 to 6 **Independent Study** - Conducted in accordance with specific agreement with doctoral advisory committee. May be repeated to a maximum of 6 hours. Requires admission to Ed.D. program Prerequisite: None

680A - 1 to 3 **Advanced Seminar: Teaching Behavior** - Advanced Seminar: Teaching behaviors. Varied content. Topics pertain to principal areas of study within instructional process areas of emphasis: May be repeated to a maximum of 6 hours so long as topic is not repeated. Requires admission to Ed.D. program Prerequisite: None

680B - 1 to 3 **Advanced Seminar: Learning and Development** - Advanced Seminar: Learning and Development. Varied content. Topics pertain to principal areas of study within instructional process areas of emphasis. May be repeated to a maximum of 6 hours so long as topic is not repeated. Requires admission to Ed.D. program Prerequisite: None

680C - 1 to 3 **Advanced Seminar: Curriculum** - Advanced Seminar: Curriculum. Varied content. Topics pertain to principal areas of study within instructional process areas of emphasis. May be repeated to a maximum of 6 hours so long as topic is not repeated. Requires admission to Ed.D. program. Prerequisite: None

697 - 1 **Seminar** - Taken during residence. Taken for one hour at a time for three semesters. Structured seminars held during the day. Requires admission to candidacy, residence request approved. Prerequisite: None

698 - 1 to 6 **Doctoral Internship** - One semester full-time assignment in educational agency in which intern carries out specified intern responsibilities contributing to educational functions of agency. Interns attend seminar during internship to facilitate integration of field experience with academic component. This course is available for letter grade only per graduate school. Requires admission to candidacy, consent of advisor Prerequisite: None

699 - 0 to 9 **Dissertation** - Ed.D candidates must complete and approved dissertation for 21 hours of credit. The dissertation is not confined to the conventional research paradigm. Requires admission to candidacy and consent of instructor Prerequisite: None

- Education Administration (EDAD)
  - 500 - 3 **Introduction to School Leadership** - Preparation of professional portfolio and participation in seminars on leadership and school improvement. Prerequisite for program admission.

    504 - 3 **History, Philosophy, and Organization of Higher Education** - Key developments in the role and function of higher education in the U.S., with emphasis on student affairs practice. Prerequisite: None

    505 - 3 **Communication and Human Relations** - Skills and practices needed by school administrators in working with various constituencies in school environment. Emphasis on communication, listening, assertion, conflict resolution, collaborative decision-making, team-building, and reaching consensus. Prerequisite: Graduate level EDAD 500 Minimum Grade of C

    510 - 3 **School Finance** - Structure and financing of public education. Federal, state, and local fiscal policies and principles. Fiscal analysis and management. Lab included. Prerequisite: Graduate level EDAD 500 Minimum Grade of C

    520 - 3 **School Law** - Analysis of state and federal statutes and case law, emphasizing needs of English language learners and students with disabilities. Prerequisite: Graduate level EDAD 500 Minimum Grade of C

    524 - 3 **Legal and Ethical Issues in Student Affairs** - Legal status of students; legal and ethical issues surrounding admissions, financial aid, student records, discipline, and support services. Prerequisite: None

    525 - 3 **Educational Supervision** - Research and theory related to the supervisory role of the administrator. Emphasis on diagnosing educational problems; formative supervision to promote academic achievement and providing supervision; and evaluation and staff development for school staff. Prerequisites 500, 505.

    525A - 3 **Instructional Leadership and Supervision:Theory and Research** - Research and theory related to instructional leadership. Emphasis on hiring, evaluation, and professional development of teachers. Prerequisites: EDAD 500 and program admission.

    525B - 3 **Instructional Leadership and Supervision: Field Experience** - This is a field-based internship. Prerequisite: Graduate level EDAD 500 Minimum Grade of C and Graduate level EDAD 525A Minimum Grade of C

    530 - 3 **Educational Planning and Evaluation** - Developing organizational mission, objectives and attainment strategies. Principles of educational program evaluation and total management. Prerequisite: 500

    530A - 3 **Data Driven School Improvement and Accountability:Theory and Research** - Principles and procedures of educational program evaluation. Data-driven school improvement processes. Prerequisite: Graduate level EDAD 500 Minimum Grade of C and Graduate level EPFR 501 Minimum Grade of C

    530B - 3 **Data Driven School Improvement and Accountability:Field Experience** - This is a field-based internship. Prerequisite: EDAD 500, EDAD 530A and EPFR 501 with minimum grade of C (concurrent enrollment allowed in EDAD 530A).

    535 - 3 **Program Development** - Specialized program analysis and development for primary, intermediate, middle and high school. Emphasis on curricular requirements, innovations, and instructional strategies from an administrative perspective. Prerequisites: 500, 505, 525.

    535A - 3 **Curriculum Leadership: Theory and Research** - Prerequisite: Graduate level EDAD 500 Minimum Grade of C

    535B - 3 **Curriculum Leadership: Field Experience** - This is a field-based internship. Prerequisite: EDAD 500 and EDAD 535A with minimum grade of C (concurrent enrollment allowed in EDAD 535A).

    540 - 3 or 6 **Leadership & Practice: Facilitating a Vision of Learning** - Conducted in professional development school to develop competence in the development, articulation, implementation and stewardship of a shared vision of learning that is supported by the school community. Requires admission to bridge program or consent of adviser. Three hour option for certification students only. Prerequisite: None

    541 - 3 or 6 **Leadership Process & Practicum: Public Policy & Change** - Conducted in professional development school to develop competence in understanding past and present policies that govern schools and how to effectively influence and change policy and practice. Requires admission to bridge program or consent of adviser. Three hour option for certification students only. Prerequisite: None

542 - 3 or 6 **Leadership Process & Practice: School Management** - Conducted in professional development school to develop competence in management of the organization; operations; and resources for a safe, efficient, and effective learning environment. Requires admission to bridge program or consent of adviser. Prerequisite: None

543 - 3 or 6 **Leadership Process & Practice: School Culture & Instructional Program** - Conducted in professional development school to develop competence in advocating, nurturing, and sustaining a school culture and instructional program conducive to student learning and staff professional growth. Requires admission to bridge program or consent of adviser. Three hour option for certification students only. Prerequisite: None

544 - 3 or 6 **Leadership Process & Practice: Collaboration & Instructional Improvement** - Conducted in professional development school to develop competence in collaboration; responding to diverse community interests and needs; and acting with integrity, fairness and in an ethical manner. Requires admission to bridge program or consent of adviser. Three hour option for certification students only. Prerequisite: None

545 - 3 **The Principalship** - Theory and research related to leadership role of building principal. Emphasis on effective schools research, participatory leadership, teacher empowerment, planned change, and school culture. Prerequisites: 500, 505, 510, 520, 530, & 535

545A - 3 **The Principalship:Theory and Research** - Theory and research related to leadership role of building principal. Prerequisite: Graduate level EDAD 500 Minimum Grade of C

545B - 3 **The Principalship:Field Experience** - This is a field-based internship. Prerequisite: EDAD 500 and EDAD 545A with minimum grade of C (concurrent enrollment allowed in EDAD 545A).

550 - 3 **Applied Administrative Processes** - Practical application of teacher leader theory and practice supervised by an approved administrator or teacher and program faculty member. Course must be taken last semester of program. Prerequisite: EDAD 500 and program admission.

554 - 3 to 6 **Practicum** - Field assignment in student affairs offices in higher education settings. Seminar discussions of work experience. Prerequisite: None

555 - 3 **Superintendency, District Administration, and Governance** - Role, responsibilities, and relationships of district superintendent and board of education in the organization, administration, policy development, and governance of a school district. Prerequisite: None

557 - 3 **Ethics in Educational Administration** - Ethical dilemmas in educational administration. Consideration of greater public good and rights of individuals as grounds for ethical reasoning and decision-making. Requires advanced standing Prerequisite: None

563 - 3 **School and Community Relations** - Principle aspects in the development and maintenance of positive relationships and partnerships with staff, parents, and community at large. Social media and crisis communication strategies. Prerequisite: None

564 - 3 **The Community College** - An overview of how various types of two-year postsecondary institutions have evolved and how they function. Prerequisite: None

565 - 3 **Human Resource Administration** - Theories and practices related to public school personnel planning, selection, evaluation, and dismissal. Principles of human motivation and development. Prerequisite: None

567 - 3 **Collective Bargaining in Education** - Labor relations in education; educational labor relations act and Illinois labor relations board; common law and statutory law governing public school labor relations; and negotiating with employee unions. Requires advanced standing Prerequisite: None

570 - 3 **Leadership Theory and Practice** - Nature of leadership and organizational change. Creating and implementing a collective vision through strategic planning and situational decision-making. Prerequisite: None

574 - 3 **Leadership and Administration in Higher Education** - Major leadership theories and their application to higher education, with emphasis on student affairs programs. Prerequisite: None

577 - 3 **Comparative Education Administration, Organization & Control** - Education systems of nations throughout the world. Types of control and countries studied are those which exemplify each type of control. Requires advanced standing Prerequisite: None

580 - 3 **District Program Development** - District-level strategies for program and curriculum development, implementation, and evaluation focused on instructional impovement and student achievement. Prerequisite: None

582 - 3 **Organization & Administration of Middle Schools** - Philosophy, organization and administration of middle schools. Trends and issues related to middle grades education and administration. Requires consent of instructor. Prerequisite: None

583 - 3 **Organization & Administration of Higher Education** - Community college and four-year public university and college systems; governance and programs. Requires advanced standing or consent of advisor. Prerequisite: None

585 - 3 **School District Business Administration** - Theory and practice related to principles of budgeting, accounting, purchasing, leasing and risk management. Examination of transportation, food service, and facility planning and management. Prerequisite: Graduate level EDAD 510 Minimum Grade of C

587 - 3 **School Budgeting & Accounting** - Principles and procedures of school district budgeting and accounting. Lab included. Prerequisite: 585

589 - 3 **School Fiscal Analysis & Forecast** - Conducting analyses of school district receipts and expenditures. Production and use of receipt and expenditure forecasts. Lab included. Prerequisite: 587

590 - 3 **Internship Practicum & Principalship** - Conducted in clinical setting under direction and supervision of school administrator and department faculty member. Comprehensive field experience designed to relate theory to practice. Emphasis on leadership, management, and school improvement. Requires consent of advisor. Prerequisite: None

591 - 3 to 6 **Internship Practicum/ Superintendency** - Conducted in clinical setting under direction and supervision of school administrator and department faculty member. Comprehensive field experience designed to relate theory to practice for those preparing for district-level administration. Emphasis on district-level leadership, management, and school improvement. Requires admission to a program leading to superintendent's certification and consent of advisor. Prerequisite: None

594 - 3 **Final Research Project** - Students will conduct an inquiry-based project related to the field. May be repeated for up to 6 credit hours. Prerequisite: Graduate level EDAD 504 Minimum Grade of C and Graduate level EPFR 514 Minimum Grade of C and Graduate level EPFR 522 Minimum Grade of C and Graduate level EPFR 503 Minimum Grade of C and Graduate level EDAD 524 Minimum Grade of C and Graduate level EDAD 574 Minimum Grade of C and Graduate level EPFR 506 Minimum Grade of C and Graduate level EPFR 516 Minimum Grade of C

595 - 3 to 6 **Field Study** - Required of candidates for specialist's degree. Report reflects special projects, research, or problems investigated during field experience. Requires consent of advisor. Prerequisite: None

597A - 1 to 3 **Individual Research: Curriculum** - Individual Research: Curriculum. Writing of research assignment. May be repeated for a maximum of 6 hours. Requires consent of advisor. Prerequisite: None

597B - 1 to 3 **Individual Research: Supervision** - Individual Research: Supervision. Writing of research assignment. May be repeated to a maximum of 6 hours. Requires consent of advisor. Prerequisite: None

597C - 1 to 3 **Individual Research: Buildings** - Individual Research: Buildings. Writing of research assignment. May be repeated to a maximum of 6 hours. Requires consent of advisor. Prerequisite: None

597D - 1 to 3 **Individual Research: Finance** - Individual Research: Finance. Writing of research assignment. May be repeated to a maximum of 6 hours. Requires consent of advisor. Prerequisite: None

597E - 1 to 3 **Individual Research: School Law** - Individual Research: School Law. Writing of research assignment. May be repeated to a maximum of 6 hours. Requires consent of advisor. Prerequisite: None

597F - 1 to 3 **Individual Research: Administration** - Individual Research: Administration. Writing of research assignment. May be repeated to a maximum of 6 hours. Requires consent of advisor. Prerequisite: None

597G - 1 to 3 **Individual Research: Elementary Education** - Individual Research: Elementary Education. Writing of research assignment. May be repeated to a maximum of 6 hours. Requires consent of advisor. Prerequisite: None

597H - 1 to 3 **Individual Research: School Business Management** - Individual Research: School Business Management. Writing of research assignment. May be repeated to a maximum of 6 hours. Requires consent of advisor. Prerequisite: None

597I - 1 to 3 **Individual Research: Managerial Accounting** - Individual Research: Managerial Accounting. Writing of research assignment. May be repeated to a maximum of 6 hours. Requires consent of advisor. Prerequisite: None

598 - 3 **Selected Topics in Education Administration** - Current trends and issues related to educational research and practice having immediate implications for practitioners. Majors may count no more than 6 hours toward their degree. No topic may be repeated. Requires consent of advisor. Prerequisite: None

599 - 3 to 6 **Thesis** - Minimum of 3 and maximum of 6 hours to be counted toward master's degree. May be repeated to a maximum of 6 hours. Requires consent of instructor Prerequisite: None

600 - 3 **Professional Seminar in Doctoral Study** - An in depth analysis of issues facing school superintendents. Prerequisite: Graduate level EDAD 555 Minimum Grade of C and Graduate level EDAD 563 Minimum Grade of C and Graduate level EDAD 565 Minimum Grade of C and Graduate level EDAD 570 Minimum Grade of C and Graduate level EDAD 580 Minimum Grade of C and Graduate level EDAD 585 Minimum Grade of C and Graduate level EDAD 591 Minimum Grade of C

620 - 3 **Advanced School Law** - Legal aspects of public education in P-12 school systems, focusing upon district level issues. Prerequisite: Graduate level EDAD 555 Minimum Grade of C and Graduate level EDAD 563 Minimum Grade of C and Graduate level EDAD 565 Minimum Grade of C and Graduate level EDAD 570 Minimum Grade of C and Graduate level EDAD 580 Minimum Grade of C and Graduate level EDAD 585 Minimum Grade of C and Graduate level EDAD 591 Minimum Grade of C

660 - 3 **Politics & Policy-Making in Ed** - Political forces that shape public education in the United States. Prerequisite: Graduate level EDAD 555 Minimum Grade of C and Graduate level EDAD 563 Minimum Grade of C and Graduate level EDAD 565 Minimum Grade of C and Graduate level EDAD 570 Minimum Grade of C and Graduate level EDAD 580 Minimum Grade of C and Graduate level EDAD 585 Minimum Grade of C and Graduate level EDAD 591 Minimum Grade of C

690 - 3 **Research Topics in Educational Administration** - Students develop a proposal for a doctoral research project, including a literature review and detailed description of research methodology. Successful completion of Ed.D. qualifying exam. Prerequisite: None

698 - 3 **Doctoral Research** - Doctoral research project on educational issue; includes contextual analysis, data analysis, program recommendations, implementation, conclusions, appendix, references; must be repeated for a maximum of 6 hours. Prerequisite: Graduate level EDAD 690 Minimum Grade of C

- Education Foundations (EDFD)
  - 506A - 0 **Analysis of Education Issues: Philosophical & Historical Perspective** - Selected educational problems and issues. (A) philosophic-historic perspective. (B) socio- cultural perspectives. Either A or B must be taken in MS in education program. Requires Graduate standing Prerequisite: None
  - 508 - 0 **History of Education in the United States** - Theory and practice of formal education since 17th century in perspective of contemporary issues. Prerequisite: None
  - 510 - 0 **The School and the Urban Community** - Crises and conflicts in education in urban areas; and social stratification which has accompanied development of massive urban areas and schools. Requires consent of instructor Prerequisite: None
  - 531 - 0 **Early Childhood Education: An International Perspective** - Comparison of structure and implementation of early childhood education in the United States and other countries focusing on factors effecting similarities and differences. Requires completion of CI 420 or consent of instructor. Same as CI 531 Prerequisite: None
  - 563 - 0 **Selected Topics in Education Foundations** - Contemporary educational issues or problems from perspectives grounded in social theory or political and social philosophy. May be repeated to a maximum of 6 hours providing no topic is repeated. Requires Graduate standing Prerequisite: None
  - 575A - 0 **Individual Research: Philosophy of Education** - Research under supervision of graduate faculty member in (A) philosophy of education; (B) history of education; (C) intercultural-comparative education; (D) sociology of education; (E) education and politics. Maximum credit accumulation for any combination of 575 A-E is 6 hours. Topics studied may not be repeated. Prerequisites: Consent of instructor and advisor
- Electrical & Comp. Engineering (ECE)
  - 426 - 3 **High Frequency Design** - High frequency circuit design with elements of RF engineering. Amplifiers, oscillators, modulators, impedance matching, switching, signal integrity, and tuning. Student must be a declared major in an engineering discipline. Prerequisite: Undergraduate level ECE 326 Minimum Grade of C
  - 427 - 3 **Knowledge-Based Systems** - Engineering-oriented perspective on artificial intelligence (AI) technology. General AI concepts specifically knowledge-based (expert) systems applied to engineering problem-solving. Student must be a declared major in electrical and computer engineering, and have knowledge of one of the familiar computer programming languages (BASIC, C, Fortran or Pascal). Prerequisite: None
  - 428 - 3 **Analog Filter Design** - Active and passive filter synthesis. Standard low-pass approximations: Butterworth, Chebyshev, Inverse Chebyshev, Cauer, Bessel and frequency transformations. Active and passive circuit implementations. Student must be a declared major in an engineering discipline. Prerequisite: Undergraduate level ECE 351 Minimum Grade of C and Undergraduate level ECE 326 Minimum Grade of C
  - 429 - 3 **Bioinstrumentation** - Design and use of biosignal sensors, bioamplifiers, and filters for measuring physiological data; emphasizes origins and characteristics of nerve and heart signals; includes cell analysis and dialysis machine design. ECE 327 with a C or better; or graduate standing in Engineering.
  - 433 - 3 **Fuzzy Logic and Applications** - Fundamentals of fuzzy sets, basic operations, fuzzy arithmetic, and fuzzy systems. Examples of applications in various fields of engineering and science. Student must be a declared major in an engineering discipline Prerequisite: None
  - 436 - 3 **Digital Signal Processing** - Discrete-time signals and systems; sampling; z-transforms; discrete Fourier transform; difference equations; design and implementation of digital filters; and DSP development systems. Student must be a declared major in an engineering discipline. Prerequisite: Undergraduate level ECE 351 Minimum Grade of C
  - 437 - 3 **Medical Imaging Systems** - Basic signals and systems, imaging principles, and image quality measures for X-ray radiography, X-ray computed tomography, ultrasound, and magnetic resonance imaging. Prerequisite: Undergraduate level ECE 351 Minimum Grade of C
  - 438 - 3 **Image Analysis and Computer Vision** - Image formation, geometrical and topological properties of binary images; image filtering; boundary detection; image segmentation; and pattern recognition. Two hours lecture and one laboratory session per week. Student must be a declared major in an engineering discipline. Prerequisite: Undergraduate level ECE 351 Minimum Grade of C
  - 439 - 3 **Digital Image Processing** - Fundamentals of human perception; sampling and quantization; image transforms; enhancement; and restoration and coding. Two hours lecture and one laboratory session per week. Student must be a declared major in an engineering discipline. Prerequisite: Undergraduate level ECE 351 Minimum Grade of C
  - 441 - 3 **Finite Element Analysis and Design of Electrical Machines** - Practical design of electrical machines based on finite element analysis. ECE 341 or equivalent courses with C or better or admission to graduate ENGE program.
  - 444 - 3 **Power Electronics** - Basics of DC/DC and DC/AC conversion, inductors, transformers, switching characteristics of semiconductor devices, elements of electromagnetic compatibility. ECE 326 with C or better or admission to graduate Engineering Program.
  - 445 - 3 **Power Distribution System** - Distribution system planning; load characteristics; application of distribution transformers; design of distribution system; voltage-drop and power-loss calculations; voltage regulation; and protection and reliability. Student must be a declared major in an engineering discipline. Prerequisite: Undergraduate level ECE 341 Minimum Grade of C

446 - 3 **Power System Analysis** - Synchronous machines; power transformers; transmission lines; system modeling; load-flow study; economic operation of power systems; symmetrical components; symmetrical and unsymmetrical faults; and power system stability. Student must be a declared major in an engineering discipline. Prerequisite: Undergraduate level ECE 341 Minimum Grade of C

447 - 3 **Radar Systems** - Introduction to radar systems, including antenna fundamentals, radar equation, radar signals and systems, CW radar, FM-CW Radar, pulse radar, and tracking radar. Student must be a declared major in an engineering discipline. Prerequisite: Undergraduate level ECE 340 Minimum Grade of C and Undergraduate level ECE 351 Minimum Grade of C

455 - 3 **System Modeling & Optimization** - Mathematical modeling of engineering systems; dynamic response of electrical and mechanical systems; and optimization models in electrical engineering. Student must be a declared major in an engineering discipline. Prerequisite: Undergraduate level ECE 351 Minimum Grade of C

465 - 3 **Control Systems Design** - Root-locus analysis; frequency-response analysis; design and compensation technique; describing-function analysis of nonlinear control systems; and analysis and design by state-space methods. Student must be a declared major in an engineering discipline. Prerequisite: Undergraduate level ECE 365 Minimum Grade of C

466 - 3 **Digital Control** - Topics include finite difference equations; Z-transforms and state variable representation; analysis and synthesis of linear sampled-data control systems using classical and modern control theory. Same as ME 466. Student must be a declared major in an engineering discipline. Prerequisite: Undergraduate level ME 450 Minimum Grade of C or Undergraduate level ECE 365 Minimum Grade of C

467 - 3 **Robotics-Dynamics and Control** - (Same as ME 454 and MRE 454) Robotics; robot kinematics and inverse kinematics; trajectory planning; differential motion and virtual work principle; and dynamics and control. Student must be a declared major in an engineering discipline and obtain the consent of the instructor. Prerequisite: None

475 - 3 **Communication Systems** - Digital transmission through band-limited channels; optimum receiver principles; symbol synchronization; channel capacity and coding; Bandpass digital modulation; and case studies of communication systems. Student must be a declared major in an engineering discipline. Prerequisite: Undergraduate level ECE 375 Minimum Grade of C

476 - 3 **Electronic Circuits II** - Small signal analysis, transistor amplifier design, frequency response, feedback system analysis, output stage design, signal generation and waveform shaping circuits. Three hour lecture and one hour laboratory session per week. Prerequisite: Undergraduate level ECE 326 Minimum Grade of C

477 - 3 **Network Engineering** - Principles and practices of network engineering with particular emphasis on the physical, data-link, and network layers as applied to telecommunication and computing systems. Prerequisite: Undergraduate level ECE 282 Minimum Grade of C

482 - 0 to 3 **Microprocessor System** - Design of microprocessor systems using VLSI building blocks. Several microprocessors and peripheral ICS studied laboratory experiments with microprocessor systems using logic analyzers. Three hours lecture and one laboratory session per week. Student must be a declared major in an engineering discipline. Prerequisite: Undergraduate level ECE 282 Minimum Grade of C

483 - 0 to 3 **Advanced Digital Systems Engineering** - Design of digital systems using a hardware description language, and logic synthesis tools. Three hours lecture and one laboratory session per week. Prerequisite: Undergraduate level ECE 282 Minimum Grade of C

484 - 3 **Digital VLSI Design** - Discussion of CMOS circuits, MOS transistor theory, CMOS processing technology, circuit characterization, and CMOS Circuit and Logic Design. Student must be a declared major in an engineering discipline. Prerequisite: Undergraduate level ECE 326 Minimum Grade of C

485 - 3 **Embedded Power Electronics Controllers** - Practical approach to programming dedicated microprocessor systems, communication links, sensor signal conditioning, gate driver, inner and outer control loops, power startup, and user interface. Prerequisite: Undergraduate level ECE 282 Minimum Grade of C

491 - 1 to 4 **Independent Study** - Individual investigation of a topic in electrical engineering to be agreed upon with the instructor. May be repeated to a maximum of 6 hours provided no topic is repeated. Requires consent of instructor. Prerequisite: None

492 - 2 to 6 **Topics in Electrical and Computer Engineering** - Selected topics of special interest. Course schedule will include name of topic. May be repeated to a maximum of 6 hours so long as no topic is repeated. Requires consent of instructor. Prerequisite: None

510 - 3 **Engineering Research Methods** - Engineering research methods; experimental design; statistical analysis of experimental results, presentation of results; and research tools and technical writing. Prerequisite: None

532 - 3 **Applications of Digital Signal Processing** - Parametric signal modeling with direct and indirect methods; classical and modern spectral estimation; multi-rate processing of discrete signals; adaptive signal processing; and VLSI signal processor applications. Prerequisite: Undergraduate level ECE 436 Minimum Grade of C and Undergraduate level ECE 352 Minimum Grade of C

535 - 3 **Advanced Image Compression Methods and Algorithms** - Advanced algorithms and methods in image compression; transform coding, wavelet/vector quantization, JPEG, JPEG2000, differential predictive coding, fractal coding, applications. Group projects. Prerequisite: Undergraduate level ECE 439 Minimum Grade of C or Graduate level ECE 439 Minimum Grade of C

538 - 3 **Image Analysis and Computer Vision II** - Applications of pattern recognition, image analysis, and multi-spectral computer vision. Group projects. Prerequisite: Undergraduate level ECE 438 Minimum Grade of C

539 - 3 **Digital Image Processing II** - Topics of current interest in image processing. Applications of image analysis, image restoration, image enhancement. Group projects. Prerequisite: Undergraduate level ECE 439 Minimum Grade of C

541 - 3 **Advanced Electric Machines and Drives** - Advanced analysis of modern electrical machines and adjustable speed drives. Prerequisite: Undergraduate level ECE 341 Minimum Grade of C

545 - 3 **Generator Control and Protection** - Synchronous generator basics including construction and theory of operation. Types of excitation systems and control architectures. Supplemental controls. Power system stability and introduction to generator protection. Prerequisite: Undergraduate level ECE 341 Minimum Grade of C

552 - 3 **Advanced Stochastic Processes** - Intensive review of random variable concepts, emphasizing moments, characteristic functions, and large number and convergence concepts. Spectral analysis, Kalman filtering and renewal processes. Prerequisite: Undergraduate level ECE 352 Minimum Grade of C

562 - 3 **Modern Control** - Analysis and design of control systems; state-variable description; controllability, observability, non-linearities and perturbation theory; and stability, state feedback design, robust control. Prerequisite: Undergraduate level ECE 465 Minimum Grade of D or Undergraduate level ME 450 Minimum Grade of D

563 - 3 **Optimal Control** - Description of system and evaluation of its performance and dynamic programming; calculus of variations and Pontryagin's minimum principle; and iterative numerical techniques. Same as ME 563, MATH 563 Prerequisite: Undergraduate level ME 450 Minimum Grade of C or Undergraduate level ECE 365 Minimum Grade of C

570 - 3 **Communication Theory** - Circuit and packet switching; local-area networks; network performance; performance of light-wave; analog and digital communication systems; detection theory; information theory; and error coding. Prerequisite: Undergraduate level ECE 375 Minimum Grade of C

572 - 3 **Wireless Communications** - Code-division multiple-access systems, spread-spectrum communications, wireless signal propagation, cellular communication systems, and network capacity and control. Prerequisite: Graduate level ECE 570 Minimum Grade of C

574 - 3 **Digital Communications** - Fundamental blocks in digital communication systems, and channel capacity; and source and channel coding. Detection and estimation. Robust quantization for PCM. Coding speech at low bit rates. Digital modulation techniques. Prerequisite: Undergraduate level ECE 475 Minimum Grade of C

575 - 3 **Detection and Estimation** - Bayes decision strategy, simple composite hypothesis, Gaussian problem, orthogonal random processes, detection in Gaussian noise, and linear estimation using Weiner and Calman-Bucy filters. Prerequisite: Undergraduate level ECE 475 Minimum Grade of C or Graduate level ECE 552

Minimum Grade of C

577 - 3 **Advanced Network Engineering** - The principles and practice of network engineering are applied to real systems in a wide variety of environments with emphasis on network technology integration issues. Prerequisite: Undergraduate level ECE 477 Minimum Grade of C or Undergraduate level CS 447 Minimum Grade of C

580 - 3 **Digital Technology and Electronic Communication** - Discussion of digital circuit technologies, evolution of microprocessors, information superhighway, and wireless communications. Introduction to workstation technology, UNIX, X-windows, and networking principles. Prerequisite: None

581 - 3 **High Performance Architectures I** - Advanced computer architectures, memory-system design, and parallel processing mechanisms. Design issues and various example machines. Evaluation of performance increases dependency on algorithms. Prerequisite: Undergraduate level ECE 483 Minimum Grade of C

582 - 3 **High Performance Architectures II** - Parallel processing architectures with emphasis on identifying common underlying structure of applications and architectures. Prerequisite: Undergraduate level ECE 483 Minimum Grade of C

584 - 3 **Analog CMOS Integrated Circuit Design** - Operating principles of CMOS analog integrated circuits, physics of MOS devices, linearized models of MOSFETS, and circuit design techniques for realizing CMOS operational amplifiers. Prerequisite: Undergraduate level ECE 327 Minimum Grade of C and Undergraduate level ECE 484 Minimum Grade of C

585 - 3 **Mixed-Signal Design & Modeling** - Circuit techniques and design issues for mixed-signal integrated circuits; switched-capacitor circuits; digital-to-analog and analog-to-digital converters; and an introduction to modeling using VerilogA. Prerequisite: Undergraduate level ECE 327 Minimum Grade of D and Undergraduate level ECE 483 Minimum Grade of D and Undergraduate level ECE 484 Minimum Grade of D

591 - 1 to 6 **Independent Study** - Individual investigation of a topic in electrical engineering to be agreed upon with instructor. May be repeated for a maximum of 6 hours provided that no topic is repeated. Prerequisite: None

592 - 3 **Topics in Electrical Engineering** - Topic of special interest; course schedule will define the topic. May be repeated to a maximum of 12 hours provided no topic is repeated. Prerequisite: None

595 - 3 **Master's Project** - Design and development of a graduate-level final project in electrical engineering. Requires consent of instructor. Prerequisite: None

599 - 1 to 6 **Thesis** - Independent research in electrical engineering. May be repeated to a maximum of 6 hours. Requires consent of instructor. Prerequisite: None

- Engineering (ENGR)
  - 580 - 1 **Graduate Seminar** - Study and oral presentation of selected problems in advanced engineering and science. Prerequisite: Enrollment in the Engineering Science Cooperative Ph.D. program.
  - 590 - 1 to 3 **Special Investigations in Engineering Science** - Investigation of Individual advanced projects and problems selected by student or instructor. Prerequisite: enrollment in the Engineering Science Cooperative Ph.D. program and consent of instructor.
  - 699 - 1 to 24 **Doctoral Dissertation** - Dissertation Research. Hours and credit to be arranged by Director of Graduate Studies. Graded S/U only. Prerequisite: None
- English Language & Literature (ENG)
  - 400 - 3 **Principles of Linguistics** - Principles and techniques of linguistic analysis illustrated through survey of major structural components of language. Recommended for anthropology students, linguistics students, and those preparing to teach English. Prerequisite: None
  - 403 - 3 **History of the English Language** - Historical survey of major phonological and grammatical changes in English language from its Indo-European antecedents to the present. Prerequisite: None
  - 404 - 3 **Chaucer: Canterbury Tales** - The Canterbury Tales read in Middle English. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C
  - 405 - 3 **Pragmatics** - Study of principles controlling how implicit levels of meaning are expressed in language and how context influences the interpretation of meaning. Prerequisite: None
  - 406 - 3 **Old English Language** - Sounds, grammar, and vocabulary of the Old English language, including readings in Old English poetry and prose. Prerequisite: None
  - 408 - 3 **Phonological Analysis** - Principles of linguistic analysis and interpretation as applied to sound systems of language. Prerequisite: None
  - 409 - 3 **Syntactic Analysis** - Principles of syntactic analysis and interpretation as applied to clause and sentence level structures. Prerequisite: None
  - 410 - 3 **Rhetoric, Writing, and Citizenship** - Examination of rhetoric's role in US citizenship both past and present. Students will write analytical and persuasive documents. Service learning project required. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C
  - 412 - 3 **Digital Literacies** - Students will investigate digital literacy - electronic technologies, discursive practices, and cyberspaces. Analysis and assessment of digital artifacts, cultures, and texts. Complete all Foundations Requirements: Foundation Writing 1, Foundation Writing 2, Foundation Speech Communication, Foundation Reasoning and Argumentation, and Foundation Quantitative Reasoning courses.
  - 416 - 3 **Language and Society** - Study of relationships between language, society, and culture, and their implications for education and intercultural communication. Topics include language variation, socialization, and ethnography of communication. Prerequisite: None
  - 417 - 3 **Language and Ethnicity** - The course will introduce students to linguistic thought through definitions of ethnicity, case studies of diverse language communities, ethnic crossing via language, and inter-ethnic communication. Prerequisite: None
  - 420 - 3 **Topics in Film Studies** - Variable topics course focusing on the history and aesthetic development of one or two film genres, styles or historical periods. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C
  - 443 - 3 **Prosody** - Students will both study and write metrical poetry. All aspects of versification will be considered. For both literature majors and creative writing minors. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C
  - 444 - 3 **Creative Nonfiction** - Writing practice in and examination of a wide variety of modes and subjects comprising the genre of creative nonfiction, i.e. memoir, personal essay, lyric essay. Workshop format. Prerequisite: Undergraduate level ENG 290 Minimum Grade of D
  - 445 - 3 **Young Adult Literature** - Historical survey of and contemporary perspectives on young adult literature. Students will analyze interactions between literary texts and the cultures in which they are read. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C
  - 446 - 3 **Studies in African American Literature** - This course will examine the fiction, poetry, short stories, and essays of African American writers within the context of scholarship and criticism dedicated to the study of black Diasporic cultures. May be repeated up to 6 hours. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C
  - 457 - 3 **Topics in Postcolonial Literature and Criticism** - Examination of postcolonial texts-novels, plays, poem, memoirs, speeches, and critical essays-with focus on scholarship and theory in postcolonial studies. May be repeated to a maximum of 6 hours provided no topic is repeated. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C
  - 463 - 3 **Topics in Literary Periods** - Reading and analysis of works drawn from one or more specific literary periods; authors and periods vary. May be repeated to a maximum of 9 hours as long as no topic is repeated. Junior standing or consent of instructor. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C
  - 464 - 3 **Topics in Forms and Genres** - Reading and analysis of works drawn from one or more specific literary forms and genres; authors, forms, and genres vary. May be repeated to a maximum of 9 hours as long as no topic is repeated. Junior standing or consent of instructor. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C
  - 465 - 3 **Special Topics** - Special topics in literature, linguistics, rhetoric and composition, and creative writing. May be repeated once for a maximum of six hours provided no topic is repeated. Prerequisite: ENG 102 with a C or better; junior standing or consent of instructor.
  - 468 - 3 **Second Language Acquisition** - Examination of issues and theories applicable to understanding process of second language development. Prerequisite: None

470 - 3 **Methods & Materials For P-12 English as a Second Languageand Bilingual Teaching** - Examination of techniques and materials for teaching dual-language and English Learners in P-12 settings. Prerequisite: None

471 - 3 **Shakespeare** - The in-depth study of the works of Renaissance author William Shakespeare. Topic varies; may be repeated to a maximum of 6 hours so long as topic is not repeated. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C

472 - 3 **Assessment and Testing in English as a Second Language** - Examination of issues and methods for assessing oral and written proficiency in English as a Second Language. Prerequisite: None

473 - 3 **Milton** - Paradise Lost and other works such as Samson Agonistes, Paradise Regained, Lycidas, Comus, and selected prose. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C

474 - 3 **Bilingualism and Bilingual Education** - An introduction to cognitive, linguistic, and social perspectives on bilingualism; and the history and politics of bilingual education in the U.S. Prerequisite: None

475 - 3 **Methods of Teaching Secondary English Language Arts** - Approaches to teaching English Language Arts at the secondary level, including lesson planning for reading, writing, and language instruction; must be seeking secondary ELA licensure. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C

476 - 3 **Practicum in English as a Second Language** - This course is designed for students who need to gain supervised experience teaching English as a second language for the purposes of the state English as a second language enrollment. Prerequisite: Undergraduate level ENG 470 Minimum Grade of D or Undergraduate level ENG 542 Minimum Grade of D

477 - 3 **Morrison** - Reading and analysis of the works of major contemporary American author Toni Morrison. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C

478 - 3 **Studies in Women, Language and Literature** - Relationships among society, gender, language, and literature; ways women are affected by and depicted in language and literature; literature written by women; and feminist criticism. Topic varies; may be repeated to a maximum of 6 hours so long as topic is not repeated. Complete all Foundations Requirements: Foundation Writing 1, Foundation Writing 2, Foundation Speech Communication, Foundation Reasoning and Argumentation, and Foundation Quantitative Reasoning courses.

479 - 3 **Major Authors: Shared Traditions** - Reading and analysis of the works of two to four major authors who share an historical period; authors and topic vary. May be repeated up to a maximum of 6 hours as long as authors and topic are not repeated. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C

480 - 3 **Major Authors: Crossing Boundaries** - Reading and analysis of the works of two to four major authors from different historical periods; authors and topic vary. May be repeated to a maximum of 6 hours as long as no topic is repeated. Junior standing or consent of instructor. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C

482 - 3 **Technology & Literature** - Analysis of digital theory, electronic environments, hypertextual editing, and born-digital literatures. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C

485 - 3 **Writing for Teachers of English** - Composition processes for teachers of English in secondary education; the practice and pedagogy of academic writing. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C

486 - 3 **Teaching Creative Writing** - Seminar on the teaching of creative writing, with an emphasis on poetry and/or fiction. Prerequisite: None

488 - 3 **Rhetoric Politics & the Law** - Rhetorical figures, political texts and speeches, law and policies, from classical origins to today. Analysis of persuasion, reason, style, fallacy, rhetorical situation and context. ENG 102 with a C or better or graduate standing (GM).

489 - 3 **Style and Intentionality** - A writing course on the study of style. The aim: to study stylistic conventions and innovations. The course is both theoretical and practical. Prerequisite: None

490 - 3 **Advanced Composition** - Writing sophisticated expository prose. Review of grammatical matters as needed. Emphasis on clarity, organization, effectiveness, and flexibility. May be repeated once for a max of 6 hours with permission. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C

491 - 3 **Technical and Business Writing** - Technical communication, professional correspondence, reports, proposals, descriptions, and evaluations. Word processing and graphics software. For students in English, business, engineering, nursing, the sciences, and the social sciences. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C

492 - 3 **Advanced Fiction Writing** - Advanced seminar in short story writing. Includes readings in fiction and a study of the psychology of creativity, fiction markets, and experimental fiction. Workshop format. Prerequisite: Undergraduate level ENG 392 Minimum Grade of D

493 - 3 **Advanced Poetry Writing** - Advanced workshop in writing poetry. Examination of poetic expression. Prerequisite: Undergraduate level ENG 393 Minimum Grade of D

494 - 3 **Literary Editing** - Principles of literary editing, primarily of fiction and poetry. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C

496 - 3 **Scholarly and Critical Editing** - Editorial preparation of copy for scholarly and critical journals in English language and literature. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C

499 - 1 to 3 **Readings in English** - Independent study in specific area of interest. Extensive reading. For English students only; may be repeated to a maximum of 6 hours. Requires consent of department chair and instructor. Prerequisite: None

501 - 3 **Modern Literary Studies** - Integrates study of modern literary theory and scholarly editing with instruction in professional research writing and use of electronic data bases. Continues with ENG 502. Prerequisite: None

505 - 3 **Topics in Forms and Genres** - The course will address a range of topics relevant to literary forms and genres. May cross periods and geographies. Prerequisite: None

506 - 3 **Topics in Literary Periods** - This course will focus on a particular literary period and/or relationships between literary periods. Prerequisite: None

508 - 3 **Major Author Studies** - This course will involve the comprehensive study of one author or a select group of authors. Prerequisite: None

521 - 3 **Topics in Lit & Culture** - This course will address relationships between literature and culture that are not period or genre specific. Prerequisite: None

526 - 3 **Studies in African American Texts** - This course examines African American texts, including fiction, poetry, plays, essays, sermons, slave narratives, memoirs, and speeches, with primary focus on pertinent theory, scholarship, and publications in black studies. May be repeated to a maximum of 9 hours, provided no topic is repeated. Prerequisite: None

530 - 3 **Writer in the World** - Introduce students to theories, research methods, and practicum design in service learning while pursuing community-based creative writing opportunities. Prerequisite: None

531 - 3 **Writer in the World Practicum** - Participation in a practicum related to teaching, arts programming, literacy, writing, and/or editing. Supervised by selected faculty member and cooperating site. Prerequisite: Graduate level ENG 530 Minimum Grade of C

532 - 3 **Topics in Creative Writing** - This course will focus on special topics in creative writing. May be repeated to a maximum of 12 hours, provided no topic is repeated. Prerequisite: None

533 - 3 **Advanced Literary Editing** - Study of current trends and issues in literary publishing. Hands-on experience in the editing and production of Sou'wester, SIUE's literary journal. Prerequisite: None

540 - 3 **Seminar in Second Language Acquisition** - Examination of advanced topics in the acquisition of English as a second language, including universal grammar, lexical development, and conversational analysis. Prerequisite: ENG 400 with minimum grade of D or concurrent enrollment.

541 - 3 **Graduate Research Methods** - Students will learn to use strategies, techniques, protocols, and tools to successfully carry out research projects that involve gathering, analyzing, and presenting data. Prerequisite: Undergraduate level ENG 400 Minimum Grade of D

542 - 3 **Methods For Teaching English as a Second Language** - Analysis of models for teaching English as a second language in various educational settings. Includes classroom observation and evaluation. Prerequisite: None

543 - 3 **Grammar Pedagogy** - Study of problem areas in the structure, acquisition, and teaching of English grammar to non-native speakers. Prerequisite: None

544 - 3 **Reading and Writing Pedagogy in Teaching English as a Second Language** - Examination of reading and writing processes in second language acquisition and approaches to teaching them to non-native speakers. Prerequisite: None

545 - 1 to 3 **TESL Practicum** - Guided observation and tutoring in a variety of English as a Second Language (ESL) classrooms, supported by readings and reflection papers. Prerequisite: None

552 - 3 **Academic Writing and Research Methods in Composition Studies** - Research methods in composition studies; practice using electronic data bases; instruction in professional research writing. Required of students in teaching of writing MA specialization. Prerequisite: None

554 - 3 **Composition Pedagogy** - Introduction to teaching writing. Writing-as-process approach: inventive methods, revision techniques, collaborative learning, and workshops. Design and evaluation of assignments. Planning writing courses. Requires consent of instructor. Prerequisite: None

556 - 3 **Theory of Composition and Rhetoric** - Study of theories and historical movements underlying and constituting modern composition pedagogy and rhetorical studies. Prerequisite: None

558 - 3 **Practicum in the Teaching of Writing** - Course focuses on teaching techniques for first-year college writing courses. Working with mentor and supervisory instructors, students will observe, and then teach, a writing course. Prerequisite: Graduate level ENG 554 Minimum Grade of C

570 - 3 **Teaching African American Oral and Written Literature** - Teaching of African American oral and written literatures: emphasis on methodology, comparative presentation styles, and textual analysis; from ancient Africa to contemporary America. Prerequisite: None

572 - 3 **Theory and Practice of Teaching Writing With Computers** - Study of theoretical principles of computer-mediated composition pedagogy and practical applications of specific technologies in the writing classroom. Prerequisite: None

574 - 3 **Basic Writing Theory and Pedagogy** - Focus on theories and practical teaching methods for working in basic and developmental writing courses at the college level. Prerequisite: None

576 - 3 **Writing Across the Curriculum** - History, philosophy, pedagogical techniques, and assessment of writing across the curriculum. Prerequisite: None

578 - 3 **Gender Language and Pedagogy** - Study of recent research into ways gender affects language: speaking, reading, and writing. Prerequisite: None

581 - 3 **Topics in Teaching Writing** - Workshop or seminar in teaching composition, language, literature, creative writing, and related subjects in education. May be repeated to a maximum of 9 hours provided no topic is repeated. Prerequisite: None

583 - 3 **History of Rhetoric I - The Classical Period to the Renaissance** - Major rhetoric figures, texts, and definitions, beginning with Classical origins and continuing into the Renaissance period. Designed for students interested in composition, literature, and criticism. Prerequisite: None

584 - 3 **History of Rhetoric II - The Enlightenment to Today** - Major rhetoric figure, texts, and definitions, beginning with the Enlightenment and continuing into the contemporary period. Designed for students interested in composition, literature, and criticism. Prerequisite: None

587 - 3 **Politics of Composition Pedagogy** - Pedagogical politics of the writing classroom; teacher-student power relations; relations between educational institutions and social order; and development of alternative perspectives in pedagogical politics. Prerequisite: None

592 - 3 **Fiction Writing** - Emphasis on fiction written by students. May be repeated to a maximum of 12 hours provided no topic is repeated. Requires consent of instructor. Prerequisite: None

593 - 3 **Poetry Writing** - Emphasis on poetry written by students. May be repeated to a maximum of 12 hours provided no topic is repeated. Requires consent of instructor. Prerequisite: None

594 - 3 **Creative Non-fiction Writing** - Emphasis on creative non-fiction written by students. May be repeated to a maximum of 12 hours provided no topic is repeated. Requires consent of instructor. Prerequisite: None

595 - 3 **Professional Development Seminar** - Reflection and classroom-research oriented course designed to integrate the theory and practice of TESL via analysis and research of teaching experiences. Prerequisite: None

596 - 3 **Preparatory Reading/ Teaching of Writing** - Reading of relevant research and writing of three essays under supervision of committee. Restricted to MA candidates within one semester of fulfilling requirements for teaching of writing specialization. Prerequisite: None

597 - 1 to 3 **Readings in English Studies** - Individual readings in creative writing, linguistics, literature, Teaching English as a Second Language, or Teaching of Writing. May be repeated once for a maximum of 6 hours. Requires consent of instructor and advisor. Prerequisite: None

598 - 3 to 6 **Preparatory Reading** - MA candidates will prepare comprehensive reading lists and produce either three 20-page papers (3 credit hours max) or a scholarly exit project (6 credit hours max). Prerequisite: None

599 - 3 to 6 **Thesis** - May be repeated to a maximum of 6 hours. Prerequisite: None

- Environmental Sciences (ENSC)
  - 404 - 3 **Regional Environment Planning** - Interrelationships between regions, environments, and planning. Prerequisite: None

411 - 3 **Hydrology** - Hydrologic cycle; major stream systems; and uses of water resources and their relationships to quality and future supplies. Same as GEOG 411 Prerequisite: Undergraduate level GEOG 111 Minimum Grade of D

412 - 3 **Groundwater Hydrology** - Study of groundwater: occurrence; physical and chemical properties; flow and flow system modeling; relation to rock structure and lithology; and contamination of groundwater resources. Prerequisite: Undergraduate level GEOG 310 Minimum Grade of D and Undergraduate level CHEM 113 Minimum Grade of D

426 - 3 **Environmental Geochemistry** - Study of exogenic environment as a geochemical system, natural circulation of water, sediment, carbon, sulfur, nitrogen, and phosphorus; and assessment of human activities on these cycles. Prerequisite: Undergraduate level GEOG 310 Minimum Grade of D and Undergraduate level CHEM 113 Minimum Grade of D

431 - 3 **Environmental Toxicology** - Chemical and biological effects of toxic substances in living organisms at the molecular and biological levels. Topics include: routes of entry, mechanism of action, effects, and antidotes. (Same as CHEM 471) Prerequisite: (Undergraduate level CHEM 120A Minimum Grade of D and Undergraduate level CHEM 120B Minimum Grade of D) or (Undergraduate level CHEM 121A Minimum Grade of D and Undergraduate level CHEM 121B Minimum Grade of D) and Undergraduate level BIOL 150 Minimum Grade of D and Undergraduate level BIOL 151 Minimum Grade of D

434 - 3 **Fundamentals of Aquatic Ecotoxicology** - Biological effects of aquatic pollution from the molecular to the ecosystem level; uptake, metabolism, excretion, food chain transfer, environmental fate and transport of aquatic pollutants. Same as BIOL 434. Prerequisite: (Undergraduate level ENSC 220 Minimum Grade of D and Undergraduate level ENSC 330 Minimum Grade of D) or Undergraduate level BIOL 319 Minimum Grade of D or Undergraduate level BIOL 365 Minimum Grade of D or Undergraduate level CHEM 471 Minimum Grade of D

435 - 3 **Ecological Risk Assessment** - Introduction to science behind environmental policy/regulations. Application of ecology, chemistry, and toxicology to assess present and future pollution risks to populations, communities ecosystems. Prerequisite: Undergraduate level BIOL 365 Minimum Grade of D and Undergraduate level ENSC 431 Minimum Grade of D

436 - 3 **Environmental Epidemiology** - Environmental epidemiology, the study of how environmental factors (e.g., pollution, climate, geography) influence human health. Includes advanced training in data management and analysis using spreadsheets. Prerequisite: Undergraduate level ENSC 220 Minimum Grade of D and Undergraduate level ENSC 330 Minimum Grade of D

445 - 3 **Conservation Biogeography** - Analysis of biogeography principles and conservation problems. Assess changes in biosphere distributions and extinction due to human activity. Evaluates strategies to maintain biodiversity. Field trips. Prerequisite: Undergraduate level GEOG 316 Minimum Grade of D

450 - 3 **Applied Ecology** - Applying ecological concepts and principles for solving, predicting and managing current important ecological problems, such as global climate change, conservation, wetland restoration, and environmental remediation. (Same as BIOL 464) Prerequisite: Undergraduate level BIOL 365 Minimum Grade of C

465 - 4 **Aquatic Ecosystems** - Biogeochemistry and community structure of aquatic systems. Three lectures one three-hour laboratory per week. Prerequisite: Undergraduate level BIOL 151 Minimum Grade of C and Undergraduate level CHEM 121B Minimum Grade of C

466 - 3 **Terrestrial Ecosystems** - Community structure, biogeochemistry and historical development of terrestrial ecosystems. Two lectures, one three-hour laboratory per week. Prerequisite: One semester of botany or consent of instructor.

472 - 4 **Topics in Plant Physiology** - Topics include photosynthesis, mineral nutrition, water as related to plants growth and movement of plants. Two lectures and two laboratories per week. Requires completion of one semester of botany or consent of instructor. Prerequisite: None

473 - 3 **Occupational Health** - Concepts and details regarding occupational health. Requires completion of at least one year of college chemistry. Prerequisite: None

475 - 3 **Chemical Safety Management** - Concepts and details regarding safe use and handling of chemicals as recommended by safety professionals. Requires completion of at least one year of college chemistry. Prerequisite: None

505 - 2 **Environmental Sciences Seminar I** - Student and faculty research on current environmental issues and environmental research methods. Seminar is required to be taken during the first year of the program. Prerequisite: None

506 - 1 **Environmental Sciences Seminar II** - Student's seminar on their thesis or paper topic. Seminar is required to be taken during or just prior to the semester of their thesis or paper defense. Prerequisite: None

510 - 3 **Advanced Environmental Sciences and Policy** - Skills used in environmental sciences and policy; and coupling of science and policy in the discussion of local, regional, and global environmental concerns. Prerequisite: None

511 - 3 **Environmental Policy** - Prevention, control, and remediation of environmental problems through social, political, and legal means. Prerequisite: Undergraduate level ENSC 510 Minimum Grade of D

512 - 3 **Environmental Law** - Principle environmental laws and the judicial interpretation of important environmental statutes that have developed around the protection of various aspects of the environment. Prerequisite: None

516 - 3 **Environmental Impact Analysis** - Implications and applications of the National Environmental Policy Act (NEPA) and related environmental legislation. Methodologies for environmental inventory and environmental impact statement preparation. Requires Graduate standing. Same as BIOL 516 and GEOG 524 Prerequisite: None

520 - 3 **Environmental Sampling** - Sampling techniques for water, air, soil, biota, and vegetation are covered for sampling activities that will provide representative environmental samples for analysis. Prerequisite: None

525 - 3 **Environmental Chemistry** - Emphasizes chemical equilibrium and thermodynamics, acid-base chemistry, dissolved carbon dioxide, coordination chemistry, precipitation and dissolution, oxidation and reduction, and adsorption reactions. Prerequisite: Undergraduate level CHEM 120B Minimum Grade of C or Undergraduate level CHEM 121B Minimum Grade of C or Undergraduate level CHEM 131 Minimum Grade of C

528 - 3 **Analysis of Environmental Contaminants** - Theory and application of procedures used in the separation, detection, identification and quantitation of contaminants in environmental and biological samples. Prerequisite: None

528L - 1 **Analysis of Environmental Contaminants Lab** - Laboratory techniques used in the separation, detection identification, and quantitation of contaminants in environmental and biological samples. Prerequisite: ENSC 528 with minimum grade of C or concurrent enrollment.

531 - 3 **Toxicology** - Chemical and biological effects of toxic substances in living organisms at the molecular and biochemical level. Topics: Routes of entry, mechanism of action, effects, antidotes, etc. Requires completion of organic chemistry, graduate standing, or consent of instructor. Prerequisite: None

532 - 3 **Molecular Toxicology and Pharmacology** - Molecular, biochemical, and cellular mechanisms of toxicity, mode of action, metabolism, and interactions of environmental pollutants, toxic chemicals, and drugs. Same as BIOL 536. Prerequisite: Undergraduate level BIOL 319 Minimum Grade of D or Undergraduate level CHEM 471 Minimum Grade of D or Graduate level ENSC 531 Minimum Grade of C

534 - 3 **Aquatic Ecotoxicology** - Biological effects of aquatic pollution from the molecular to the ecosystem level;uptake, metabolism, excretion, food chain transfer, environmental fate and transport of aquatic pollutants. Same as BIOL 534. Prerequisite: (Undergraduate level ENSC 330 Minimum Grade of D and Undergraduate level ENSC 220 Minimum Grade of D) or Undergraduate level ENSC 531 Minimum Grade of C or Undergraduate level BIOL 319 Minimum Grade of D or Undergraduate level BIOL 365 Minimum Grade of D or Undergraduate level CHEM 471 Minimum Grade of D

535 - 3 **Ecological Risk Assessment** - Application of ecology, chemistry, and toxicology to assess present and future pollution risks to populations, communities, ecosystems. Prerequisites: ENSC 531/CHEM 471; or ENSC/BIOL 330; or BIOL 365; or equivalent; or consent of instructor.

540 - 3 **Pollution Ecology** - The application of biological, ecological, chemical, and physical sciences to understanding the fate and transport of pollutants through ecosystems. Requires one year of college chemistry. Prerequisite: None

545 - 3 **Treatment Wetlands and Phytoremediation** - Development and use of treatment wetlands and phytoremediation technology to clean up contaminated water, soil and sediment. Focus on hydrological, biogeochemical and ecological processes. Requires completion of three semesters of both biology and chemistry or consent of instructor. Prerequisite: None

550 - 3 **Applied Ecology** - Examination of the mechanisms, directions, and magnitude of an organism's or ecosystem's response to human perturbation. Same as BIOL 464 and 564. Prerequisite: None

555 - 3 **Agroecology** - Application of ecological concepts and principles to the design and management of agricultural production; theoretical and conceptual framework for study and analysis of agroecosystems. Requires completion of three semesters of both biology and chemistry or consent of the instructor. Prerequisite: None

556 - 2 **Advanced Applied Ecology** - Techniques in critical analysis and communication in t in the field of applied ecology. Requires consent of instructor. Prerequisite: Undergraduate level ENSC 550 Minimum Grade of D or Undergraduate level BIOL 464 Minimum Grade of D

561 - 4 **Plants and Environment** - Environmental effects on plant growth, reproduction, and distribution. Adaptive responses to environmental stress examined and measured. Three lectures and three laboratory hours per week for six weeks. Course taught only in the summer. Prerequisite: Undergraduate level BIOL 121 Minimum Grade of C

570 - 3 **Environmental Technology and Assessment** - Techniques used to conceptualize, stimulate, and analyze the dynamic nature of environmental systems. Theory and application of environmental modeling. Same as CE 570 Prerequisite: None

573 - 3 **GIS Modeling the Natural Environment** - Modeling of the natural environment using geographic information science and systems as well as environmental and biological field methodologies. Prerequisite: Undergraduate level GEOG 418 Minimum Grade of D

575 - 3 **Statistics For Environmental Sciences** - Characterization of steps, processes and statistical analysis necessary for a well-planned experiment. Theory and application of experimental design. Prerequisite: Statistics through analysis of variance. Same as BIOL 575

580 - 3 **Environmental Education** - Environmental education history, practices, curriculum, organization, evaluation, project development and research required of successful practitioners in the field. Requires consent of instructor. Same as BIOL 567 Prerequisite: None

590 - 1 to 6 **Environmental Internship** - Coordinated activities of students with internships in "program relevant positions," as directed by their internship supervisors and faculty adviser. Requires consent of department chair or program director. Prerequisite: Graduate level ENSC 510 Minimum Grade of C

591 - 1 to 2 **Readings in Environmental Sciences** - Coordinated readings with faculty in the areas of science, politics, law, education, technology, and other environmental areas. May be repeated to a maximum of 2 hours. Requires consent of department chair or program director. Prerequisite: None

593 - 1 to 2 **Research in Environmental Sciences** - Environmental laboratory, field, computer, and library research on an individual basis under the supervision of a faculty member. May be repeated to maximum of 2 hours. Requires consent of program director or instructor. Prerequisite: None

595 - 1 to 3 **Topics in Environmental Sciences** - In-depth examination of components of one specific environmental problem. May be repeated to a maximum of 6 hours provided no topic is repeated Requires Graduate standing. Prerequisite: None

597 - 1 to 3 **Final Research Paper** - Directed research to satisfy non-thesis paper requirement for ms degree. Topic must be approved by graduate degree committee. May be repeated to a maximum of 3 hours. Requires consent of graduate committee chair. Prerequisite: None

599 - 1 to 6 **Thesis** - Directed research to satisfy thesis requirement for ms degree. Topic must be approved by graduate degree committee. May be repeated to a maximum of 6 hours. Requires consent of department chair or program director. Prerequisite: None

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- Finance (FIN)
  - 420 - 3 **Problems in Corporate Finance** - In-depth development of analytical decision models; and basic and advanced corporate financial theory and application to business and industrial settings. Will not count toward MA or MS in Economics and Finance. Prerequisite: Undergraduate level FIN 320 Minimum Grade of C or Undergraduate level ACCT 312 Minimum Grade of C
  - 430 - 3 **Portfolio Analysis** - Modern portfolio theory and asset pricing models; theory and practice of portfolio performance evaluation; structure of equity markets; trading of securities; and mutual funds. Satisfies research requirement for business program and EL designation. Prerequisite: Undergraduate level FIN 320 Minimum Grade of C or Undergraduate level FIN 420 Minimum Grade of C
  - 431 - 3 **Derivative Securities** - Introduction to derivatives; options, forwards, futures and swaps; trading of derivatives and the arbitrage relationships; and pricing of derivatives on equities, debt, commodities and foreign exchange. Prerequisite: Undergraduate level FIN 320 Minimum Grade of D or Graduate level FIN 527 Minimum Grade of C
  - 435 - 3 **Real Estate Finance & Investment** - Fundamental concepts, and investigation and evaluation of real (estate) assets. Single residence, multiple dwellings, and commercial properties. Applications based on financial theory and methodology. Prerequisite: Undergraduate level FIN 320 Minimum Grade of D
  - 440 - 3 **Financial Institutions** - Financial management of financial institutions: commercial banks, S&L's, insurance companies, and other financial institutions. Asset and liability management. Prerequisite: Undergraduate level FIN 320 Minimum Grade of D
  - 445 - 3 **Applied Security Analysis & Portfolio Management** - Hands-on experience in the practice of investing. Introduces students to fundamental techniques of stock selection, portfolio diversification approaches, and performance evaluation techniques. Prerequisite: Undergraduate level FIN 430 Minimum Grade of C and Undergraduate level FIN 320 Minimum Grade of B
  - 450 - 3 **International Finance** - International financial markets. Determinants of foreign exchange rates and risk management in global markets. Managerial implications of foreign exchange exposure and firm valuation. International investment analysis. Prerequisite: Undergraduate level FIN 320 Minimum Grade of C
  - 460 - 0 or 3 **Corporate Financial Analysis & Strategy** - In-depth analysis of financial data and stock prices. Study the relationship among financial markets, financial strategy, and welfare of corporate stake holders. Will not count toward MA or MS in Economics and Finance. Prerequisite: Undergraduate level FIN 420 Minimum Grade of D
  - 480 - 3 **Cases & Problems in Corporate Finance** - Use case analyses to study financial concepts and techniques; topics included: investment decisions, mergers and acquisitions, and long-term and short-term financing. Will not count toward MA or MS in Economics and Finance. Prerequisite: Undergraduate level FIN 420 Minimum Grade of D
  - 490 - 1 to 6 **Independent Study in Finance** - Investigation of topic areas through individual or small group readings under supervision of faculty member. Requires consent of instructor and department chairperson. May be repeated up to a total of 6 hours. Will not count toward MA or MS in Economics and Finance. Prerequisite: None
  - 501 - 3 **Advanced Corporate Finance** - Theories and analytical tools used to solve problems in firm's financing choices; capital budgeting and project evaluation; and cost of capital. Requires admission to Economics and Finance graduate program. Prerequisite: None
  - 502 - 3 **Investment Theory and Analysis** - Theoretical and empirical concepts in investments. Equity, fixed income and derivative securities. Develop modeling skills for financial analyses. Requires admission to Economics and Finance graduate program. Prerequisite: None
  - 525 - 3 **Financial Strategy, Growth and Control** - Financial management using comparative methods of ratio and relative value analysis. The course intends to focus on application of these approaches to financial decision making. Prerequisite: Graduate level FIN 527 Minimum Grade of C
  - 527 - 3 **Corporate Finance** - Theoretical concepts and analytical tools for solving problems and making corporate investment and financing decisions. Firm valuation, international security markets, and foreign investments. Will not count toward MA or MS in Economics and Finance. Prerequisite: Graduate level ACCT 524 Minimum Grade of C
  - 528 - 3 **Security Analysis & Modeling** - Security analysis for investment and trading. Fundamental analysis; and economic, industry/company analysis for trading purposes. Prerequisite: None
  - 532 - 3 **Financial Innovations & Engineering** - Prerequisite: Graduate level FIN 502 Minimum Grade of C
  - 540 - 3 **Health Policy, Politics, & Ethics** - Politics, policy and ethics in the U.S. health care system. Implications of government involvement in the organization; and financing and delivery of health care. Prerequisite: Graduate level MGMT 514 Minimum Grade of C
  - 541 - 3 **Investments** - Broad range of financial and real assets; investment analysis; portfolio theory; and strategy and timing concepts. Not a personal investments course. Prerequisite: Graduate level FIN 527 Minimum Grade of C
  - 542 - 3 **Financial Markets & Institutions** - Survey of debt and equity markets and major institutions involved. Theory of financial intermediation. Risk management. Prerequisite: Graduate level FIN 527 Minimum Grade of C or Graduate level FIN 501 Minimum Grade of C
  - 543 - 3 **Capital Resource Allocation** - Theory and applications of large scale capital expenditures. Emphasis on selection and use of models and affects on firm value. Prerequisite: Graduate level FIN 527 Minimum Grade of C
  - 544 - 3 **Health Care Financial Management** - Study of major financial management concepts and issues involved with current and proposed methods of third party reimbursement of health care providers. Prerequisite: Graduate level FIN 527 Minimum Grade of C
  - 545 - 3 **Entrepreneurial Finance** - Applies financial strategy, tools, and analysis to entrepreneurial ventures at various stages of the venture life cycle. Key topics include evaluating, planning, financing, operating, controlling, and monetizing a venture. Prerequisite: Graduate level FIN 527 Minimum Grade of C
  - 550 - 3 **Multinational Corporate Finance** - Multinational corporate finance; and investment decision, financial policy, and cost of capital. Foreign exchange rates, risk and hedging. International diversification. Portfolio theories, mergers, and acquisitions. Prerequisite: Graduate level FIN 527 Minimum Grade of C
  - 596 - 3 **Research in Finance** - Empirical research in financial modeling and methodological issues. Includes research issues from corporate finance, investments, derivatives and pricing models. Prerequisite: FIN 501, FIN 502; ECON 515 or FIN 515; or consent of instructor.

597 - 3 **Independent Study in Finance** - Topics not considered in current offerings and in greater depth than regularly titled courses permit. Empirical investigation is encouraged. Requires consent of department chair or program director. Prerequisite: None

599 - 3 to 6 **Thesis in Finance** - Independent research and study on approved topic. Requires a three-member committee with a thesis chairperson. Requires consent of department chair or program director. Prerequisite: None

- Foreign Language & Literature (FL)
  - 486 - 3 **Methods for Teaching Foreign Languages K-12** - Practical study of second language acquisition, cognitive variations, instructional methodologies, and student testing in foreign language classroom. Required for state certification of all majors intending to teach foreign languages in secondary schools. Prerequisite: (Undergraduate level FR 301 Minimum Grade of D or Undergraduate level GER 301 Minimum Grade of D or Undergraduate level SPAN 301 Minimum Grade of D)
  - 491 - 3 to 6 **Cultural & Language Workshop: Italian, Chinese, Russian, etc.** - Comparative or contrastive linguistics, advanced methodology and techniques. In-depth study of foreign cultures; and travel-study abroad. Supervised projects in foreign studies. May be repeated to a maximum of 6 hours provided no topic is repeated. Prerequisite: None
- French (FR)
  - 454 - 3 **Selected Topics in Literature** - Selected topics in literature or literary criticism. May be repeated to a maximum of 6 hours provided that no topic is repeated. Prerequisite: Undergraduate level FR 301 Minimum Grade of D
  - 455 - 3 **French Drama** - Major and typical works. Prerequisite: Undergraduate level FR 301 Minimum Grade of D
  - 456 - 3 **Seminar on Women Writers** - Fiction, nonfiction, drama, and poetry. Taught in English. For credit in FL; term paper written in French. Same as WMST 456. Prerequisite: Undergraduate level FR 301 Minimum Grade of D
  - 457 - 3 **African & Caribbean Literature of French Expression** - Literature of various French-speaking nations. Taught in English. For credit in FL; term paper written in French. Prerequisite: Undergraduate level FR 301 Minimum Grade of D
  - 461 - 3 **French Stylistics** - Writing style: application of stylistics to development of skill in written expression. Advanced work in principles of grammar and composition. Prerequisite: 6 hours of 300-level courses.
  - 491 - 3 to 6 **Cultural and Language Workshop French** - Comparative or contrastive linguistics; advanced methodology; and techniques. In-depth study of foreign cultures, and travel-study abroad. Supervised projects in French. May be repeated to a maximum of 6 hours provided that no topic is repeated. Prerequisite: None
  - 499 - 3 **Readings in French** - Selected areas of language, literature, and culture. Individual work or small groups supervised by one or more members of French faculty. Prerequisite: None
  - 551 - 3 **Seminar On A Selected French Author** - Intensive study of one author. May be repeated once for a total of 6 hours if authors vary. Prerequisite: None
  - 552 - 3 **The French Novel of the 20th Century** - Representative works by authors such as Gide, Proust, Mauriac, Camus, Malraux, and Beauvoir. Prerequisite: None
  - 553 - 3 **Romanticism** - Representative works by such authors as Lamartine, Hugo, Flaubert, and Stendhal. Prerequisite: None
  - 554 - 3 **Realism** - Representative works of 19th century authors such as Balzac and Zola. Prerequisite: None
  - 555 - 3 **Medieval French Literature** - Chanson de Roland, epics, romances, fabliaux, lyric poetry, and drama. Prerequisite: None
  - 556 - 3 **French Literature of the 17th Century** - The age of classicism. Prerequisite: None

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- General Business Admin (GBA)
  - 489 - 1 to 15 **Study Abroad** - Participation in school's exchange programs. Credit earned by completion of an approved plan of study at an exchange institution. May be repeated for a maximum of 30 hours undergrads & 15 hours for grads. Requires appropriate language competency, and approval by director of exchange programs. Prerequisite: None
- Geography (GEOG)
  - 401 - 3 **Geography of Development** - Analysis of development in world regions including more developed countries and less developed countries. Emphasis on theories of development and issues associated with various levels of development. Requires consent of instructor. Prerequisite: None
  - 402 - 3 **Cultural Landscape** - Identification and analysis, both objective and subjective, of the Earth as transformed by human action with emphasis on the contemporary situation. Field trip. Requires consent of instructor. Prerequisite: None
  - 403 - 3 **Advanced Urban Geography** - Selected topics in spatial patterns and processes of urbanization. Topics may include: planning, transportation, sustainability, society and culture, health, housing, global cities, and economic functions. Prerequisite: GEOG 303 with minimum grade of C or better, or consent of instructor, or concurrent enrollment.
  - 404 - 3 **Medical Geography** - This course examines medical geographic principles to understand the diversity of health around the world and the processes connecting them. Prerequisite: Undergraduate level GEOG 205 Minimum Grade of C
  - 405 - 3 **Geography of Food** - Examination of food production and distribution. The relationship between food and culture from geographic perspective. Prerequisite: Undergraduate level GEOG 205 Minimum Grade of D
  - 406 - 3 **Political Geography** - Fundamental principles of geopolitics, geostrategic theory, electoral geography, and their application to the United States and other major world regions. Can be taken for graduate credit. Requires junior and senior standing. Prerequisite: None
  - 407 - 3 **Spatial Thinking & Behavior** - This course examines how people understand, think about, and behave in space. Prerequisite: Undergraduate level GEOG 205 Minimum Grade of C
  - 408 - 3 **Snow and Ice Processes** - This course: focuses on the properties processes, and distribution of seasonal and perennial snow; provides an overview of glaciers; and studies snow and ice climatology. Prerequisite: Undergraduate level GEOG 314 Minimum Grade of D
  - 410 - 3 **Soils** - Formation processes, classification, distribution, use, and problems associated with Earth surface materials. Field trip. Prerequisite: Undergraduate level ESCI 111 Minimum Grade of D
  - 411 - 3 **Hydrology** - Hydrologic cycle, major stream systems, and uses of water resources and their relationships to quality and future supplies. Same as ENSC 411. Prerequisite: Undergraduate level MATH 120 Minimum Grade of D or Undergraduate level MATH 120E Minimum Grade of D
  - 412 - 3 **Groundwater Hydrology** - Study of groundwater: occurrence; physical and chemical properties; flow and flow system modeling relation to rock structure and lithology; and contamination of groundwater resources. Prerequisite: Undergraduate level CHEM 113 Minimum Grade of D and (Undergraduate level MATH 120 Minimum Grade of D or Undergraduate level MATH 120 Minimum Grade of D)
  - 413 - 3 **Environmental Geochemistry** - Study of exogenic environment as a geochemical system; natural circulation of water, sediment, carbon, sulfur, nitrogen, and phosphorus; and assessment of human activities on these cycles. C/l with ENVS 426. Prerequisite: Undergraduate level CHEM 113 Minimum Grade of D
  - 414 - 3 **Floods, Climate and the Environment** - Examines the nature of floods, the hydrologic, climatic, and anthropogenic factors that lead to floods and the effects of floods on humans and the environment. Prerequisite: Undergraduate level GEOG 411 Minimum Grade of D
  - 415 - 3 **Animal Biogeography** - Principles of biogeography as applied to animals. Focusing on past and present distribution patterns considering environmental circumstances and animal capabilities. Field trips. Prerequisite: Undergraduate level GEOG 316 Minimum Grade of D
  - 416 - 3 **Conservation Biogeography** - Analysis of biogeography principles and conservation problems. Assess changes in biosphere distributions and extinction due to human activity. Evaluates strategies to maintain biodiversity. Field trips. Same as ENSC 445. Prerequisite: Undergraduate level GEOG 316 Minimum Grade of D
  - 417 - 3 **River Landscapes** - Combines scientific understanding of river and watershed processes with ecological concepts to address rivers as comprehensive systems. GEOG 210 or permission of Instructor or graduate admission to Geography.
  - 418 - 3 **Geographic Information Systems (GIS)** - Concepts, basic theory, and principles of GIS using both Raster and Vector data models in a PC environment. Requires consent of instructor. Prerequisite: None
  - 419 - 3 **Thematic Cartography** - This course offers an in-depth analysis of cartographic techniques, theories, and their application to the design of maps. Prerequisite: Undergraduate level GEOG 320 Minimum Grade of D
  - 420 - 3 **Interactive & Animated Cartography** - Investigate and develop alternatives such as interactive maps and map animation to traditional map representations such as static paper maps. Prerequisite: Undergraduate level GEOG 320 Minimum Grade of D
  - 421 - 3 **Digital Elevation Modeling** - Processing of digital elevation models and the generation of 3D renderings with digital orthophotos, satellite imagery, digital raster graphics, and/or other 3D features. Prerequisite: Undergraduate level GEOG 418 Minimum Grade of D
  - 422 - 3 **Remote Sensing and Digital Image Processing** - Concepts of remote sensing including air-photo interpretation, digital image preprocessing, and classification of satellite based imagery. Prerequisite: None
  - 423 - 3 **Computer Mapping** - Cartographic design techniques related to computer aided conversion, analysis, and presentation of data. Includes use of arc view, symbol perception, and map design. Requires consent of instructor. Prerequisite: None
  - 424 - 3 **Vector Based Geographic Information Systems (GIS)** - Examination of vector topology, digital map transformation, manipulation, analysis, and composition. Prerequisite: Undergraduate level GEOG 418 Minimum Grade of D
  - 425 - 3 **Raster Based Geographic Information Systems (GIS)** - In-depth study of cell-based (Raster) GIS concepts. Includes the development of cell based GIS models for addressing environmentally related issues. Prerequisite: (Undergraduate level MATH 120 Minimum Grade of D or Undergraduate level MATH 120E Minimum Grade of D or Undergraduate level MATH 125 Minimum Grade of D) and Undergraduate level GEOG 418 Minimum Grade of D

426 - 1 to 6 **Field Study** - Field investigation of physical and cultural features of the environment. [Dist. NSM] may be repeated to a max of 6 hours. Requires advanced standing or consent of instructor. Prerequisite: None

427 - 1 to 6 **Internship** - Work experiences in public or private agencies. May be repeated to a maximum of 6 hours. Prerequisite: None

428 - 1 to 6 **Travel Study** - Enrichment through travel, supervised study, and readings on areas visited. May be repeated to a maximum of 6 hours. Prerequisite: None

429 - 3 **Storm Chasing & Assessment Field Course** - Exposes students to the unique environments and hazards associated with local thunderstorms. Students will benefit from lecture and participation in event assessment. Requires consent of instructor. Prerequisite: Undergraduate level GEOG 314 Minimum Grade of D

430 - 3 **Global Climate Change** - Addresses (a) the scope and controls of climate on various scales; (b) climate throughout history; and (c) addresses both contemporary and future global climate change. Prerequisite: Undergraduate level GEOG 211 Minimum Grade of C and Undergraduate level GEOG 314 Minimum Grade of C

431 - 3 **Web-based Online Mapping** - Concepts of web-based online mapping services and map mashups; development of interactive map applications for use on the Internet using HTML, JavaScript, xml AND Maps APIs. Prerequisite: Undergraduate level GEOG 320 Minimum Grade of C

432 - 3 **Python Scripting in GIS** - Use of Python as a tool to automate geoprocessing tasks in the creation of maps, tools and add-ins in ArcGIS. Prerequisite: Undergraduate level GEOG 418 Minimum Grade of C or Graduate level GEOG 418 Minimum Grade of C

440 - 3 **Teaching Geography** - Methods and techniques of teaching geography in primary and secondary classroom situations. Emphasis on teaching devices, illustrative materials, and literature. Requires junior standing. Prerequisite: None

451 - 3 **Topics in Human Geography** - Specific topics in human geography based on faculty expertise. May be repeated to a maximum of 6 hours. Prerequisite: None

452 - 3 **Topics in Physical Geography** - Specific topics in physical geography based on faculty expertise. May be repeated to a maximum of 6 hours. Prerequisite: None

453 - 3 **Topics in Regional Geography** - Specific topics in regional geography based on faculty expertise. May be repeated to a maximum of 6 hours. Prerequisite: None

454 - 3 **Topcs in Geographic Techniques** - Specific topics in geographic techniques based on faculty expertise. May be repeated to a maximum of 6 hours. Prerequisite: None

470 - 2 to 4 **Advanced Physical Geography Laboratory** - Application of field and laboratory methods, from study design to data collection and analysis, used to study the Earth's physical features and processes. May be repeated to 4 credit hours. Graduate credit requirements include additional course work design and conduct a field survey, then analyze and report on the data collection. Requires consent of instructor. Prerequisite: None

490 - 1 to 3 **Tutorial in Geography** - Individual and small group conferences with faculty to examine geographic topics. May be repeated to a maximum of 6 hours. Requires consent of adviser and instructor. Prerequisite: None

500 - 3 **Seminar in Cultural Geography** - Selected topics in human-environment interactions. May be repeated to a maximum of 9 hours if topics vary. Requires consent of instructor. Prerequisite: None

510 - 3 **Seminar in Phys Geog** - Selected topics as related to various aspects of physical environments and patterns of human occupancy. May be repeated once to a maximum of 6 hours if topics vary. Requires consent of instructor. Prerequisite: None

520 - 3 **Research Methods in Geography** - Preparation of a plan of study to investigate a geographical problem. Prerequisite: None

521 - 3 **Contemporary Philosophy & Explanation in Geography** - Explores major themes and paradigm shifts in contemporary philosophy of geography. Compares positivist, humanist, and structuralist modes of explanation in geography. Prerequisite: None

522 - 3 **Techniques in Geography** - Introduces qualitative and quantitative techniques in geographic research. Exposes students to data collection, analysis, and display methods. Prerequisite: None

523 - 3 **Environmental Assessment and Evaluation Methods** - Methods and techniques used to determine and analyze environmental effects as related to public and private entities. Same as ENSC 520. Prerequisite: None

524 - 3 **Environmental Impact Analysis** - Implications and applications of National Environmental Policy Act (NEPA) and related environmental legislation. Methodologies for environmental inventory and environmental impact statement preparation. Same as ENSC 516 and Biology 516. Prerequisite: None

525 - 3 **Seminar in Geographic Information Systems** - Selected topics dealing with application of GIS. May be repeated once to a maximum of 6 hours if topics vary. Requires consent of instructor. Prerequisite: None

526 - 3 **Seminar in Cartography** - Selected topics in cartography. May be repeated once to a maximum of 6 hours if topics vary. Course history: Course replaces the quarter based course Geography 523. Requires consent of instructor. Prerequisite: None

530 - 3 **Seminar in Regional Geography** - Application of regional concepts and methods to geographical problems in selected regions. May be repeated once to a maximum of 6 hours if topics vary. Requires consent of instructor. Prerequisite: None

570 - 3 **SIUE Weather Station** - This course focuses on meteorological instruments and measurement techniques; formal weather observations and reporting; and community outreach. Requires Graduate standing and instructor approval. Prerequisite: None

571 - 3 **Preparatory Readings For Weather Observer Exam** - This course focuses on preparatory readings, exercises and practice examinations for weather observers. Requires Instructor approval. Prerequisite: None

573 - 3 **GIS Modeling of the Natural Environment** - Modeling of the natural environment using Geographic Information Science and Systems as well as environmental and biological field methodologies. Prerequisite: Graduate level GEOG 418 Minimum Grade of C

590 - 1 to 6 **Independent Study** - May be repeated to a maximum of 6 hours. Course history: Course replaces the quarter based course Geography 530. Requires consent of instructor and graduate adviser. Prerequisite: None

598 - 3 **Graduate Research Project** - Culminating experience of the non-thesis option for a M.S. degree in Geographical Studies. Requirements include a research paper and presentation based on the research paper. Prerequisites: Permission of Graduate Program Director.

599 - 1 to 6 **Thesis** - May be repeated to a maximum of 6 hours. Requires consent of thesis committee chairperson and graduate adviser. Prerequisite: None

- German (GER)
  - 411 - 3 **German Civilization** - German-speaking areas of the world. Anthropological and social aspects of various cultures. Prerequisite: None

    452 - 3 **Faust** - Goethe's masterpiece, its background, meaning, and impact on world literature. Life and times of Goethe. Prerequisite: Undergraduate level GER 301 Minimum Grade of D

    454 - 2 to 4 **Seminar** - Critical and analytical study of selected topics of German literature or literary criticism. May be repeated to a maximum of 4 hours provided that no topic is repeated. Prerequisite: None

    491 - 3 to 6 **Cultural & Language Workshop: German** - Comparative or contrastive linguistics, advanced methodology and techniques. In-depth study of foreign cultures, and travel-study abroad. Supervised projects in German studies. May be repeated to a maximum of 6 hours provided that no topic is repeated. Prerequisite: None

    499 - 3 to 6 **Readings in German** - Selected areas of German language, literature, and culture. Individual or small group work supervised by one or more members of German faculty. May be repeated to a maximum of 6 hours provided no topic is repeated. Requires consent of instructor. Prerequisite: None

    551 - 3 **Seminar On Selected Author** - Intensive study of one author. May be repeated for total of 6 hours provided authors vary. Course history: Course replaces the quarter based course German 501. Prerequisite: None

552 - 3 **German Lyric Poetry** - Various forums including the ballad. Prerequisite: None

553 - 3 **Austria's Role in German Literature** - Selected works. Prerequisite: None

554 - 3 **Romanticism I** - Authors of the early period and the "Berlin school." Prerequisite: None

555 - 3 **Romanticism II** - Selected authors of the patriotic and late periods: Kleist, Arndt, Koerner, Uhland, Eichendorff, Lenau, Grillparzer, Heine and Moerike. Prerequisite: None

556 - 3 **19th Century German Novel** - From the decline of romanticism to the end of the century. Representative authors: Keller, Fontane and Raabe. Prerequisite: None

557 - 3 **20th Century German Novel** - Representative authors of various movements. Prerequisite: None

558 - 3 **Seminar in Folklore** - German folk literature emphasizing tales, chap-books, songs and dances. Prerequisite: None

559 - 3 **German Literature of The Middle Ages** - From the fall of Rome through the courtly age. Nibelungenlied. Prerequisite: None

- Gerontology (GRN)
  - 587 - 3 **Interdisciplinary Seminar in Gerontology** - Aspects of aging from both disciplinary and professional perspectives, including anthropology, biology, economics, political science, business, dentistry, medicine, and nursing. Prerequisite: PSYC 487 or consent of instructor
  - 588 - 3 **Programs, Services, and Resources in Aging** - Major federal, state, and local programs serving older adults. Older American Act and titles of the act. Prerequisite: 587 or consent of instructor
  - 598 - 1 to 12 **Practicum in Gerontology** - Professional training provided by gerontological specialists in aging network, business, social service, and health care industries. Field placement dependent upon student's discipline or profession. Minimum of 3 hours of practicum required for interdisciplinary graduate sequence in gerontology certificate of completion. May be repeated to a maximum of 12 hours. Prerequisites: 587, or 588; consent of practicum coordinator
- Greek (GRK)
  - 499A - 4 **Readings in Ancient Greek: Development of Lexical & Structural Competence** - Development of lexical and structural competence. GRK499A, 499B, and 499C must be taken in sequence and are prerequisites to GRK499D, 499E, or 499F which may be taken out of sequence with consent of instructor. Individual segments may not be repeated for credit. Requires consent of instructor. Prerequisite: None
  - 499B - 4 **Readings in Ancient Greek: Continuation of GRK 499A** - Continuation of GRK 499A. Must be taken in sequence and are prerequisites to GRK 499D, 499E, or 499F which may be taken out of sequence with consent of instructor. Individual segments may not be repeated for credit. Requires consent of instructor. Prerequisite: Undergraduate level GRK 499A Minimum Grade of D
  - 499C - 4 **Readings in Ancient Greek: Selected Masterpieces of Literature** - Selected masterpieces of literature. GRK 499A, 499B, and 499C must be taken in sequence and are prerequisites to GRK 499D, 499E, or 499F which may be taken out of sequence with consent of instructor. Individual segments may not be repeated for credit. Requires consent of instructor. Prerequisite: None
  - 499D - 4 **Readings in Ancient Greek: History** - History. GRK 499A, 499B, and 499C must be taken in sequence and are prerequisites to GRK 499D, 499E, or 499F which may be taken out of sequence with consent of instructor. Individual segments may not be repeated for credit. Prerequisite: Undergraduate level GRK 499A Minimum Grade of D and Undergraduate level GRK 499B Minimum Grade of D and Undergraduate level GRK 499C Minimum Grade of D
  - 499E - 4 **Readings in Ancient Greek: Poetry** - Poetry. GRK 499A, 499B, and 499C must be taken in sequence and are prerequisites to GRK 499D, 499E, or 499F which may be taken out of sequence with consent of instructor. Individual segments may not be repeated for credit. Prerequisite: Undergraduate level GRK 499A Minimum Grade of D and Undergraduate level GRK 499B Minimum Grade of D and Undergraduate level GRK 499C Minimum Grade of D
  - 499F - 4 **Readings in Ancient Greek: Philosophy** - Philosophy. GRK 499A, 499B, and 499C must be taken in sequence and are prerequisites to GRK 499D, 499E, or 499F which may be taken out of sequence with consent of instructor. Individual segments may not be repeated for credit. Prerequisite: Undergraduate level GRK 499A Minimum Grade of D and Undergraduate level GRK 499B Minimum Grade of D and Undergraduate level GRK 499C Minimum Grade of D

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- Healthcare Informatics (HCIM)
  - 596A - 1 **Capstone I** - During Capstone I the student will initiate their project. Students will use their approved project proposal to do the background work and literature review. An outline of the final paper is required at the end of the course. Prerequisite: Undergraduate level CS 434 Minimum Grade of C and Graduate level NURS 509 Minimum Grade of C and (Graduate level CMIS 535 Minimum Grade of C or Graduate level CMIS 549 Minimum Grade of C) and Graduate level CS 560 Minimum Grade of C
  - 596B - 1 **Capstone II** - During Capstone II the student will continue their capstone project and submit a rough draft of their capstone project paper. The rough draft should include a literature review/background as appropriate for the project. Prerequisite: Graduate level HCIM 596A Minimum Grade of C
  - 596C - 1 **Capstone III** - During Capstone III the student will complete their capstone project and submit their final capstone project paper and deliver a presentation. Students must successfully complete all other required courses before enrolling in Capstone III. Prerequisite: Graduate level HCIM 596B Minimum Grade of C
- Historical Studies (HIST)
  - 400 - 3 **Topics in History** - Selected topics such as biography of a major figure, recent theme in world history, etc. May be repeated for a maximum of 9 hours provided that no topic is repeated. [Dist. SS] Prerequisite: None
  - 403 - 3 **Ancient Mesopotamia** - History and culture of ancient Mesopotamia and surrounding regions from CA. 10,000 B.C. to CA. 539 B.C.E. [Dist. SS, IC] Prerequisite: None
  - 404A - 3 **Topics in Medieval Social, Religious, & Intellectual History: 400 - 1000 C.E.** - Historiographical problems in the evaluation of medieval society, culture and ritual: 400 - 1000 C.E. [Dist. SS, IC]. Prerequisite: None
  - 404B - 3 **Topics in Medieval Social, Religious, & Intellectual History: 1000 - 1500 C.E.** - Historiographical problems in the evaluation of medieval society, culture and ritual: 1000 - 1500 CE. [Dist. SS, IC]. Prerequisite: None
  - 408A - 3 **History of England: 1509 - 1714** - Reformation and revolution: 1509 -1714. [Dist. SS] Prerequisite: None
  - 408B - 3 **History of England: 1714 - 1867** - Birth and growth of industrial England: 1714 -1867. [Dist. SS] Prerequisite: None
  - 408C - 3 **History of England: 1867 to the Present** - Birth and growth of the welfare state: 1867 to present. [Dist. SS, II] Prerequisite: None
  - 412 - 3 **The French Revolution** - Examination of the origins of the revolution, its subsequent outbreak, development, radicalization, and collapse; focusing especially on development, radicalization and collapse. [Dist. SS, IC] Prerequisite: None
  - 413 - 3 **History of Modern France** - Nineteenth and twentieth century France: ongoing revolutions, politics and culture of third republic; efforts to construct 'Frenchness'; Vichy, imperial adventures and leadership in European integration. [Dist. SS, II] Prerequisite: None
  - 415 - 3 **Modern German History** - German history from 1871 to present including Germany under Bismarck, World War I, the Nazi period, World War II, division, and reunification. [Dist. SS, II] Prerequisite: 111B
  - 416 - 3 **World War I and Its Aftermath: 1914 - 1921** - War's origins, course, and results; military action as well as political, social, economic, and cultural effect on home fronts, war and world revolution: 1917- 1921. [Dist. SS] Prerequisite: None
  - 418 - 3 **World War II** - Survey of causes and multiple aspects of the second world war. Emphasis on military operations. [Dist. SS] Prerequisite: None
  - 420A - 3 **European Social, Cultural & Intellectual History: Renaissance to French Revolution** - Renaissance to French revolution. [Dist. SS, IC] Prerequisite: None
  - 420B - 3 **European Social, Cultural & Intellectual History: French Revolution to Present** - French revolution to present. [Dist. SS, II] Prerequisite: None
  - 422A - 3 **Late Modern Europe: Vienna Congress to the Great War** - Vienna Congress to the great war. [Dist. SS, IC] Prerequisite: HIST 111A
  - 422B - 3 **Late Modern Europe: World War I through World War II** - World War I through World War II. [Dist. SS, IC] Prerequisite: HIST 111B
  - 422C - 3 **Late Modern Europe: Europe since World War II** - Europe since World War II. [Dist. SS, II] Prerequisite: HIST 111B or consent of instructor.
  - 423A - 3 **Trail of Tears: Native American History from Columbus to Removal** - Native American history to 1840. Investigation of disparate cultures in contact using historical and anthropological methods, with emphasis on Native American world views. Prerequisite: None
  - 423B - 3 **Indian Wars, Progressives and Casinos: Native American History from Removal to Present** - Native American history 1840 to present. Investigation of disparate cultures in contact using historical and anthropological methods, with emphasis on Native American world views. Prerequisite: None
  - 424 - 3 **Topics in East European History** - Selected topics such as the rise of nationalism, World War I, the Cold War, etc. Prerequisite: None
  - 425 - 3 **History of American Ideas 1620-1865** - History of American Ideas 1620-1865 traces ideological conflicts and compromises that created the United States through the Civil War. Prerequisite: None
  - 427 - 3 **History of South Africa** - Course will familiarize students with the major themes in the history of South Africa largely focusing on the period of sustained western contact from 1652 - present. [Dist. SS, II, IC] Prerequisite: None
  - 428 - 3 **Topics in European Women's Studies** - Selected topics in women's history. Course varies from semester to semester. May be repeated to a maximum of nine hours provided that no topic is repeated. [Dist. SS, II] Prerequisite: None
  - 429 - 3 **History of American Ideas 1865-Present** - History of American Ideas 1865-Present traces ideological conflicts and compromises that created the United States after the Civil War. Prerequisite: None
  - 430 - 3 **American Colonial History** - Founding of colonies in British America and their development to 1763. [Dist. SS] Prerequisite: None
  - 431 - 3 **American Revolution and Constitution** - Conflicting forces and events that led to the American Revolution and to the Constitution. [Dist. SS] Prerequisite: None
  - 434 - 3 **Southern History in American Culture** - This course uses popular culture (film, television, music, etc.) to analyze how Southern history is presented in American culture. Prerequisite: Undergraduate level HIST 200 Minimum Grade of C or Undergraduate level HIST 201 Minimum Grade of C
  - 439 - 3 **Aid to Africa: Humanitarianism and Development in African History** - This course explores the history of aid in Africa, beginning with systems of philanthropy existent in Africa before the arrival of Europeans, and continuing through the colonial period into the present, exploring such themes as the abolition

movement, children, refugees, health, violence, and economic development programs. Prerequisite: None

440 - 3 **Women in American Social History** - Women from various social classes; ethnic and racial groups; and geographic regions. Social institutions: family, church, schools, etc. Colonial era to present. [Dist. SS, IGR] Same as WMST 440. Prerequisite: None

442 - 3 **Black Urban Experience** - Social, economic, and political history. Emphasizes community life and development, as well as race relations. [Dist. SS, IGR] Prerequisite: None

444 - 3 **The Civil War Era** - Exploring in-depth questions related to the era of the American Civil War. Seminar will emphasize shared inquiry through research and historiographical methods. Prerequisite: None

445 - 3 **American Masculinity** - American Masculinity is a gender history that explores the different manifestations of manhood as it has been constructed by Americans from the seventeenth century to the present. Prerequisite: None

447 - 3 **Oral History** - Workshop course designed to provide practical experience conducting oral history interviews and to familiarize you with major issues in oral history. Prerequisite: None

451 - 3 **Native Americans Encounter Lewis and Clark** - Investigates the Lewis and Clark expedition from American and especially Native American points of view. Prerequisite: None

452 - 3 **Native American Women** - Investigates Native American gender roles, particularly women's roles, from an ethnohistorical perspective. Prerequisite: None

454 - 3 **History of the Arab-Israeli Conflict** - Origins and development of Zionism and Palestinian nationalism. Relations between Israel, Palestinians and the Arab states. [Dist. SS, II] Prerequisite: None

455 - 3 **Women and Gender in Islamic History** - Examines the role of women in Islamic history from the pre-Islamic Middle Eastern context through the establishment of classical Islamic family law to contemporary reforms.Cross-listed with WMST 455. Prerequisite: None

460 - 3 **History of Mexico** - Mexican history from the winning of independence to present. Special attention will be devoted to relations with the U.S. [Dist. SS, II] Prerequisite: None

461 - 3 **History of Cuba** - The history of Cuba since 1800, with special emphasis on the political, economic, and cultural development of the island. Prerequisite: None

462 - 3 **History of Brazil** - The history of Brazil since 1800 with a focus on the political, economic and cultural development of the nation. Prerequisite: None

470 - 3 **Public History** - Explores how history is communicated and practiced in public arenas, including museums, monuments, documentaries, cemeteries, and historic buildings. Prerequisite: None

471 - 3 **Community Engaged Digital History** - This course is intended to offer an introduction to the rich and complex field of public and digital history. Prerequisite: None

490 - 3 to 6 **Internship in History** - Professional experience in aspects of historical research, preservation, exhibition, and interpretation. May be repeated to a maximum of 6 hours. Enrollment by permission only. Prerequisite: None

500A - 3 **History Seminar: American** - History seminar: American. Any part or combination of parts may be repeated to a maximum of 12 hours provided no topic is repeated. Prerequisite: None

500B - 3 **History Seminar: European** - History seminar: European. Any part or combination of parts may be repeated to a maximum of 12 hours provided no topic is repeated. Prerequisite: None

500C - 3 **History Seminar: Latin American** - History seminar: Latin American. Any part or combination of parts may be repeated to a maximum of 12 hours provided no topic is repeated. Prerequisite: None

500D - 3 **History Seminar: World Comparative** - History seminar: World/comparative. Any part or combination of parts may be repeated to a maximum of 12 hours provided no topic is repeated. Prerequisite: None

510 - 1 to 3 **Readings in History** - Supervised reading for students with sufficient background. May be repeated to a maximum of 6 hours. Requires consent of instructor. Prerequisite: None

514 - 3 **Studies in Asian History and Politics** - Selected themes on Asian history and politics. Prerequisite: Undergraduate level HIST 356 Minimum Grade of D and Undergraduate level HIST 358 Minimum Grade of D

515 - 3 **Problems in 20th Century United States History** - Lectures, discussions, and readings on significant issues and interpretations. Prerequisite: None

554 - 3 **Problems in 19th Century American History** - Lectures, discussions, and readings on significant issues and interpretations concerning them. Prerequisite: None

555 - 3 **Grad Core Sem In Hist & Theory** - Theory in historical practice, focusing on major theorists, the structure of their thought, and its application. Required for all history graduate students. Prerequisite: None

556 - 3 **Graduate Seminar in Historical Research** - Research methods and practice for graduate students. Required of all MA and co-op PhD students. Repeatable once for a total of 6 credit hours. Prerequisite: None

580 - 3 **Museum Studies** - History; theory; structure; organization of museums; planning and interpretation of exhibits; collections management; and ethical and legal concerns. Cross-listed with ART 580. Prerequisite: None

581 - 3 **Management of Museum Collections** - Professional practices in museum collections management including ethical standards; statutory, regulatory, and judicial rules; risk management; conservation; and development. Prerequisite: HIST/ART 580. Cross-listed with ART 581.

582 - 3 **Practicum in Exhibit and Program Development** - Intensive, independent exhibition, educational project, or program related to museum studies. Cross-listed with ART 583. Prerequisite: Undergraduate level ART 580 Minimum Grade of D or Undergraduate level HIST 580 Minimum Grade of D and Undergraduate level ART 581 Minimum Grade of D or Undergraduate level HIST 581 Minimum Grade of D

590 - 3 **Internships in Museology** - Professional experience in aspects of museum work, including exhibition, education, interpretation, or administration. This would not fulfill HIST 490 repeat. Completely different course. Registration by permission only. Prerequisite: None

598 - 1 to 6 **Readings for Exams** - Preparation for written and oral comprehensive master's exams and portfolio presentation. Prerequisite: None

599 - 3 to 6 **Thesis** - Directed research to satisfy thesis requirement for M.A. degree. May be repeated to a maximum of 6 hours. Requires consent of instructor. Prerequisite: None

- Humanities (HUM)
  - 400 - 3 **Symposium in the Humanities** - Subjects not covered by the standard curriculum. May be repeated up to 6 hours. Credit toward concentration at the discretion of the department. Prerequisite: None

450 - 3 **Children and Death** - Mortality, dying, and bereavement as related to childhood and adolescence; socio-cultural and developmental context; guidelines and resources for caregivers, counselors, educators, and parents. Prerequisite: None

460 - 3 **Hospice** - Hospice philosophy and programs of care for dying persons and their families both before and after death. [Dist. SS] Course history: Course replaces quarter basic course Humanities 460. Prerequisite: None

470 - 3 **Loss Grief and Bereavement** - Detailed study of pre-death and post-death experiences of grief and mourning. [Dist. SS] Course history: Course replaces the quarter based course Humanities 470. Prerequisite: None

490 - 1 to 3 **Topics in Death & Dying** - Specified topics in depth, varied content; may be repeated to a maximum of 12 hours without repetition of topic. Prerequisite: None

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- Industrial Engineering (IE)
  - 401 - 3 **Biomechanics** - Mechanics of human body systems including basic anatomy of human body, 2D and 3D biomechanical models and application of models in real-life problems. Prerequisite: Undergraduate level IE 370 Minimum Grade of C
  - 415 - 3 **Operations Research Deterministic Models** - Linear programming; problem formulation; simplex algorithm; transportation and network problems; duality theory; and sensitivity theory. Requires knowledge of a programming language, MATH 250, or consent of instructor. Same as OR 440. Prerequisite: Undergraduate level MATH 250 Minimum Grade of D
  - 427 - 3 **Knowledge-Based Systems** - Engineering-oriented perspective on artificial intelligence (AI) technology. General AI concepts and specifically knowledge-based (expert) systems applied to engineering problem-solving. Requires knowledge of one of the familiar computer programming languages (Basic, C, Fortran, or Pascal) or consent of instructor. Same as CE 427, ECE 427 and ME 427. Prerequisite: None
  - 430 - 3 **Managing Engineering and Technology** - Management functions of planning; organizing, motivating, controlling, and analyzing application of these functions in engineering research, design, production, technical marketing, and project management. Requires Junior or Senior standing in IE. Prerequisite: None
  - 445 - 3 **Foundations of Financial Engineering** - Financial engineering integrates computational intelligence, mathematical finance, numerical methods and computer simulations for pricing, trading, hedging, and investment decisions. Prerequisite: Undergraduate level IE 345 Minimum Grade of C and Undergraduate level STAT 380 Minimum Grade of C
  - 451 - 3 **Methods Design and Work Measurements** - Design of work systems. Methods and techniques employed in measuring work. Current philosophy underlying improvement in work methods and procedures used to measure work performed. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level STAT 380 Minimum Grade of D or Undergraduate level IE 365 Minimum Grade of D
  - 458 - 3 **Human Factors Engineering** - Analysis of the limitations of humans in man-machine systems to increase productivity and meet physiological needs of system participants. Principles are applied through design problems. Requires completion of stated prerequisite or consent of instructor. Prerequisite: level IE 451 Minimum Grade of
  - 461 - 3 **Operations Research Stochastic Models** - Probability models; elementary queuing theory with single or multiple servers. Markov processes and models; and decision theory. Same as OR 441. Prerequisite: level STAT 380 Minimum Grade of or level STAT 480A Minimum Grade of
  - 462 - 3 **Six Sigma, Quality and Process Improvement** - Provides a comprehensive understanding of the role and value of Six Sigma as an integrated approach to solving process-based problems in quality. Requires completion of stated prerequisite or consent of instructor. STAT 380 with a grade of C or higher; or Graduate Level status.
  - 463 - 3 **Reliability Engineering** - Probabilistic models for the reliability of coherent systems. Statistical models for lifetimes of components and repairable systems. Reliability estimation and prediction. MIL standards. Same as STAT 484. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level STAT 480B Minimum Grade of C or Graduate level STAT 480B Minimum Grade of C or Undergraduate level STAT 380 Minimum Grade of C or Undergraduate level IE 365 Minimum Grade of C
  - 464 - 3 **Design & Analysis of Experiments with Applications to Science and Engineering** - Design for experimentation and statistical inference with engineering and science applications. One-way, two-way classification; complete and incomplete block designs. Factorial and fractional factorial designs. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level STAT 380 Minimum Grade of C or (Undergraduate level STAT 480A Minimum Grade of C and Undergraduate level STAT 480B Minimum Grade of C)
  - 465 - 3 **Design & Control of Qual Sys** - Statistical process control techniques, determination of process capability, quality control using variable and attribute control charts, specs and tolerances, control variation, and acceptance sampling. Requires completion of stated prerequisite or consent of instructor. Prerequisite: level STAT 380 Minimum Grade of
  - 466 - 3 **Engineering Metrology** - Exposes the student to the principles associated with dimensional measurement, inspection, measurement systems analysis, and geometric dimensioning and tolerancing. Prerequisite: Undergraduate level IE 370 Minimum Grade of D
  - 467 - 3 **Total Quality and Taguchi Methods** - Apply concepts and methods of quality improvement including total quality, quality function deployment, design of experiments, quality loss function, etc. Case studies and software tools. Requires completion of stated prerequisite or consent of instructor. Prerequisite: level IE 465 Minimum Grade of
  - 468 - 3 **Operations Research Simulation** - Design of simulation models using a high level simulation programming language. Applications in production, inventory, queuing, and other models. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level IE 461 Minimum Grade of C or Graduate level IE 461 Minimum Grade of C or Undergraduate level STAT 380 Minimum Grade of C or Undergraduate level OR 441 Minimum Grade of C or Graduate level OR 441 Minimum Grade of C
  - 470 - 3 **Manufacturing Systems** - Design, control and analysis of manufacturing systems in various configurations such as single and multiple stations, manual and automated assembly lines, flow and job shop. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level IE 370 Minimum Grade of D and Undergraduate level STAT 380 Minimum Grade of D
  - 475 - 3 **CAD/CAM/CAE (Comp Aided Engr)** - Advanced 3-D solid and assembly modeling in computer-integrated design and manufacturing environments; parametric and associative modeling; and sketch modeling. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level IE 375 Minimum Grade of D
  - 476 - 3 **Plantwide Process Control** - A treatment of techniques in automated control. Digital, analog, open and closed loop controls are discussed. Students gain experience with PC data acquisitions and control. Prerequisite: Undergraduate level ECE 210 Minimum Grade of D and Undergraduate level CS 145 Minimum Grade of D
  - 477 - 3 **Computer Integrated Manufacturing Systems** - Application of robot theory integrated with automated manufacturing systems. Emphasis on design laboratory exercises. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level CS 145 Minimum Grade of C and (Undergraduate level IE 470 Minimum Grade of C or Graduate level IE 470 Minimum Grade of C) and (Undergraduate level IE 476 Minimum Grade of C or Graduate level IE 476 Minimum Grade of C)

478 - 3 **Industrial Robotics** - Analysis of industrial robots focusing on the kinematics, dynamics, control and trajectory planning and their applications for real-life problems through hands-on exercise. Prerequisite: level IE 370 Minimum Grade of

480 - 3 **Tool Engineering** - This course covers topics including locating/orientation principles, clamping, positioning, and concepts required to design and fabricate tooling for machining, joining, and bulk deformation processes. Prerequisite: [IME 345 and IME 370] OR [IE 345 and IE 370] OR [IE 345 and IME 370] OR [IE 370 and IME 345] with minimum grade of D (concurrent enrollment allowed in IE 345 and IME 345).

482 - 3 **Manufacturing Engineering Design** - Topics include tolerancing, material selection, cost estimation, process planning, product fabrication, and activities required to bring product from conceptual design through manufacture. Requires completion of stated prerequisite or consent of instructor. Prerequisite: Undergraduate level IE 345 Minimum Grade of D and Undergraduate level IE 370 Minimum Grade of D

483 - 3 **Production Planning & Control** - Development and applications of models and techniques for designing integrated production systems to manage material, service, and information flows in response to fluctuating market demands. (2 hours lecture, 2 hours laboratory). Requires senior standing in Industrial engineering or consent of instructor. Prerequisite: None

484 - 3 **Facilities Planning** - Theory and methods of facilities layout and planning emphasizing activity relationships; space requirements; materials handling and storage; plant layout; and facility location problems. Requires completion of stated prerequisite or consent of instructor. Prerequisite: level IE 415 Minimum Grade of and level IE 451 Minimum Grade of

488 - 3 **Lean Production Systems** - An integrated and holistic approach to efficient and synchronized production of goods and/or services with emphasis on work organization, manufacturing flow, process control, lean metrics, lean logistics and value stream mapping tools and techniques for lean manufacturing implementation. Requires completion of stated prerequisite or consent of instructor. Prerequisite: level IE 483 Minimum Grade of

490 - 3 **Integrated Engineering Design** - Individual/ group laboratory or industrial projects of a research, design, or development nature which may apply to engineering systems. (2 hours lecture, 2 hours laboratory). Requires Senior standing in Industrial Engineering or consent of instructor. Prerequisite: None

492 - 1 to 6 **Special Topics in Industrial Engineering** - Selected topics of current interest in Industrial Engineering and related fields. May include individual research projects for students with honors standing. Requires Senior standing in Industrial. Prerequisite: None

515 - 3 **Engineering Optimization Models** - Linear and nonlinear optimization for IME. Taxonomy, modeling, formulation, convex optimization, duality, unconstrained, and constrained optimization. Computational complexity and NP-completeness. Engineering Applications. Prerequisite: None

527 - 3 **Intelligent Engineering Systems** - Designing intelligent engineering systems, solving complex problems through knowledge-based design using hybrid architecture comprising expert systems, artificial neural networks, and optimization. Prerequisite: Undergraduate level IME 427 Minimum Grade of D or Undergraduate level IE 427 Minimum Grade of D or Graduate level IME 427 Minimum Grade of C or Graduate level IE 427 Minimum Grade of C

528 - 3 **Data Analytics and Mining** - Introduction to predictive analytics, data mining, and machine learning techniques and their applications to data intensive problems using modern software tools. Prerequisite: None

530 - 3 **Engineering and Technology Management** - Applied management principles in manufacturing and high-tech environments. Planning and forecasting; motivating technical people; product life cycle; and concurrent engineering. Requires consent of instructor. Prerequisite: None

531 - 3 **Engineering Project Management** - Applying IE skills to industry-based, team-oriented problems involving cost estimating; planning; scheduling; and implementation using advanced techniques such as CPM, PERT, GERT. Prerequisite: None

557 - 3 **Value Engineering** - Effective techniques to improve overall performance highlighting value methodology, lean production management, strategic planning, and everyday business decisions in private industry. Prerequisite: (Undergraduate level IME 345 Minimum Grade of D and Undergraduate level IME 451 Minimum Grade of D and Undergraduate level IME 470 Minimum Grade of D) or (Undergraduate level IE 345 Minimum Grade of D and Undergraduate level IE 451 Minimum Grade of D and Undergraduate level IE 470 Minimum Grade of D) or (Graduate level IME 451 Minimum Grade of C and Graduate level IME 470 Minimum Grade of C) or (Graduate level IE 451 Minimum Grade of C and Graduate level IE 470 Minimum Grade of C)

568 - 3 **Advanced Computer Simulation** - Advanced techniques of computer simulation and their applications for real world projects in production, manufacturing, service industries, discrete-event, continuous simulation, simulation optimization, and output analysis. Prerequisite: Undergraduate level IME 468 Minimum Grade of D or Graduate level IME 468 Minimum Grade of C or Undergraduate level IE 468 Minimum Grade of D or Graduate level IE 468 Minimum Grade of C

570 - 3 **Assembly Engineering** - Statistical and traditional tolerancing methods, cost/tolerance relationship, design for assembly, part count reduction techniques, assembly tooling, and inspection for assembly components. Prerequisite: Undergraduate level IME 428 Minimum Grade of D or Graduate level IME 428 Minimum Grade of C or Undergraduate level IE 428 Minimum Grade of D or Graduate level IE 428 Minimum Grade of C

575 - 3 **Advanced CAD/CAM/CAE** - Prerequisite: Undergraduate level IME 475 Minimum Grade of D or Graduate level IME 475 Minimum Grade of C or Undergraduate level IE 475 Minimum Grade of D or Graduate level IE 475 Minimum Grade of C

576 - 3 **Advanced Computer Integrated Manufacturing Systems** - Advanced topics in system integration, optimization, data collection, device monitoring, and software development for automated systems. Prerequisite: None

577 - 3 **Advanced Engineering Materials** - Examination of Engineering Materials with emphasis on selection, application, fabrication, and testing of materials in industrial applications. Prerequisite: Undergraduate level IME 370 Minimum Grade of D or Undergraduate level IE 370 Minimum Grade of D

580 - 3 **Advanced Measurement Systems** - Advanced topics associated with dimensional measurement, inspection, measurement system analysis, and measurement of other physical parameters. Emphasis on automated and precision measurement techniques. Prerequisite: Undergraduate level IME 466 Minimum Grade of D or Graduate level IME 466 Minimum Grade of C or Undergraduate level IE 466 Minimum Grade of D or Graduate level IE 466 Minimum Grade of C

583 - 3 **Supply Chain Logistics Systems** - Design of integrated production systems based on supply chain logistics, enterprise-wide performance measurement, distribution planning, vehicle routing, demand management, replenishment management, and real-time control. Prerequisite: Undergraduate level IME 483 Minimum Grade of D or Graduate level IME 483 Minimum Grade of C or Undergraduate level IE 483 Minimum Grade of D or Graduate level IE 483 Minimum Grade of C

584 - 3 **Design and Evaluation of Material Handling Systems** - Material handling, automatic storage and retrieval systems. Vehicle alternatives, sorting, distribution, warehousing, order picking, pallet storage, receiving, bar-coding, benchmarking, case picking, RFID, cross-docking. Prerequisite: Undergraduate level IME 484 Minimum Grade of D or Graduate level IME 484 Minimum Grade of C or Undergraduate level IE 484 Minimum Grade of D or Graduate level IE 484 Minimum Grade of C

591 - 1 to 4 **Independent Study** - Individual investigation of a topic in Industrial Engineering to be agreed upon with the instructor. May be repeated to a maximum of 6 hours provided no topic is repeated. Prerequisite: None

592 - 1 to 5 **Topics in Industrial Engineering** - Topic of special interest; course schedule will include name of topic. May be repeated to a maximum of 9 hours provided no topic is repeated. Prerequisite: consent of instructor.

595 - 1 to 5 **Special Project** - Independent study in focus area. May be used as a paper for MS degree in Industrial Engineering. Prerequisite: None

599 - 1 to 6 **Thesis** - Directed research on a specific Industrial Engineering topic to satisfy thesis requirement. May be repeated to a maximum of 6 hours. Prerequisite: None

- Instructional Technology (IT)
  - 410 - 3 **Media in Instruction** - Designing lessons with multi-sensory approach. Demonstrations and hands-on experiences with audio, video projection, and computer equipment. Emphasis on software evaluation and utilization. Prerequisite: None
  - 430 - 3 **Computer Based Publishing & Instruction** - Opportunities to work with various computer hardware and software systems to prepare instructional materials. Emphasis is placed on design and production of effective instructional materials. Prerequisite: None

435 - 3 **Producing Instructional Materials** - Development of instructional products which integrate various digital media. Emphasis on production, visual communication, graphics, authoring environments, and evaluation of instructional software. Prerequisite: Consent of department chair or program director.

442 - 3 **Media Selection** - Analysis and criteria for selecting aids and reviewing sources. Includes principles and theories of library media selection, assessment and policy for library media collection development. Prerequisite: None

443 - 3 **Instructional Media For Children and Young Adults** - Media for preschool children and young adults. Includes comparison and evaluation of major writers, artists, illustrators and designers of media and identification of established genres. Prerequisite: None

448 - 3 **Cataloging for School Librarians** - Principles and skills of cataloguing all types of materials, including the use of bibliographic records, Dewey Decimal classification, and Library of Congress Subject Headings. Prerequisite: None

450 - 3 **Using Video For Instruction** - Instructional television as medium for learning. Emphasis on delivery systems including commercial, public, and satellite programs; and teacher- produced instructional sequences. Prerequisite: None

481 - 3 **Computers in Education: Theory and Practice** - Research on and effective methods for using computers in an educational setting and a systematic framework for integrating computers into the curriculum. Prerequisite: None

486 - 3 **Web Design for Instruction** - Web design concepts for educational settings including usability concepts, web style criteria, interaction and instructional strategies; and legal/ethical issues related to web development. Requires consent of department chair or program director. Prerequisite: None

490 - 1 to 6 **Special Topics** - Varied content. Topics of immediate concern in instructional technology field. May be repeated up to 6 hours as long as no topic is repeated. Prerequisite: None

500 - 3 **Major Concepts in Instructional Technology** - Major concepts, critical issues, and research in instructional technology, including historical perspectives, design models, media, development, and evaluation. Prerequisite: None

505 - 3 **Needs Assessment and Program Evaluation in Instructional Technology** - Key concepts and approaches of needs assessment and program evaluation in instructional technology related to quantitative and qualitative evaluation methods, data collection, analysis, and interpretation. Prerequisite: None

508 - 3 **Instructional Design and Media Selection for Healthcare Informatics** - Provides healthcare informatics professionals with foundation in the skills of planning, designing, developing, implementing, and evaluating employee trainings. Prerequisite: None

510 - 3 **Instructional Systems Design** - Concepts and procedures related to systematic design, development, implementation, and evaluation of instruction. Prerequisite: None

520 - 3 **Performance Technology** - Assessment and analysis of training and educational needs; procedures for performing instructional analysis; and consultation strategies. Prerequisite: None

530 - 3 **Managing Instructional Development** - Prerequisite: None

540 - 3 **Distance Education** - Examination of theories and applications of distance education in educational and training settings in a variety of instructional modalities. Prerequisite: None

542 - 3 **Advanced Reference** - Evaluation of information sources including utilization of appropriate data bases in varied and specialized subject areas such as social sciences; science and technology; and literature, and humanities. Prerequisite: IT 447

544 - 3 **Cataloging of Non-Print Materials** - Cataloging, organizing, and classifying non-book materials for school library media centers and small to medium size public libraries. Emphasis on non-print media. Prerequisite: 448

548 - 3 **Administration if Instructional Materials Program** - Principles and theory of administration for school media centers and libraries. Emphasis on policies, goals, personnel, organization, budgets, communication, systems analysis, and future trends. Prerequisite: None

550 - 3 **Emerging Technologies in Education** - Current and emerging technologies in the field of education. Software and accessories will be utilized in a variety of instructional settings. Prerequisite: Graduate level IT 481 Minimum Grade of C

560 - 3 **Leadership in Educational Technology** - Issues related to the integration of technology in educational institutions are explored. Emphasis is given to planning models, leadership, management, professional development, planning models, and integration strategies. Requires consent of department chair or program director. Prerequisite: Undergraduate level IT 481 Minimum Grade of D

561 - 3 **Designing Digital Materials** - Experience with technology tools designed to enhance learning. Emphasis is on production and development for implementation in classrooms. Prerequisite: None

562 - 3 **Social Media for Teachers** - Using social media platforms to extend classroom learning. Emphasis is on interacting with social media resources and applying these platforms in the classroom. Prerequisite: None

563 - 3 **Games and Simulations** - Experience with games, simulations, and strategies to facilitate student learning. Emphasis is on development of new (and utilization of existing) games and simulations to strengthen student background knowledge. Prerequisite: None

565 - 3 **Managing Technology Resources for Education** - Installation, maintenance, and troubleshooting of a variety of operating systems, data networks, and distance learning systems in educational contexts. Focus on management, support, and delivery options. Requires consent of department chair or program director. Prerequisite: Undergraduate level IT 481 Minimum Grade of D and Graduate level IT 560 Minimum Grade of C

567 - 3 **Tools for Online Teaching and Learning** - Synchronous and asynchronous tools as communication and delivery channels within online classrooms. Prerequisite: None

568 - 3 **Design and Development of Online Lessons, Modules, and Courses** - Processes for designing, developing, and evaluating online course content, including lessons, modules, and entire courses. Prerequisite: None

569 - 3 **Managing and Facilitating the Online Classroom** - Principles and procedures for managing and facilitating the daily operations of online classrooms. Prerequisite: None

570 - 3 **The Learner/Instructional Strategies** - Design of instructional strategies which accommodate individual differences in learning. Prerequisite: EDUC 515 or consent of instructor

571 - 1 **Field Experiences I** - Field experiences in area schools focusing on situational analysis and planning for effective technology integration practices. Requires consent of department chair or program director. Prerequisite: Undergraduate level IT 481 Minimum Grade of C

572 - 2 **Field Experiences II** - Field experiences in area schools focusing on the design of technology-based integration strategies and the evaluation of technology-based learning experiences. Requires consent of department chair or program director. Prerequisite: Graduate level IT 571 Minimum Grade of C

573 - 3 **Field Experiences III** - Field experiences in area schools focusing on technology support, management, administration and leadership. Requires consent of department chair or program director. Prerequisite: Graduate level IT 572 Minimum Grade of C

580 - 3 **Design of Interactive Learning Environments** - Instructional theories and strategies for designing digital multimedia learning environments. Emphasis on design methods, interactivity, and usability issues. Prerequisite: None

582 - 3 **Development of Interactive Learning Environments** - Principles and techniques for developing interactive learning environments using advanced authoring and production tools. Prerequisite: Undergraduate level IT 486 Minimum Grade of C

590 - 3 **Seminar in Instructional Technology** - Topics in instructional technology. May be repeated once for a total of 6 hours. Requires consent of instructor Prerequisite: None

592 - 1 to 6 **Field Study** - Prerequisite: None

595 - 1 to 6 **Problems in Instructional Technology** - Individual study of selected problems in instructional technology. May be repeated to a maximum of 6 hours. Requires consent of advisor Prerequisite: None

596 - 1 **Design Studio 1** - Field-based experiences in the design of learning activities and utilization of appropriate tools for computer-based instructional development, including graphics, multimedia, and software authoring. Prerequisite: Graduate level IT 486 Minimum Grade of C and Graduate level IT 500 Minimum Grade of C

597 - 2 **Design Studio 2** - Field-based experiences in the design and production of interactive multimedia, electronic performance support systems, internet resources, and other forms of technology-enhanced learning environments. Student must have completed 15 hours of course work in Instructional Technology. Prerequisite: (Graduate level IT 510 Minimum Grade of C or Graduate level IT 580 Minimum Grade of C) and Graduate level IT 596 Minimum Grade of C

598 - 3 **Final Project** - Design, development, and testing of instructional product. Proposal and defense required. Requires completion of 30 hours toward of degree and consent of instructor. Prerequisite: None

599 - 1 to 6 **Thesis** - Supervised research on approved topic. Proposal and defense required. May be repeated to a maximum of 6 hours. Requires consent of instructor and advisor Prerequisite: None

- Integrative Studies (INTG)
  - 500 - 1 **Proposal Development** - Independent development of the thesis or final project proposal for the Master of Integrative Studies program. Prerequisite: Must have consent of the advisory committee.
  - 593 - 1 to 6 **Final Project** - Independent scholarly or creative activity at the master's level for the non-thesis option. May be repeated to a maximum of 6 hours. Prerequisite: consent of the advisory committee.
  - 599 - 1 to 6 **Thesis Research** - Independent research at the master's level for the thesis option. May be repeated to a maximum of 6 hours. Prerequisite: consent of the advisory committee.
- Italian (ITAL)
  - 499 - 2 to 6 **Independent Study in Italian** - Selected areas of language, literature, and culture. Individual work or small groups supervised by Italian faculty. Prerequisite: Undergraduate level ITAL 202 Minimum Grade of D

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- Kinesiology (KIN)
  - 412 - 3 **Biology of Cardiovascular and Metabolic Disease** - Molecular bases of human diseases related to cardiovascular, diabetes, hypertension, and obesity. Relationship between cellular pathways, diseases, and treatment effects. Not for graduate credit. Prerequisite: KIN 350 or NUTR 319 with C or better.
  - 418 - 3 **Exercise Epidemiology** - Effects of physical activity on cardiopulmonary, metabolic, and other hypokinetic diseases. Students will gain an understanding of current evidence-based interventions that improve health. Not for graduate credit. Prerequisite: KIN 416 with minimum grade of D or concurrent enrollment.
  - 426 - 3 **Cardiac and Pulmonary Rehabilitation** - This course will cover theory and common practice for the assessment and treatment of patients with cardiac and pulmonary diseases. Prerequisite: Undergraduate level KIN 350 Minimum Grade of C
  - 480 - 1 to 4 **Independent Study** - Individual investigation of a topic to be agreed upon by the instructor. May be repeated for a maximum of 4 hours so long as topics vary. Requires consent of instructor. Prerequisite: None
  - 490 - 1 to 4 **Selected Topics in Applied Kinesiology** - Theory and practice in topical areas such as exercise physiology; biomechanics; sport psychology; exercise psychology; skill teaching; and fitness assessment. May be repeated to a maximum of 6 hours provided no topics are repeated. Prerequisite: None
  - 496 - 3 **Advanced Concepts and Techniques in Strength and Conditioning** - This course will prepare students to take the Certified Strength and Conditioning Specialist (CSCS) certification exam through the National Strength and Conditioning Association. Prerequisite: Undergraduate level KIN 319 Minimum Grade of D and Undergraduate level KIN 350 Minimum Grade of D
  - 499 - 1 to 4 **Individual Research** - Selection, investigation, and writing of research paper under supervision of instructor. Requires consent of instructor. Prerequisite: None
  - 501 - 3 **Exercise Psychology** - Provides an in-depth analysis of psychosocial factors related to preventive and rehabilitative exercise behavior. Prerequisite: None
  - 502 - 3 **Sport Psychology** - Explores the psychological factors influencing participation patterns and performance in sport, and effects of sport upon psychological responses. Prerequisite: None
  - 503 - 3 **Sports Sociology** - Provides an in-depth analysis of the interaction between physical activity and society including the social and cultural processes and institutions which influence, and are influenced by, physical activity. Prerequisite: None
  - 505 - 3 **Psychology of Coaching** - Will focus on using best practices in coaching based on research and readings by those in the field. Prerequisite: None
  - 506 - 3 **Rehabilitation and Health Psychology** - Provides an in depth analysis of the biological, psychological, social, environmental, and political factors that are related to one health and to the rehabilitative process. Prerequisite: None
  - 507 - 3 **Physical Activity Promotion** - Designed to explore practical and theory-based strategies for increasing physical participation and adherence among various populations. Prerequisite: None
  - 508 - 3 **Professional Standards and Ethics in Sport Psychology** - This course will deal with ethical issues within the field of applied sport psychology. Prerequisite: None
  - 509 - 3 **Research Methods in Kinesiology** - Prepares students to read, understand, and evaluate research in the field of Kinesiology. Prerequisite: None
  - 512 - 3 **Advanced Exercise Physiology** - Discussion and application of the physiological and metabolic effects that occur at rest and during exercise in humans. Prerequisite: None
  - 513 - 3 **Clinical Exercise Physiology** - Review of evaluations, mechanisms and adaptation by which exercise prevents and treats chronic diseases. Prerequisite: None
  - 514 - 3 **Advanced Exercise Assessment and Prescription** - Provides in-depth training for the various concepts related to exercise assessment and prescription for healthy persons and those with chronic disease and/or disability. Prerequisite: None
  - 516 - 3 **Advanced Cardiovascular and Respiratory Physiology** - Discussion and application of the cardiovascular and respiratory physiological effects that occur at rest and during exercise in humans. Includes interpretation of electrocardiograms (ECG). Prerequisite: None
  - 517 - 3 **Pathophysiology and Treatment of Obesity** - Provides in depth content of the etiology, pathophysiology, prevention and treatments for obesity in adults and children. Prerequisite: None
  - 518 - 3 **Exercise Endocrinology** - Provides content on the cellular and systems physiology of the neuro-endocrine system, as well as presents research-based findings of how exercise alters neuro-endocrine function. Prerequisite: None
  - 520 - 3 **Pedagogy in Special Physical Education** - Selection of appropriate intervention strategies for individuals with disabilities. Includes instructional strategies and curriculums. Prerequisite: None
  - 521 - 3 **Analysis of Research in Physical Education and Coaching Pedagogy** - Designed to help teachers and coaches understand important literature in Physical Education and Coaching. Students will interpret ad utilize research to inform instruction. Prerequisite: None
  - 522 - 3 **Anaylsis of Teaching Behaviors in Sport and Physical Education** - Selection and observation of appropriate teaching behaviors in sport and K-12 physical education. Prerequisite: None
  - 524 - 3 **Assessment in Sport and Physical Education** - Focuses on particular skills necessary for developing, implementing, and evaluating assessment in sport and physical education. Prerequisite: None
  - 525 - 3 **Principles of Assessment in Special Physical Education** - Selection and presentation of appropriate assessment tools for individuals with varying degrees of disability and age. Prerequisite: None
  - 526 - 3 **Diversity in Physical Education and Coaching Pedagogy** - Designed to help students demonstrate an understanding of diversity issues such as race, ethnicity, gender, sexuality, religion, physical ability, language, and/or social class. Prerequisite: None
  - 527A - 3 **Action Research in Physical Education** - Introduces students to action research, a form of self-reflective systematic inquiry by practitioners on their own practice. Prerequisite: None
  - 527B - 3 **Presentation of Action Research in Physical Education** - Introduces students to presenting action research, a form of self-reflective systematic inquiry by practitioners on their own practice. Prerequisite: None

528 - 3 **Physical Activity and Mental Health** - Survey of positive effects of physical effects of physical activity on several mental health issues including stress, depression and cognition. Prerequisite: None

532 - 3 **Research Methods in Sport Management** - Analysis of Qualitative Research Methods studying multiple sport management research streams. Case studies, content analysis, ethnography, policy analysis, and legal research are included. Prerequisite: None

533 - 3 **Issues in Athletics and Education** - Current topics analysis, through principles of management, strategy, sociology, law and other disciplines. Prerequisite: None

534 - 3 **Strategic Management in the Sport Industry** - Firms in the sport industry, attainment of competitive advantage, analytical tools studying corporate environment, culture, change, planning and implementation. Prerequisite: None

535 - 3 **Administrative Theory & Practice in Kinesiology** - Administrative and supervisory functions in physical education and sport organizations including organizational policies and procedures for instructional programs. Prerequisite: None

536 - 3 **Sport Facility Design and Management** - Principles of design, construction, maintenance and management of sports centers. Prerequisite: None

537 - 3 **Development & Governance of International Sports** - Cultural influences affecting the emergence, governance and organization of selected international sports. Prerequisite: None

538 - 3 **Special Topics in Sport Management** - Human Resource management, risk management, sport communications, Interscholastic, Intercollegiate and /or professional sport administration, coach theory and administration. Prerequisite: None

541 - 3 **Advanced Human Nutrition and Metabolism** - Discussion and application of macronutrients and micronutrients on metabolism in health and disease. Prerequisite: None

550 - 3 to 12 **Selected Topics in Kinesiology** - Analysis of reports, current problems, trends, and research in exercise science. Repeatable up to 12 hours at discretion of advisor, provided no topic is repeated. Prerequisite: None

555 - 1 to 9 **Internship in Exercise Physiology** - Individualized planned experience in agency, organization, or institution appropriate to student's area of professional interest. Prerequisite: None

580 - 1 to 4 **Readings in Kinesiology** - Supervised reading in selected topics. May be repeated to a maximum of 8 hours. Prerequisite: None

597 - 3 **Seminar in Exercise Physiology** - Review and discussion of historically classic articles and current research in exercise physiology. Prerequisite: None

599 - 1 to 6 **Thesis in Kinesiology** - Minimum of 3 credit hours must be earned by student selecting thesis track. May be repeated to a max of 6 hours. Prerequisite: Graduate level KIN 509 Minimum Grade of C

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- Latin (LAT)
  - 499A - 4 **Readings in Latin: Learning Language - Selections from Classical, Medieval, and Renaissance Latin** - Learning language through selections from classical, medieval, and renaissance Latin. LAT 499 A, LAT 499 B, and LAT 499 C must be taken in sequence and are prerequisite to LAT 499 D, LAT 499 E, or LAT 499 F which may be taken out of sequence with consent of instructor. Individual segments may not be repeated Prerequisite: None
  - 499B - 4 **Readings in Latin: Continuation of LAT 499A** - Continuation of A. LAT 499 A, LAT 499 B, and LAT 499 C must be taken in sequence and are prerequisite to LAT 499 D, LAT 499 E, or LAT 499 F which may be taken out of sequence with consent of instructor. Individual segments may not be repeated for credit. Requires consent of instructor. Prerequisite: None
  - 499C - 4 **Readings in Latin: Continuation of LAT 499B** - Continuation of B. LAT 499 A, LAT 499 B, and LAT 499 C must be taken in sequence and are prerequisite to LAT 499 D, LAT 499 E, or LAT 499 F which may be taken out of sequence with consent of instructor. Individual segments may not be repeated for credit. Requires consent of instructor. Prerequisite: None
  - 499D - 4 **Readings in Latin: Second-Year Level/Content Varies** - Second-year level. Content varies with instructor. LAT 499 A, LAT 499 B, and LAT 499 C must be taken in sequence and are prerequisite to LAT 499 D, LAT 499 E, or LAT 499 F which may be taken out of sequence with consent of instructor. Individual segments may not be repeated for credit. Prerequisite: None
  - 499E - 4 **Readings in Latin: Second-Year Level/Content Varies** - Second-year level. Content varies with instructor. LAT 499 A, LAT 499 B, and LAT 499 C must be taken in sequence and are prerequisite to LAT 499 D, LAT 499 E, or LAT 499 F which may be taken out of sequence with consent of instructor. Individual segments may not be repeated for credit. Prerequisite: None
  - 499F - 4 **Readings in Latin: Second-Year Level/Content Varies** - Second-year level. Content varies with instructor. LAT 499 A, LAT 499 B, and LAT 499 C must be taken in sequence and are prerequisite to LAT 499 D, LAT 499 E or LAT 499 F which may be taken out of sequence with consent of instructor. Individual segments may not be repeated for credit. Prerequisite: None

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- Management (MGMT)
  - 430 - 3 **Human Resource Management** - Theory, practice and trends in effective utilization of human resources in organizations. Prerequisite: Undergraduate level MGMT 340 Minimum Grade of D or (Undergraduate level MGMT 330 Minimum Grade of D and Undergraduate level MGMT 331 Minimum Grade of D)
  - 431 - 3 **Recruiting, Selecting and Hiring Employees** - Principles, practices and issues relevant to staffing work organizations. Topics include employee recruitment approaches; selection procedure development; work force headcount planning; and equal employment regulations. Prerequisite: Undergraduate level MGMT 430 Minimum Grade of D
  - 432 - 3 **Training and Developing Employees** - Principles, practices and factors that contribute to employees' job competence, performance, growth, and contribution to organizational performance. Topics include training assessment, development, and delivery. Prerequisite: Undergraduate level MGMT 430 Minimum Grade of D
  - 433 - 3 **Performance Management and Compensation** - This course focuses on the importance of performance management in the workplace, including performance assessment, compensation and workplace safety, along with performance in union environments. Prerequisite: Undergraduate level MGMT 430 Minimum Grade of D
  - 451 - 3 **Managing Organizational Change and Innovation** - Study of organizational change with emphasis on diagnostic skills necessary for effective management of planned organizational change. Individual and group leadership approaches to increase effectiveness. Prerequisite: Undergraduate level MGMT 341 Minimum Grade of D or (Undergraduate level MGMT 330 Minimum Grade of D and Undergraduate level MGMT 331 Minimum Grade of D)
  - 461 - 3 **Managing in the Global Economy/International Management** - Management of business in other countries and in global economy. Interaction of political, cultural, social, legal, and economic forces in international business context. Prerequisite: Undergraduate level MGMT 341 Minimum Grade of D or (Undergraduate level MGMT 330 Minimum Grade of D and Undergraduate level MGMT 331 Minimum Grade of D)
  - 475 - 3 **Entrepreneurship & Small Business Management** - Formation of new enterprises and management of small business. Focus on identifying opportunities, starting a new enterprise, and operational and organizational aspects of small business management. Prerequisite: Undergraduate level MGMT 341 Minimum Grade of D or (Undergraduate level MGMT 330 Minimum Grade of D and Undergraduate level MGMT 331 Minimum Grade of D)
  - 485 - 3 **Managing Quality and Performance** - Current topics in management, with special emphasis on designs, programs and techniques for managing quality and performance improvements. Advanced readings and cases on innovative business practices. Prerequisite: Undergraduate level MGMT 341 Minimum Grade of D or (Undergraduate level MGMT 330 Minimum Grade of D and Undergraduate level MGMT 331 Minimum Grade of D)
  - 495 - 3 **Special Topics in Management** - Advanced and specialized topics of current concern to field of management. May be repeated up to a maximum of 6 hours provided no topic is repeated. Requires consent of instructor. Prerequisite: Undergraduate level MGMT 341 Minimum Grade of D or (Undergraduate level MGMT 330 Minimum Grade of D and Undergraduate level MGMT 331 Minimum Grade of D)
  - 541 - 3 **Health Care Law** - Patient rights, provider rights and the legal implications of the denial of treatment. Examination of current case law and the U.S. health care system. Prerequisite: None
  - 551 - 3 **Managing Organizational Change & Innovation** - Knowledge and skills of organizational change with emphasis on diagnostic skills necessary for effective management of planned organizational change. Individual and group leadership approaches. Prerequisite: None
  - 553 - 3 **Seminar in Quality and Performance Management** - Current topics in management, with special emphasis on designs, programs and techniques for managing quality and performance improvements. Advanced readings and cases on innovative business practices. Prerequisite: None
  - 558 - 3 **Cyberlaw** - Addresses legal issues presented by cyberspace and related technology. Students learn legal issues, law, and application of law by case method. Prerequisite: Graduate level MBA 522 Minimum Grade of C or Undergraduate level ACCT 340 Minimum Grade of D
  - 561 - 3 **International Business** - Management of business in other countries and in global economy. Interaction of political, cultural, social, legal and economic forces in international business context. Prerequisite: None
  - 570 - 3 **Seminar in Human Resource Management** - Theory and practice of human resource management. Balanced attention on strategic use of HR in organizations and HR tools to achieve effectiveness and efficiency. Prerequisite: None
  - 575 - 3 **Entrepreneurship and Small Business Management** - Formation of new enterprises and management of small business. Focus on identifying opportunities, starting a new enterprise, and operational and organizational aspects of small business management. Prerequisite: Graduate level MKTG 525 Minimum Grade of C and Graduate level FIN 527 Minimum Grade of C
  - 580 - 3 **Employment Law For Managers** - Selected areas impacting business managers. Topics include affirmative action; drugs; safety; and discrimination based on sex, race, pregnancy and age. Prerequisite: Graduate level MBA 522 Minimum Grade of C or Undergraduate level ACCT 340 Minimum Grade of D
  - 595 - 3 **Seminar in Management** - Interpretations and discussions of current developments in management. Topics vary with faculty interest and changes in the field. Emphasis on analysis of current developments. Prerequisite: None
  - 597 - 1 to 3 **Independent Study in Management** - Investigation of focused, topical areas. Individual or small group projects. May be repeated to a maximum of 3 hours. Prerequisite: Detailed proposal approved by supervising faculty member and chair. Requires consent of department chair or program director.
- Marketing (MKTG)
  - 466 - 3 **Marketing On the Internet** - Focus on marketing issues surrounding commercialization of world wide web and other emerging electronic media. Examines impact of digital technology on strategic marketing planning. Prerequisites: MKTG 300.
  - 470 - 3 **Sport Marketing** - Sport marketing mix decisions from perspective of organizations that offer sports-related products and those that use sport to promote other products and services. Prerequisites: MKTG 300 or consent of instructor.
  - 471 - 3 **Advertising Policy & Management** - Strategic role of persuasive communication. Concepts and methods necessary to develop advertising programs. Advertising planning and budgeting in the context of achieving marketing objectives. Prerequisite: MKTG 300.
  - 472 - 3 **Sales Policy & Management** - Organization and operational functions of salespeople and sales managers. Selling skills; forecasting; recruiting; selection; training; territory design and assignment; supervision; compensation; motivation; and performance appraisal. Prerequisite: MKTG 300.

474 - 3 **Retail Policy & Mgmt** - Functions, organization, and management of retail enterprises. Impact of recent and contemporary forces. Systems for merchandising and promotional activities. Retailing careers and appropriate preparation. Prerequisite: Undergraduate level MKTG 300 Minimum Grade of D

475 - 3 **Consumer Behavior** - Consumer motivation, buying behavior, group influence, cultural forces, information processing, and product diffusion. Explanatory theories and product development. Prerequisite: Undergraduate level MKTG 300 Minimum Grade of D

476 - 3 **International Marketing** - Impact of tariffs, cultural/social restrictions, economic political environments, and legal restrictions. International distribution pricing; multinational product planning; communications decisions; and international marketing research. Prerequisite: Undergraduate level MKTG 300 Minimum Grade of D

478 - 3 **Intermediate Marketing Research** - Marketing research project planning and development. Emphasizes design and execution of custom research projects, data analysis, report preparation, and presentation. Prerequisite: Undergraduate level MKTG 377 Minimum Grade of D

479 - 3 **Special Topics in Marketing** - Contemporary issues/problems in marketing. Topic varies when offered. Examples: service marketing; industrial marketing; non-profit marketing; and other significant topics. May repeat as topic varies. Requires consent of instructor. Prerequisite: Undergraduate level MKTG 300 Minimum Grade of D

480 - 3 **Advanced Marketing Management** - Market structure and behavior. Research and select marketing opportunities. Develop marketing strategies. Plan marketing tactics. Implementation and control of marketing efforts. Final marketing course. Prerequisite: Undergraduate level MKTG 377 Minimum Grade of D

490 - 1 to 3 **Independent Study in Marketing** - Topical areas in greater depth or unavailable in regular courses. Individual or small group readings and/or research projects. May be repeated to 6 hours by permission. Requires consent of department chair or program director. Prerequisite: None

501 - 1 **MMR Immersion Boot Camp** - Introduction of common practices and culture of Marketing Research Industry. Overview of MMR and SIUE Graduate School. Overview of MS Office and SPSS. Prerequisite: None

525 - 3 **Marketing Analysis and Applications for Managerial Decision Making** - Decision-Oriented overview of marketing management in creating value by analyzing customer responses for designing products, prices, channel and communication strategies for planning marketing effort. Prerequisite: None

530 - 3 **Marketing Planning & Strategy** - Analytical tools and decision paradigms for marketing planning and strategy. Emphasizes integration of information, segmentation and elements of marketing plan to achieve competitive advantage. Prerequisite: Graduate level MKTG 525 Minimum Grade of C

532 - 3 **Services Marketing** - Service systems and service management with emphases in services quality and satisfaction, service strategy, service recovery, marketing differentiation and positioning in services industries. Prerequisite: Graduate level MKTG 525 Minimum Grade of C

534 - 3 **Advertising Research** - Advertising research using both theory based literature and practical application of current theories of advertising and persuasion. Prerequisite: Graduate level MKTG 525 Minimum Grade of C

539 - 1.5 **Marketing Research Advances and Applications** - Speaker series with real world case studies and advances in marketing research. Prerequisite: None

540 - 3 **Buyer Behavior** - Organizational and consumer behavior models; internal/ external factors influencing choice processes; attitudes, intentions, and information processing; and measurement and research. Applies behavioral theories to marketing decisions. Prerequisite: Graduate level MKTG 525 Minimum Grade of C

541 - 3 **New Product Design, Development and Management** - Theoretical and pragmatic issues for developing new products and services and managing ongoing products and services. Analytical decision making applied to product design, positioning, research, adoption, and diffusion. Prerequisite: (Graduate level MKTG 525 Minimum Grade of C and Graduate level MBA 521 Minimum Grade of C) or MKTG 516 Placement 1

542 - 3 **Promotion Management** - Communications from marketer to market using advertising, personal selling, publicity, and sales promotion. Managerial analysis strategy programming and evaluation emphasized. Prerequisite: Graduate level MKTG 525 Minimum Grade of C

543 - 3 **Channel Management** - Development and management of channel and distribution systems in restrictive and dynamic environments. Communication, control, performance, and customer service. Prerequisite: Graduate level MKTG 525 Minimum Grade of C

544 - 3 **Marketing Research for Decision Making** - Marketing management information needs. Data collection and interpretation for decision-making. Research design; survey methods; sampling; questionnaire and experimental designs; and data analysis. Prerequisite: (Graduate level MKTG 525 Minimum Grade of C and Graduate level MBA 521 Minimum Grade of C) or MKTG 516 Placement 1

545 - 3 **Health Care Marketing** - Application of marketing strategies and techniques to health care of organizations. Focus on identifying appropriate client-oriented marketing programs. Prerequisite: Graduate level MKTG 525 Minimum Grade of C

546 - 3 **Research Design & Data Collecting Procedures** - Advanced consideration of management of marketing research process; research designs; sources of marketing data; qualitative and quantitative data collection procedures; measurement; scaling; and questionnaire design. Prerequisite: Graduate level MKTG 544 Minimum Grade of C

547 - 3 **Qualitative Marketing Research** - Overview of qualitative marketing research methods. Data collection, analysis and interpretation for decision making. Prerequisite: Graduate level MKTG 525 Minimum Grade of C or Graduate level MKTG 544 Minimum Grade of C

548 - 3 **Marketing Research Methodology & Data Analysis** - Comprehensive and practical considerations of research methodology; data characteristics and processing; multivariate data analysis approaches (statistical considerations and applications); and communication of marketing research results. Prerequisite: Graduate level MKTG 546 Minimum Grade of C

550 - 3 **Marketing Research Project and Strategy** - Integration of all aspects of marketing research into comprehensive plans and course of action. Action planning, design, and execution including client service and management. Prerequisite: Graduate level MKTG 530 Minimum Grade of C and Graduate level MKTG 548 Minimum Grade of C

560 - 3 **Special Topics in Marketing Research** - Prerequisite: Graduate level MKTG 525 Minimum Grade of C

561 - 3 **Database Marketing** - Applications of database technology to implementation of marketing strategies. Focus on use of databases in relationship marketing and customer-satisfaction management. Prerequisite: Graduate level MKTG 525 Minimum Grade of C

562 - 3 **Syndicated Data Analysis** - Identification of the marketing uses of information from syndicated scanner data. Experience with the principle syndicated data technologies and supplies. Prerequisite: Graduate level MKTG 525 Minimum Grade of C

563 - 3 **Customer Relationship Management** - Introduces students to the concepts, methods and applications of Customer Relationship Management. Students will develop an understanding of theoretical underpinnings and practical considerations of customer relationship management. Prerequisite: Graduate level MKTG 525 Minimum Grade of C

595 - 1 to 3 **Seminar in Marketing** - Interpretation and discussion of current developments. Impact and analysis of current issues. May be repeated to a maximum of 6 hours provided no topic is repeated. Prerequisite: Graduate level MKTG 525 Minimum Grade of C

597 - 1 to 3 **Independent Study in Marketing** - Topical areas in greater depth or unavailable in regular courses. Individual and/or research projects. May be repeated by permission to a maximum of 6 hours. Requires consent of department chair or program director. Prerequisite: None

- Mass Communications (MC)
  - 401 - 3 **Media Law and Policy** - U.S. Constitution and federal and state law related to mass media. Congressional and public policy. Research paper/case study required. Prerequisite: None

    402 - 3 **Media Management** - Management responsibilities. Challenges and expectations in the professional environment, i.e., promotions, ratings, programming. Research paper required. Requires upper class standing in Mass Communications major or consent of instructor. Prerequisite: None

421 - 3 **Advertising Campaigns** - Creation and production of advertising campaigns using print and electronic media. Prerequisite: Undergraduate level MC 326 Minimum Grade of C or Undergraduate level MC 334 Minimum Grade of C

422 - 3 **Strategic Media Writing** - Analyzing, writing, and presenting various forms of corporate communications for an assortment of media and audiences. Prerequisite: Undergraduate level MC 202 Minimum Grade of C

423A - 3 **Advanced Topics in Writing for Media: Dramatic Writing** - Advanced theory and practice of writing for the print and visual media. Dramatic writing. Prerequisite: None

423B - 3 **Advanced Topics in Writing for Media: Other Topics** - Advanced theory and practice of writing for the print and visual media. Other topics. Prerequisite: None

424 - 3 **Literary Journalism** - Students develop skills in literary non-fiction writing. Includes reading works by both historically important and contemporary writers in this genre. Prerequisite: Undergraduate level MC 202 Minimum Grade of C

433 - 3 **Advanced Video Directing and Producing** - Advanced theory and practice in television directing and producing. Students work as senior producers for the cable program SIUE Global Village, plus other assignments. Prerequisite: Undergraduate level MC 333 Minimum Grade of C

440 - 3 **Visual Media Analysis** - Evaluation of illustration and photography for publication and for motion imagery. Values, language, philosophy, style and standards based on artistic vision, audience expectations, and distribution constraints. Prerequisite: None

441 - 3 **Advanced Writing and Designing for Digital Media** - A project-based course which provides a comprehensive overview of both writing and designing for digital media. Students learn popular, industry-leading multimedia authoring tools. Prerequisite: Undergraduate level MC 327 Minimum Grade of C

443 - 3 **Narrative Media Production** - Processes and practices for short narrative production, including short films, TV pilots, and web series. Prerequisite: Undergraduate level MC 204 Minimum Grade of C

449 - 3 **Media Psychology** - Media's short term and long term psychological effects; socialization of children and adults; persuasion and social perception in politics, health communication, and consumer behavior. Prerequisite: None

451 - 3 **Research Methods in Mass Media** - Examination of traditional and emerging concepts of research. Extensive use of research instruments, evaluation and special applications to mass media. Individual and group research projects required. Prerequisite: None

452 - 3 **New Media and Technology** - Technological changes in the mass media. New media forms; audience fragmentation; and economic, regulatory, and social issues. Patters of adoption and diffusion. Prerequisite: None

453 - 3 **Transnational Media** - Focus on media ownership, content flow, cultural values, political power, and technological impact in history industrialization, economics and current processes of globalization. Prerequisite: None

454 - 3 **Documentary Media Production** - Evolution of documentary filmmaking; emphasis on student production of original documentary films. Prerequisite: Undergraduate level MC 204 Minimum Grade of C and (Undergraduate level MC 332 Minimum Grade of C or Undergraduate level MC 333 Minimum Grade of C or Undergraduate level MC 334 Minimum Grade of C or Undergraduate level MC 431 Minimum Grade of C)

455 - 3 **Media Ethics** - Critical examination and analysis of main values, issues, and arguments associated with media functions, performance, business practices, and public perceptions of the media. Prerequisite: None

456 - 3 **Identity and Emerging Media** - Students explore how people construct identities on various emerging media—Twitter, Snapchat, Instagram and YouTube. Students read academic sources and engage in podcast, videocast or animation projects. ENG 101 or 102 with grade of C or better or admission to the Media Studies graduate program.

471 - 3 **Special Topics in Mass Media** - Special and advanced topics in the mass media. Topics to be announced. May be repeated to a maximum of 9 hours provided no topic is repeated. Prerequisite: None

472 - 3 **Mass Media and Health** - Focuses on media literacy in the area of health, ethics related to media health content, the influence media have on health behavior and health policy. Prerequisite: None

475 - 3 **Advanced Mobile Media Design** - A project-based course which introduces students to concepts and techniques in designing advanced mobile-based interactive multimedia applications. Prerequisite: Undergraduate level MC 441 Minimum Grade of C

478 - 3 **International Advertising** - The course introduces and discusses issues that affect advertising and communications in a global marketplace. Prerequisite: None

491 - 3 **Advanced Practices** - Independent study in areas which student has completed all formal course work. Included are studies in news, advertising, writing, announcing, and production-direction. May be repeated to a maximum of 6 hours. Requires consent of instructor. Prerequisite: None

495 - 1 to 4 **Readings in Mass Media** - Selected readings in depth with member of faculty. Contemporary books and periodicals. May be repeated to a maximum of 4 hours. Requires consent of instructor. Prerequisite: None

500 - 3 **Mass Communication Theory** - Interrelationships of mass communications institutions in society. Government, marketing, management, audience, and research. Technological realities and future development. Characteristics of various media and places in communication process. Prerequisite: None

501 - 3 **Research Methods for Mass Communications** - Research methods and methodology for mass media and the social sciences. Methodologies include quantitative, qualitative, legal, historical and multi-method. Prerequisite: None

502 - 3 **Media Campaigns** - Seminar on theoretical and practical dimensions of media campaigns; exposure to campaigns and campaign management. Prerequisite: None

503 - 3 **Cultural Studies in Media** - Analysis of media impact on culture and society through use of critical theory. Research component and major term paper required. Prerequisite: None

504 - 3 **Special Topics in Mass Communications** - Varied content. Offered as student need exists and faculty time permits. May be repeated once to a maximum of 6 hours provided no topic is repeated. Requires consent of graduate program advisor. Prerequisite: None

505 - 3 **Seminar in Propaganda and Persuasion** - Students learn propaganda principles and theories; examine propaganda campaigns; present papers on theoretical and practical dimensions of propaganda; and develop critical skills for further study. Prerequisite: Undergraduate level MC 500 Minimum Grade of C

510 - 3 **Data Visualization for Storytelling** - This course introduces students to principles, tools, and techniques for exploring data and creating engaging data visualization for storytelling. Prerequisite: None

520A - 1 **Journalism Teachers' Organizational Role** - Legal, business and teaching aspects of being an adviser, with an emphasis on improving students' skills. Requires consent of department chair or program director. Prerequisite: None

520B - 1 **Journalism Teachers' Approach to News Gathering** - Provides secondary school newspaper advisers and journalism teachers the necessary background to successfully supervise, coach and evaluate their students. Requires consent of department chair or program director. Prerequisite: None

520C - 1 **Journalism Teachers' Approach to Design** - Design theory and digital production techniques applicable to student publications. Requires consent of department chair or program director. Prerequisite: None

520D - 1 **Journalism Teachers' Legal, Ethical Roles** - Provides secondary school newspaper and journalism teachers the necessary background to successfully supervise, coach, and evaluate their students in law, ethics, and issues. Requires consent of department chair or program director. Prerequisite: None

590 - 3 **Independent Study in Mass Communications** - Investigation of special topic area. Individual research projects which may include field experience and operations analysis. Requires consent of graduate program advisor. Prerequisite: None

591 - 3 **Professional Internship in Mass Comm** - Gain practical, curriculum-related experience in any area of media and communications. Prerequisite: None

598 - 1 to 6 **Final Project** - Culminating project. Individual approaches to message production for problem resolution. Effectiveness of different media in dealing with problem areas. Requires consent of graduate program advisor. Prerequisite: None

599 - 1 to 6 **Thesis** - Requires consent of graduate program advisor. Prerequisite: None

- Master of Business Admin (MBA)
  - 521 - 3 **Quantitative Analysis** - Problem solving and fundamental quantitative methods to formulate and solve problems to support business decision making. Analysis of complex situations and communication of results. Prerequisite: None
  - 522 - 3 **Decision Making in Organizations** - Examines the individual and group level dynamics of decision making focusing on non-quantitative issues surrounding managerial decisions and ethical dilemmas. Must be taken in the first 12 hours of MBA program. Prerequisite: None
  - 523 - 3 **Negotiation and Interpersonal Skills for Managers** - Within the framework of negotiation, this course is designed to develop individual skills needed to manage effectively including: conflict management, negotiation, and crisis/change management. Prerequisite: Graduate level MBA 522 Minimum Grade of C
  - 531 - 3 **External Environment of Business** - Analysis of the external environment in which business functions. Focus on ethical, social, legal, and economic environments as they affect managerial responsibility and organizational performance. Prerequisite: None
  - 532 - 3 **International Business Environment** - International issues of markets, power, and culture under condition of global interdependence. Analytical framework and global perspectives needed to manage a firm's interaction with its international environment. Prerequisite: None
  - 533 - 3 **Leadership, Influence & Managerial Effectiveness** - Focus on diagnostic, conceptual, analytic and interpersonal competencies needed in leadership roles; power, politics and influence in organizations; corporate culture and leadership style; and leadership and ethical decision-making. Prerequisite: None
  - 534 - 3 **Strategic Management** - Analysis, formulation, and implementation of firm's strategy studied from a general management perspective. Interrelationships between the firm and its external environment are emphasized. Prerequisite: Graduate level MBA 521 Minimum Grade of C and Graduate level MBA 522 Minimum Grade of C and Graduate level ACCT 524 Minimum Grade of C and Graduate level MKTG 525 Minimum Grade of C and Graduate level CMIS 526 Minimum Grade of C and Graduate level FIN 527 Minimum Grade of C and Graduate level ECON 528 Minimum Grade of C
  - 595 - 1 to 3 **Contemporary Issues in Business** - Seminar focusing on interdisciplinary issues in business; emphasis is on contemporary issues facing practicing business professionals that cut across traditional disciplinary boundaries. May be repeated for a total of 6 hours. Requires consent of instructor. Prerequisite: None
- Mathematics (MATH)
  - 400 - 3 **Development of Modern Mathematics** - The development of mathematics since the discovery of calculus. Prerequisite: Undergraduate level MATH 152 Minimum Grade of C and Undergraduate level MATH 223 Minimum Grade of C
  - 411 - 3 **The Teaching of Secondary Mathematics 2** - The second of two courses focusing on the content and pedagogy applicable to secondary mathematics teacher licensure. Does not count toward non-teaching degree or minor in mathematics. Prerequisite: Undergraduate level MATH 311 Minimum Grade of C
  - 416A - 1 to 3 **Mathematics Topics for Teachers: Analysis** - Analysis. May be repeated to a maximum of 3 hours so long as no topic is repeated. May not count toward a concentration or minor in mathematics. Requires consent of instructor. Prerequisite: None
  - 416B - 1 to 3 **Mathematics Topics for Teachers: Algebra** - Algebra. May be repeated to a maximum of 3 hours so long as no topic is repeated. May not count toward a concentration or minor in mathematics. Requires consent of instructor. Prerequisite: None
  - 416C - 1 to 3 **Mathematics Topics for Teachers: Number Theory** - Number theory. May be repeated to a maximum of 3 hours so long as no topic is repeated. May not count toward a concentration or minor in mathematics. Requires consent of instructor. Prerequisite: None
  - 416D - 1 to 3 **Mathematics Topics for Teachers: Probability & Statistics** - Probability and statistics. May be repeated to a maximum of 3 hours so long as no topic is repeated. May not count toward a concentration or minor in mathematics. Requires consent of instructor. Prerequisite: None
  - 416E - 1 to 3 **Mathematics Topics for Teachers: Mathematical Concepts** - Mathematical concepts. May be repeated to a maximum of 3 hours so long as no topic is repeated. May not count toward a concentration or minor in mathematics. Requires consent of instructor. Prerequisite: None
  - 416F - 1 to 3 **Mathematics Topics for Teachers: Geometry** - Geometry. May be repeated to a maximum of 3 hours so long as no topic is repeated. May not count toward a concentration or minor in mathematics. Requires consent of instructor. Prerequisite: None
  - 416G - 1 to 3 **Mathematics Topics for Teachers: History of Mathematics** - History of Mathematics. May be repeated to a maximum of 3 hours so long as no topic is repeated. May not count toward a concentration or minor in mathematics. Requires consent of instructor. Prerequisite: None
  - 416H - 1 to 3 **Mathematics Topics for Teachers: Applied Mathematics** - Applied mathematics. May be repeated to a maximum of 3 hours so long as no topic is repeated. May not count toward a concentration or minor in mathematics. Requires consent of instructor. Prerequisite: None
  - 416I - 1 to 3 **Mathematics Topics for Teachers: Logic & Foundations** - Logic and foundations. May be repeated to a maximum of 3 hours so long as no topic is repeated. May not count toward a concentration or minor in mathematics. Requires consent of instructor. Prerequisite: None
  - 420 - 3 **Abstract Algebra** - Rings, fields, integral domains, homomorphisms, factor rings, rings of polynomials, prime ideals, maximal ideals, extension fields, and vector spaces. Prerequisite: Undergraduate level MATH 320 Minimum Grade of C
  - 421 - 3 **Linear Algebra II** - Advanced study of vector spaces: Cayley-Hamilton Theorem, minimal and characteristic polynomials, Eigen spaces, canonical forms, Lagrange-Sylvester Theorem, and applications. Prerequisite: Undergraduate level MATH 223 Minimum Grade of C and Undergraduate level MATH 250 Minimum Grade of C and Undergraduate level MATH 321 Minimum Grade of C
  - 423 - 3 **Combinatorics and Graph Theory** - Methods of solving problems which are discrete in nature. Counting combinatorial reasoning and modeling; generating functions; and recurrence relations. Graphs: definitions, examples, basic properties, applications, and algorithms. Some knowledge of programming is recommended. Prerequisite: Undergraduate level MATH 223 Minimum Grade of D
  - 430 - 3 **A Geometric Introduction to Topology** - Topological spaces and equivalence through the study of knots, links, surfaces, 3-manifolds and other selected topics. Prerequisite: Undergraduate level MATH 350 Minimum Grade of C
  - 435 - 3 **Foundations for Euclidean & Non-Euclidean Geometry** - Points; lines; planes; space; separations; congruence; parallelism and similarity; non-Euclidean geometries; and independence of the parallel axiom. Riemannian and Bolyai-Lobachevskian geometries. Prerequisite: Undergraduate level MATH 250 Minimum Grade of C and Undergraduate level MATH 321 Minimum Grade of C and Undergraduate level MATH 320 Minimum Grade of C or Undergraduate level MATH 350 Minimum Grade of C
  - 437 - 3 **Differential Geometry** - Curves and surfaces in Euclidean 3-space from the perspective of classical differential geometry. Topics include: Frenet frames, fundamental surface forms, geodesics, and the Gauss-Bonnet theorem. Prerequisite: Undergraduate level MATH 250 Minimum Grade of C and Undergraduate level MATH 321 Minimum Grade of C
  - 450 - 3 **Real Analysis I** - Integration; infinite series, sequences and series of functions and their properties. Prerequisite: Undergraduate level MATH 350 Minimum Grade of C
  - 451 - 3 **Introduction to Complex Analysis** - Analytic functions, Cauchy-Riemann equations, harmonic functions, elements of conformal mapping, line integrals, Cauchy-Goursat theorem, Cauchy integral formula, power series, the residue theorem and applications. Prerequisite: Undergraduate level MATH 350 Minimum Grade of C
  - 462 - 3 **Engineering Numerical Analysis** - Polynomial interpolation and approximations; numerical integration; differentiation; and direct and iterative methods for linear systems. Numerical solutions for ODE's and PDE's. Matlab programming required. Not for Math majors. Prerequisite: Undergraduate level MATH 250 Minimum Grade of C and Undergraduate level MATH 305 Minimum Grade of C and (Undergraduate level CS 140 Minimum Grade of C or Undergraduate level CS 145 Minimum

Grade of C)

464 - 3 **Partial Differential Equations** - Partial differential equations, heat equation, wave equation, Laplace's equation, Fourier series, Fourier transform, method of separations of variable. Prerequisite: Undergraduate level MATH 223 Minimum Grade of C and Undergraduate level MATH 250 Minimum Grade of C and Undergraduate level MATH 305 Minimum Grade of C and Undergraduate level MATH 321 Minimum Grade of C

465 - 3 **Numerical Analysis** - Error analysis, solution of nonlinear equations, interpolation, numerical differentiation and integration, numerical solution of ordinary differential equations, solution of linear systems of equations. Prerequisite: Undergraduate level MATH 223 Minimum Grade of C and Undergraduate level MATH 305 Minimum Grade of C and Undergraduate level CS 145 Minimum Grade of C

466 - 3 **Numerical Linear Algebra with Applications** - Direct and iterative methods for linear systems; approximation of eigenvalues; solution of nonlinear systems; numerical solution of ODE and PDE boundary value problems; and function approximation. Prerequisite: Undergraduate level MATH 223 Minimum Grade of C and Undergraduate level MATH 250 Minimum Grade of C and Undergraduate level MATH 305 Minimum Grade of C and Undergraduate level MATH 321 Minimum Grade of C and (Undergraduate level CS 140 Minimum Grade of C or Undergraduate level CS 145 Minimum Grade of C)

490A - 3 **Topics in Mathematics** - 490a-h, 1-3 each Topics in Mathematic — Selected topics in specified area of interest. (a) Algebra, (b) Geometry and topology, (c) Analysis, (d) Mathematics education, (e) Logic and foundations, (f) Differential equations, (g) Numerical analysis, (h) Combinatorics and graph theory. May be repeated to a maximum of 6 hours so long as no topic is repeated. Prerequisite: consent of instructor.

490B - 1 to 3 **Topics in Mathematics** - 490a-h, 1-3 each Topics in Mathematic — Selected topics in specified area of interest. (a) Algebra, (b) Geometry and topology, (c) Analysis, (d) Mathematics education, (e) Logic and foundations, (f) Differential equations, (g) Numerical analysis, (h) Combinatorics and graph theory. May be repeated to a maximum of 6 hours so long as no topic is repeated. Prerequisite: consent of instructor.

490C - 1 to 3 **Topics in Mathematics** - 490a-h, 1-3 each Topics in Mathematic — Selected topics in specified area of interest. (a) Algebra, (b) Geometry and topology, (c) Analysis, (d) Mathematics education, (e) Logic and foundations, (f) Differential equations, (g) Numerical analysis, (h) Combinatorics and graph theory. May be repeated to a maximum of 6 hours so long as no topic is repeated. Prerequisite: consent of instructor.

490D - 1 to 3 **Topics in Mathematics** - 490a-h, 1-3 each Topics in Mathematic — Selected topics in specified area of interest. (a) Algebra, (b) Geometry and topology, (c) Analysis, (d) Mathematics education, (e) Logic and foundations, (f) Differential equations, (g) Numerical analysis, (h) Combinatorics and graph theory. May be repeated to a maximum of 6 hours so long as no topic is repeated. Prerequisite: consent of instructor.

490E - 1 to 3 **Topics in Mathematics** - 490a-h, 1-3 each Topics in Mathematic — Selected topics in specified area of interest. (a) Algebra, (b) Geometry and topology, (c) Analysis, (d) Mathematics education, (e) Logic and foundations, (f) Differential equations, (g) Numerical analysis, (h) Combinatorics and graph theory. May be repeated to a maximum of 6 hours so long as no topic is repeated. Prerequisite: consent of instructor.

490F - 1 to 3 **Topics in Mathematics** - 490a-h, 1-3 each Topics in Mathematic — Selected topics in specified area of interest. (a) Algebra, (b) Geometry and topology, (c) Analysis, (d) Mathematics education, (e) Logic and foundations, (f) Differential equations, (g) Numerical analysis, (h) Combinatorics and graph theory. May be repeated to a maximum of 6 hours so long as no topic is repeated. Prerequisite: consent of instructor.

490G - 1 to 3 **Topics in Mathematics** - 490a-h, 1-3 each Topics in Mathematic — Selected topics in specified area of interest. (a) Algebra, (b) Geometry and topology, (c) Analysis, (d) Mathematics education, (e) Logic and foundations, (f) Differential equations, (g) Numerical analysis, (h) Combinatorics and graph theory. May be repeated to a maximum of 6 hours so long as no topic is repeated. Prerequisite: consent of instructor.

490H - 1 to 3 **Topics in Mathematics** - 490a-h, 1-3 each Topics in Mathematic — Selected topics in specified area of interest. (a) Algebra, (b) Geometry and topology, (c) Analysis, (d) Mathematics education, (e) Logic and foundations, (f) Differential equations, (g) Numerical analysis, (h) Combinatorics and graph theory. May be repeated to a maximum of 6 hours so long as no topic is repeated. Prerequisite: consent of instructor.

495A - 1 to 3 **Independent Study: Algebra** - Research and reading in specified area of interest. Algebra. May be repeated to a maximum of 9 hours so long as no topic is repeated and not more than 3 hours are accumulated in neither a single segment nor more than 6 in one semester. Requires written consent of adviser and instructor. Prerequisite: None

495B - 1 to 3 **Independent Study: Geometry** - Research and reading in specified area of interest. Geometry. May be repeated to a maximum of 9 hours so long as no topic is repeated and not more than 3 hours are accumulated in neither a single segment nor more than 6 in one semester. Requires written consent of adviser and instructor. Prerequisite: None

495C - 1 to 3 **Independent Study: Analysis** - Research and reading in specified area of interest. Analysis. May be repeated to a maximum of 9 hours so long as no topic is repeated and not more than 3 hours are accumulated in neither a single segment nor more than 6 in one semester. Requires written consent of adviser and instructor. Prerequisite: None

495D - 1 to 3 **Independent Study: Mathematics Education** - Research and reading in specified area of interest. Mathematics education. May be repeated to a maximum of 9 hours so long as no topic is repeated and not more than 3 hours are accumulated in neither a single segment nor more than 6 in one semester. Requires written consent of adviser. Prerequisite: None

495E - 1 to 3 **Independent Study: Logic & Foundations** - Research and reading in specified area of interest. Logic & foundations. May be repeated to a max of 9 hours so long as no topic is repeated and not more than 3 hours are accumulated in neither a single segment nor more than 6 in one semester. Requires written consent of adviser and instructor. Prerequisite: None

495F - 1 to 3 **Independent Study: Topology** - Research and reading in specified area of interest. Topology. May be repeated to a maximum of 9 hours so long as no topic is repeated and not more than 3 hours are accumulated in neither a single segment nor more than 6 in one semester. Requires written consent of adviser and instructor. Prerequisite: None

495G - 1 to 3 **Independent Study: Numerical Analysis** - Research and reading in specified area of interest. Numerical analysis. May be repeated to a max of 9 hours so long as no topic is repeated and not more than 3 hours are accumulated in neither a single segment nor more than 6 in one semester. Requires written consent of adviser and instructor. Prerequisite: None

501 - 3 **Differential Equations & the Fourier Analysis** - Brief review of ode. Legendre and Bessel functions. Fourier series, integrals, and transforms. Wave equation and Laplace equation. Not for MATH majors. Prerequisite: Undergraduate level MATH 250 Minimum Grade of C and Undergraduate level MATH 305 Minimum Grade of C

502 - 3 **Advanced Calculus For Engineers** - Review of vector calculus, Green's theorem, Gauss' theorem, and Stokes' theorem. Complex analysis up to contour integrals and residue theorem. Not for math majors. Prerequisite: Undergraduate level MATH 250 Minimum Grade of C

520 - 3 **Topics in Algebra** - Advanced topics in algebra. Groups: Sylow theorems and simple groups. Fields: automorphisms and elementary Galois theory. Rings: noncommutative rings and Dedekind domains. Content may vary from year to year. May be repeated to a maximum of 9 hours provided no topic is repeated. Requires written consent of adviser and instructor. Prerequisite: Undergraduate level MATH 420 Minimum Grade of C

531 - 3 **Algebraic Content, Pedagogy, and Connections** - A focused look at algebraic content, best practices in pedagogy, and connections to other areas. Prerequisite: Math 250 or consent of instructor. Within the Department of Mathematics and Statistics credit can only be earned for the Post Secondary Mathematics option.

532 - 3 **Geometric Content, Pedagogy, and Connections** - A focused look at geometric content, best practices in pedagogy, and connections to other areas. Prerequisite: MATH 250 or consent of instructor. Within the Department of Mathematics and Statistics credit can only be earned for the Post Secondary Mathematics option.

533 - 3 **Discrete Matematics Content, Pedagogy, and Connections** - A focused look at discrete mathematics content, best practices in pedagogy, and connections to other areas. Prerequisite: MATH 250 or consent of instructor. Within the Department of Mathematics and Statistics credit can only be earned for the Post Secondary

Mathematics option.

534 - 3 **Calculus Content, Pedagogy, and Connections** - A focused look at calculus content including limits, differentiation, integration, and series, best practices in pedagogy, and connections to other areas. Within the Department of mathematics and Statistics credit can only be earned for the Postsecondary mathematics Education specialization. Prerequisite: Undergraduate level MATH 350 Minimum Grade of C

545 - 3 **Real Analysis II** - Riemann, Riemann-Stieltjes, and Lebesque integrals; differentiation of functions of n variables; multiple integrals; measure and probability; and differential for forms and Stokes' theorem. Prerequisite: Undergraduate level MATH 321 Minimum Grade of C and Undergraduate level MATH 450 Minimum Grade of C

550 - 3 **Topics in Analysis** - Advanced topics in analysis. Metric and topological spaces; completeness; compactness; correctedness; Hilbert and Banach spaces; measure theory and integration; and probability theory. May be repeated to a maximum of 9 hours provided no topic is repeated. Prerequisite: Undergraduate level MATH 545 Minimum Grade of C

551 - 3 **Topics in Complex Analysis** - Riemann mapping theorem; analytic continuation; and theorems of Weierstrass and Mittag-Leffler. Content may vary from year to year. May be repeated to a maximum of 6 hours provided no topic is repeated. Prerequisite: Undergraduate level MATH 451 Minimum Grade of C

552 - 3 **Theory of Ordinary Differential Equations** - Existence and uniqueness theorem; dynamical systems; stability, bifurcation theory, and boundary value problems. Prerequisite: Undergraduate level MATH 350 Minimum Grade of C and Undergraduate level MATH 421 Minimum Grade of C

555 - 3 **Functional Analysis with Applications** - Normed and Banach spaces; inner product and Hilbert spaces; open mapping and closed graph theorem; Hahn-Banach theorem; dual spaces; and weak topology. Prerequisite: Undergraduate level MATH 421 Minimum Grade of C and Undergraduate level MATH 450 Minimum Grade of C

563 - 3 **Optimal Control Theory** - Description of system and evaluation of its performance; dynamic programming; calculus of variations and Pontryagin's minimum principle; iterative numerical techniques. [Same as ECE 563 and ME 563] Prerequisite: Undergraduate level MATH 305 Minimum Grade of C or Undergraduate level ME 450 Minimum Grade of C or Undergraduate level ECE 365 Minimum Grade of C

565 - 3 **Advanced Numerical Analysis** - Rigorous treatment of topics in numerical analysis, including function approximation; and numerical solution to ordinary and partial differential equations. Convergence and stability of finite difference methods. Prerequisite: Undergraduate level MATH 350 Minimum Grade of C and Undergraduate level MATH 465 Minimum Grade of C and Undergraduate level MATH 466 Minimum Grade of C

567 - 3 **Topics in Applied Mathematical Analysis** - Topics from the following areas: Fourier theory and applications; applied functional analysis; asymptotic analysis; perturbation theory; control theory; theory of equilibrium; and partial differential equations. May be repeated to a maximum of 12 hours provided no topic is repeated. Prerequisite: Undergraduate level MATH 421 Minimum Grade of C and Undergraduate level MATH 450 Minimum Grade of C and Undergraduate level MATH 451 Minimum Grade of C

590A - 1 to 3 **Seminar: Algebra** - Intensive study of selected mathematical topics. Algebra. Each segment may be repeated to a maximum of 6 hours so long as no topic is repeated. Requires written consent of advisor and instructor. Prerequisite: None

590B - 1 to 3 **Seminar: Geometry** - Geometry. Each segment may be repeated to a maximum of 6 hours so long as no topic is repeated. Requires written consent of advisor and instructor. Prerequisite: None

590C - 1 to 3 **Seminar: Analysis** - Analysis. Each segment may be repeated to a maximum of 6 hours so long as no topic is repeated. Requires written consent of advisor and instructor. Prerequisite: None

590D - 1 to 3 **Seminar: Mathematics Education** - Mathematics education. Each segment may be repeated to a maximum of 6 hours so long as no topic is repeated. Requires written consent of advisor and instructor. Prerequisite: None

590E - 1 to 3 **Seminar: Logic & Foundations** - Logic and foundations. Each segment may be repeated to a maximum of 6 hours so long as no topic is repeated. Requires written consent of advisor and instructor. Prerequisite: None

590F - 1 to 3 **Seminar: Topology** - Topology. Each segment may be repeated to a maximum of 6 hours so long as no topic is repeated. Requires written consent of advisor and instructor. Prerequisite: None

590G - 1 to 3 **Seminar Numerical Analysis** - Numerical analysis. Each segment may be repeated to a maximum of 6 hours so long as no topic is repeated. Requires written consent of advisor and instructor. Prerequisite: None

595A - 1 to 3 **Special Project: Algebra** - Intensive study that may be used to satisfy research paper requirements for M.S. degree in mathematics. May be repeated to a maximum of 7 hours. Requires written consent of research advisor. Prerequisite: None

595B - 1 to 3 **Special Project: Geometry** - Intensive study that may be used to satisfy research paper requirements for M.S. degree in mathematics. Geometry. May be repeated to a maximum of 7 hours. Requires written consent of research advisor. Prerequisite: None

595C - 1 to 3 **Special Project: Analysis** - Intensive study that may be used to satisfy research paper requirements for M.S. degree in mathematics. Analysis. May be repeated to a maximum of 7 hrs. Requires written consent of research advisor. Prerequisite: None

595D - 1 to 3 **Special Project: Mathematics Education** - Intensive study that may be used to satisfy research paper requirements for M.S. degree in mathematics. Mathematics education. May be repeated to a maximum of 7 hours. Requires written consent of research advisor. Prerequisite: None

595E - 1 to 3 **Special Project: Logic & Foundations** - Intensive study that may be used to satisfy research paper requirements for M.S. degree in mathematics. Logic and foundations. May be repeated to a maximum of 7 hours. Requires written consent of research advisor. Prerequisite: None

595F - 1 to 3 **Special Project: Topology** - Intensive study that may be used to satisfy research paper requirements for M.S. degree in mathematics. Numerical analysis. May be repeated to a maximum of 7 hours. Requires written consent of research advisor. Prerequisite: None

595G - 1 to 3 **Special Project: Numerical Analysis** - Intensive study that may be used to satisfy research paper requirements for M.S. degree in mathematics. Numerical analysis. May be repeated to a maximum of 7 hours. Requires written consent of research advisor. Prerequisite: None

599 - 1 to 6 **Thesis** - Directed research to satisfy thesis requirement. May be repeated to a maximum of 6 hours. Requires written consent of thesis advisor. Prerequisite: None

- Mechanical Engineering (ME)
  - 414 - 3 **Gas Dynamics** - Basic equations of compressible flow, and isentropic flow of perfect gas; normal shock waves, and oblique shock waves; flow with friction and heat loss; and applications. Prerequisites: ME 315 and ME 310.

    417 - 3 **Heating, Ventilating and Air-Conditioning (HVAC)** - Air-conditioning systems, psychrometrics, indoor air quality, heating and cooling loads, pumps and fans, duct design, refrigeration. Prerequisite: ME 310 and ME 315 with a minimum grade of C in each course, or graduate standing

    419 - 3 **Gas Turbines** - Quasi-one-dimensional compressible flow; ideal and non-ideal gas turbine cycles, gas turbines for power, turbojet, and turbofan; component performance; engine off-design performance; and engine design considerations. Prerequisite: Undergraduate level ME 312 Minimum Grade of C and Undergraduate level ME 315 Minimum Grade of C

    432 - 3 **Vehicle Dynamics and Technology** - One dimensional dynamics of a vehicle, acceleration performance, braking performance, powertrain, tire mechanism, steering mechanism, low and high speed cornering, and suspension system. Prerequisite: ME 350 or MRE 358 with a minimum grade of C in each course, or graduate standing.

    433 - 3 **Fuzzy Logic and Applications** - Fundamentals of fuzzy sets, basic operations, fuzzy arithmetic, and fuzzy systems. Examples of applications in various fields of engineering and science. Requires consent of instructor. Same as ECE 433. Prerequisite: None

442 - 3 **Microelectromechanical Systems** - Fundamental science, design, and fabrication of MEMS and microsystems, scaling laws, MEMS flexures, capacitive, piezoelectric, piezoresistive, and thermal sensing and actuation. Completion of ME 315, 356, 370, 380 with grades of C or better or Graduate standing.

450 - 3 **Automatic Control** - Modeling of dynamical systems, linearizations, stability, and feedback control; Routh-Hurwitz Criteria, time domain and frequency domain response; Root Locus; and feedback compensator design. ME 356 with a C or better; or Graduate Status (GM)

452 - 3 **Vibrations** - Vibration of single and multi-degree of freedom systems; natural frequencies and modes; and vibration isolation. Structural response to ground excitation. Prerequisites: ME 262 CE 242, and MATH 305 with a C or better or graduate standing.

454 - 3 **Robotics-Dynamics and Control** - (Same as ECE 467 and MRE 454) Robotics, robot kinematics and inverse kinematics, trajectory planning, differential motion and virtual work principle, dynamics and control. Prerequisite: Consent of instructor.

458 - 3 **Mechatronics** - Dynamics response; fundamentals of electronic and logic circuits; sensors and instrumentation for strains, movements and fluid flow; actuators and power transmission devices; and feedback control. Two hours lecture and one laboratory session per week. Prerequisites: ME 356 with a C or better or graduate standing.

460 - 3 **Nondestructive Evaluation Methods** - Nondestructive evaluations methods for engineering materials. Ultrasonic inspection for defect detection, weld inspection plus methods of dye penetrate. Acoustic emissions and eddy currents are studied. C/l with CE 461. Prerequisite: None

466 - 3 **Digital Control** - Topics include finite difference equations, z-transforms, and state variable representation; and analysis and synthesis of linear sampled-data control systems using classical and modern control theory. Prerequisite: ME 450 with a C or better or ECE 365 with a C or better or graduate standing.

470 - 3 **Stress Analysis and Design** - Three dimensional torsion and bending; stress and strain transformations; yield criteria and plasticity theory; finite element method; and case studies and engineering design. Prerequisites: ME 370 with a C or better or concurrent enrollment and CE 242 with a C pr better, or graduate standing.

530 - 3 **Advanced Dynamics** - Kinematics and dynamics of particles in three dimensions; virtual work principle; nonholonomic constraints; Lagrange's equations; and three-dimensional rigid body kinematics and dynamics. Prerequisite: None

532 - 3 **Advanced Mechanisms and Synthesis** - Kinematics of two- and three-dimensional mechanisms. Synthesis of four and six bar mechanisms using three or more precision points. Balancing of rotating mechanisms. Requires consent of instructor. Prerequisite: None

540 - 3 **Continuum Mechanics** - Equations for continuous media for both solid and fluid systems. General equations of motion including equilibrium, compatibility, and boundary conditions. Requires consent of instructor. Prerequisite: None

544 - 3 **Theory of Elasticity** - Elastic equations and boundary conditions. Variational development of equations. Solutions for stress around a hole and beams on an elastic foundation. Requires consent of instructor. Prerequisite: None

545 - 3 **Fracture Mechanics and Plasticity** - Fracture mechanics and plasticity theories for various materials. Finite Element coding of various plasticity theories. Prerequisites: consent of instructor.

546 - 3 **Plates and Shells** - Membrane theory of shells. Bending of shells, as well as, circular and rectangular plates. Indeterminate shell problems. Prerequisites: CE 445, ME 470 or consent of instructor. Same as CE 546.

547 - 3 **Elastic Stability** - Elastic stability of columns and simple frames. Lateral and torsional buckling of beams. Buckling of plates. Design code considerations of buckling. Prerequisites: CE 445, ME 470 or consent of instructor. Same as CE 547.

548 - 3 **Finite Elements** - Rayleigh-Ritz method; piecewise approximation; modal load calculation; derivation of two- and three-dimensional elements; and bending elements. Finite element computer programs. Practice with actual programs. Prerequisites: CE 445, ME 470 or consent of instructor. Same as CE 548.

550 - 3 **Modern Control** - Analysis and design of control systems; state-variable description; controllability, observability, non-linearity, and perturbation theory; stability, state feedback design, and robust control. Prerequisite: ME 450

551 - 3 **Nonlinear Control** - Lyapunov theory. Phase plane analysis. Feedback linearization. Describing function analysis. Sliding mode control. Introduction to adaptive control. Prerequisite: ME 450 with a minimum grade of C or approval of the instructor

560 - 3 **Advanced Vibration With Applications** - Lagrange equations; vibration of continuous systems; finite elements; component-mode synthesis and other approximation methods; and introduction to random and nonlinear vibration. Prerequisites: ME 452 or equivalent

562 - 3 **Discontinuous Dynamical Systems** - Discontinuous Dynamical Systems. 3 credits. Discontinuous dynamical systems, accessible and inaccessible domains, flow switchability and singularity at the boundary, bifurcation, flows and motion complexity. Prerequisites: ME 530 with B or better, Math 501 with C or better, or consent of Instructor.

563 - 3 **Optimal Control** - Description of system and evaluation of its performance; dynamic programming; calculus of variations and Pontryagin''s minimum principle; and interactive numerical techniques. Prerequisite: ME 450 or ECE 365 Same as ECE 563.

573 - 3 **Advanced Thermodynamics** - Fundamental concepts; thermodynamic relations; topics from statistical thermodynamics including Bose-Einstein and Fermi-Dirac quantum statistics; and partition functions. Requires consent of instructor. Prerequisite: None

575 - 3 **Advanced Fluid Mechanics** - Incompressible fluids; potential flows; solution of Navier-Stokes equations; low and high Reynolds number flows; laminar and turbulent boundary layers. Prerequisite: ME 315

576 - 3 **Turbulent Flow** - Reynolds averaged Navier-Stokes equations(RANS), turbulent energy transport; Closure issues and modeling; Turbulent statistics and applications; large eddy simulation(LES) and direct numerical simulation(DNS) and CFD considerations. Prerequisite: None

580 - 3 **Computational Fluid Dynamics** - Model equations; finite differences an finite volume methods; diffusion problems; convection-diffusion problems; solution algorithm; unsteady flows; and turbulence modeling. Prerequisites: ME 410; CS 145 or equivalent.

582 - 3 **Microfluidics and Nanofluidics** - Unidirectional flow, passive scalar transport, Stokes flow, potential flow, species and charge transport, Zeta potential, Poisson–Boltzmann equations, Nernst–Planck equations, electrokinetics, electrophoresis, dielectrophoresis, magnetophoresis. Prerequisite: Undergraduate level ME 315 Minimum Grade of C

585 - 3 **Convective Heat Transfer** - Conservation principles for mass, momentum, and energy; differential equations of laminar and turbulent boundary layers; and forced and natural convections. Requires consent of instructor. Prerequisite: None

587 - 3 **Advanced Thermal-Fluid Measurements** - Experimental uncertainty analysis, similitude and dimensional analysis; temperature standard and sensors; presure and flow rate measurements; turbulent measurements with hot wire anemometry and particle image velocimetry. Prerequisite: Undergraduate level ME 487 Minimum Grade of D

588 - 3 **Equilibrium Dynamics** - Energy exchanges with emphasis on conservation laws. Conditions for equilibrium and consequences of energy exchanges are included using the methodology of classical thermodynamics. Requires consent of instructor. Prerequisite: None

589 - 3 **Radiation Heat Transfer** - Radiation from a blackbody; properties of nonblack surfaces; radiative properties of real materials; radiation in enclosures; and radiative behavior of windows and semi-transparent solids. Requires consent of instructor. Prerequisite: None

591 - 1 to 4 **Independent Study** - Individual investigation of a topic in mechanical engineering to be agreed upon with the instructor. May be repeated for a maximum of 6 hours provided no topic is repeated. Requires consent of instructor. Prerequisite: None

592 - 1 to 5 **Topics in Mechanical Engineering** - Topic of special interest; course schedule will include name of topic. May be repeated to a maximum of 9 hours provided no topic is repeated. Requires consent of instructor. Prerequisite: None

599 - 1 to 6 **Thesis** - May be repeated to a maximum of 6 hours. Requires consent of advisor. Prerequisite: None

- Mechatronics & Robotics Engr (MRE)
  - 454 - 3 **Robotics Dynamics & Control** - (Same as ECE 467 and ME 454) Robotics, robot kinematics/ inverse kinematics, trajectory planning, differential motion/virtual work principle, dynamics and control. Prerequisites: consent of instructor.
  - 477 - 3 **Computer Integrated Manufacturing Systems** - (Same as IE 477). Application of robot theory integrated with automated manufacturing systems. Emphasis on design laboratory exercises. Prerequisite: IE 470, IE 476, and CS 145, all with a C or better, or consent or instructor, or graduate standing.
- Music (MUS)
  - 400Z - 0 to 3 **Specific Projects in Music** - Designed for students who will be involved with a specific project: traveling to perform, present, or to develop specific skills related to major. Prerequisite: None
  - 401 - 2 **Psycho-Physiology of Music** - Human capacities, their relationship to musical potentials and development. Acoustical foundations of music. Requires instructor permission. Prerequisite: None
  - 412A - 4 **Applied Composition** - Original composition. Must be taken in sequence. Weekly seminar required. Prerequisite: 312b or instructor permission.
  - 412B - 4 **Applied Composition** - Original composition. Must be taken in sequence. Weekly seminar required. Senior recital required for 412b. Prerequisite: 312b or instructor permission.
  - 413A - 2 **Piano Lit Baroque to Early Romantic** - Baroque to early romantic. Prerequisite: None
  - 413B - 2 **Piano Literature Romantic and Contemporary** - Romantic and contemporary. Prerequisite: None
  - 415 - 2 **Class Applied Voice** - Singing, diction, and voice pedagogy for music majors with minimal vocal experience. Prerequisite: None
  - 420 - 1 **Music Education Practicum** - Shop laboratory course. Selection adjustments, maintenance, and repair of musical instruments. Prerequisite: None
  - 426A - 2 **Adv Mus Thry: Music since 1900** - This music theory course will focus on understanding and analyzing music of the modern (post-tonal) era. Learning will involve written, aural, and compositional experiences. Prerequisite: Undergraduate level MUS 326 Minimum Grade of D
  - 436 - 2 **Jazz Education** - Teaching jazz at elementary, secondary, and college levels, both group and individual instruction. Prerequisite: MUS 225B or permit required.
  - 439 - 2 **Recording Techniques** - Technical understanding of equipment used in basic digital recording studios: microphones; equalization; mixing; hard disk recording and 24 track recording formats. Prerequisite: None
  - 440A - 2 or 4 **Private Applied Music: Violin** - Violin. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.
  - 440B - 2 or 4 **Private Applied Music: Viola** - Viola. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentrations in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.
  - 440C - 2 or 4 **Private Applied Music: Cello** - Cello. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.
  - 440D - 2 or 4 **Private Applied Music: String Bass** - String bass. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.
  - 440E - 2 or 4 **Private Applied Music: Flute** - Flute. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.
  - 440F - 2 or 4 **Private Applied Music: Oboe** - Oboe. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.
  - 440G - 2 or 4 **Private Applied Music: Clarinet** - Clarinet. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentrations in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.
  - 440H - 2 or 4 **Private Applied Music: Bassoon** - Bassoon. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.
  - 440I - 2 or 4 **Private Applied Music: Saxophone** - Saxophone. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.
  - 440J - 2 or 4 **Private Applied Music: Percussion** - Percussion. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.
  - 440K - 2 or 4 **Private Applied Music: Piano** - Piano. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.
  - 440L - 2 or 4 **Private Applied Music: Horn** - Horn. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

440M - 2 or 4 **Private Applied Music: Trumpet** - Trumpet. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

440N - 2 or 4 **Private Applied Music: Trombone** - Trombone. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

440O - 2 or 4 **Private Applied Music: Tuba** - Tuba. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

440P - 2 or 4 **Private Applied Music: Baritone** - Baritone. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

440Q - 2 or 4 **Private Applied Music: Voice** - Voice. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

440R - 2 or 4 **Private Applied Music: Organ** - Organ. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

440S - 2 or 4 **Private Applied Music: Harpsichord** - Harpsichord. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

440T - 2 or 4 **Private Applied Music: Harp** - Harp. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

440U - 2 or 4 **Private Applied Music: Guitar** - Guitar. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

440W - 2 or 4 **Private Applied Music: Conducting** - Conducting. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

440X - 2 or 4 **Private Applied Music: Accompanying** - Accompanying. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

441D - 2 or 4 **Private Jazz: Bass** - Individual instruction in performance of various jazz styles. Offered at the 400 and 500 levels in the areas listed. Credit is given at 2 or 4 hours at each level. Consult with advisor for details of credit requirements. May be repeated for two semesters. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. MUS 566 required for each semester of applied lesson. Prerequisites: audition; consent of instructor. d. Bass, i. Saxophone, j. Percussion, k. Piano, m. Trumpet, n. Trombone, q. Voice, u. Guitar.

441I - 2 or 4 **Private Jazz: Saxophone** - Individual instruction in performance of various jazz styles. Offered at the 400 and 500 levels in the areas listed. Credit is given at 2 or 4 hours at each level. Consult with advisor for details of credit requirements. May be repeated for two semesters. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. MUS 566 required for each semester of applied lesson. Prerequisites: audition; consent of instructor. d. Bass, i. Saxophone, j. Percussion, k. Piano, m. Trumpet, n. Trombone, q. Voice, u. Guitar.

441J - 2 or 4 **Private Jazz: Percussion** - Individual instruction in performance of various jazz styles. Offered at the 400 and 500 levels in the areas listed. Credit is given at 2 or 4 hours at each level. Consult with advisor for details of credit requirements. May be repeated for two semesters. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. MUS 566 required for each semester of applied lesson. Prerequisites: audition; consent of instructor. d. Bass, i. Saxophone, j. Percussion, k. Piano, m. Trumpet, n. Trombone, q. Voice, u. Guitar.

441K - 2 or 4 **Private Jazz: Piano** - Individual instruction in performance of various jazz styles. Offered at the 400 and 500 levels in the areas listed. Credit is given at 2 or 4 hours at each level. Consult with advisor for details of credit requirements. May be repeated for two semesters. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. MUS 566 required for each semester of applied lesson. Prerequisites: audition; consent of instructor. d. Bass, i. Saxophone, j. Percussion, k. Piano, m. Trumpet, n. Trombone, q. Voice, u. Guitar.

441M - 2 or 4 **Private Jazz: Trumpet** - Individual instruction in performance of various jazz styles. Offered at the 400 and 500 levels in the areas listed. Credit is given at 2 or 4 hours at each level. Consult with advisor for details of credit requirements. May be repeated for two semesters. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. MUS 566 required for each semester of applied lesson. Prerequisites: audition; consent of instructor. d. Bass, i. Saxophone, j. Percussion, k. Piano, m. Trumpet, n. Trombone, q. Voice, u. Guitar.

441N - 2 or 4 **Private Jazz: Trombone** - Individual instruction in performance of various jazz styles. Offered at the 400 and 500 levels in the areas listed. Credit is given at 2 or 4 hours at each level. Consult with advisor for details of credit requirements. May be repeated for two semesters. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. MUS 566 required for each semester of applied lesson. Prerequisites: audition; consent of instructor. d. Bass, i. Saxophone, j. Percussion, k. Piano, m. Trumpet, n. Trombone, q. Voice, u. Guitar.

441Q - 2 or 4 **Private Jazz: Voice** - Individual instruction in performance of various jazz styles. Offered at the 400 and 500 levels in the areas listed. Credit is given at 2 or 4 hours at each level. Consult with advisor for details of credit requirements. May be repeated for two semesters. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. MUS 566 required for each semester of applied lesson. Prerequisites: audition; consent of instructor. d. Bass, i. Saxophone, j. Percussion, k. Piano, m. Trumpet, n. Trombone, q. Voice, u. Guitar.

441U - 2 or 4 **Private Jazz: Guitar** - Individual instruction in performance of various jazz styles. Offered at the 400 and 500 levels in the areas listed. Credit is given at 2 or 4 hours at each level. Consult with advisor for details of credit requirements. May be repeated for two semesters. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. MUS 566 required for each semester of applied lesson. Prerequisites: audition; consent of instructor. d. Bass, i. Saxophone, j. Percussion, k. Piano, m. Trumpet, n. Trombone, q. Voice, u. Guitar.

442 - 3 **Counterpoint** - Sixteenth and Eighteenth century contrapuntal techniques. Prerequisite: Undergraduate level MUS 225B Minimum Grade of C

460A - 0 to 2 **Opera Workshop** - Skills, techniques, and literature used in performance and production of operatic scenes, operas, and operettas. May be repeated for a maximum of 16 hours. Prerequisite: Permit required.

460B - 0 to 2 **Opera Workshop** - Skill, techniques, and literature used in performance and production of operatic scenes, operas, and operettas. May be repeated for a maximum of 16 hours. Prerequisite: Permit required.

461A - 3 **Piano Teaching Techniques & Materials: Methods** - Methods. Problems of private studio teaching and college level teaching. Must be taken in sequence. Prerequisite: None

461B - 3 **Piano Teaching Techniques & Materials: Materials** - Materials. Problems of private studio teaching and college teaching. Must be taken in sequence. Prerequisite: Undergraduate level MUS 340K Minimum Grade of C

465 - 2 **Development and Teaching of Strings** - String education in elementary and secondary schools. Techniques of heterogeneous and homogeneous string teaching. Resource aids. May be repeated to a maximum of 8 hours. Requires consent of instructor. Prerequisite: None

472A - 3 **Arranging** - Instrumental. Basic Skills of arranging for large ensembles. Writing project required. May be repeated so long as topic is different. Prerequisite: Undergraduate level MUS 309 Minimum Grade of B

472B - 3 **Arranging** - Choral. Basic Skills of arranging for large ensembles. Writing project required. May be repeated so long as topic is different. Prerequisite: Undergraduate level MUS 309 Minimum Grade of B

481 - 1 to 3 **Readings in Music Theory** - NO DESCRIPTION May be repeated to 6 credits. Prerequisite: Permit required.

482 - 1 to 3 **Readings in Music History/Literature** - NO DESCRIPTION May be repeated to 6 credits. Prerequisite: Permit required.

483 - 2 **Readings in Music Education** - May be repeated for up to 6 hours. Prerequisite: permission of instructor.

487 - 2 **Computer Music Workshop for Teachers** - Designed for in-service teachers of music wishing to explore hardware and software currently available for use in schools. A hands on, project oriented approach is utilized. Limited enrollment. Prerequisite: Permit required.

499 - 1 to 3 **Independent Study** - Independent research under the supervision of a faculty specialist. May be repeated to 6 credits. Prerequisite: Permit required.

500A - 2 **Graduate Music Theory Review** - Review of music theory and analysis. Credit earned in this course does not apply towards graduation. Does not substitute for grad level theory requirements. Prerequisite: None

500B - 2 **Graduate Music History/ Literature Review** - Review of main developments, periods, composers, styles, and works in the history of western music. Credit earned in this course does not apply toward graduation. 500B does not substitute for graduate-level music history requirements. Prerequisite: None

501 - 2 **Introduction to Graduate Study in Music** - Basic bibliography and research techniques in music theory, literature, and education. Prerequisite: None

502 - 2 **Critical Approaches to Musical Analysis** - Representative works chosen from the baroque, classical, romantic, and modern eras. Prerequisite: None

509 - 2 **Jazz Composition/Arranging** - Jazz Composition/Arranging is designed to allow students an opportunity to explore, develop and demonstrate written music competencies in the jazz medium. Prerequisite: MUS 409B with minimum grade of D or concurrent enrollment.

511A - 2 **Music Literature: Symphonic** - Symphonic. Each segment may be repeated to a maximum of 6 hours so long as no topic is repeated. Prerequisite: None

511B - 2 **Music Literature: Choral** - Choral. Each segment may be repeated to a maximum of 6 hours so long as no topic is repeated. Prerequisite: None

511C - 2 **Music Literature: Chamber** - Chamber. Each segment may be repeated to a maximum of 6 hours so long as no topic is repeated. Prerequisite: None

511D - 2 **Music Literature: Opera** - Opera. Each segment may be repeated to a maximum of 6 hours so long as no topic is repeated. Prerequisite: None

511E - 2 **Music Literature: Special Areas** - Special Areas. Study of period, composer, style, or medium. Each segment may be repeated to a maximum of 6 hours so long as no topic is repeated. Prerequisite: None

511F - 2 **Music Literature: Vocal Literature** - Survey of classical art song. Renaissance to 21st Century. Study of style and interpretation. Prerequisite: None

511G - 2 **Music Literature: 20th Century** - Study of period, composer, style or medium. Each segment may be repeated to a maximum of 6 hours provided no topic is repeated. Prerequisite: None

512A - 4 **Applied Composition** - Original composition. Prerequisite: None

512B - 4 **Applied Composition** - Original composition. Must be taken in sequence. Prerequisite: Graduate level MUS 512A Minimum Grade of C

513A - 2 **Piano Literature: Baroque to Early Romantic** - Baroque to Early Romantic. Survey of Piano literature. Requires consent of instructor. Prerequisite: None

513B - 2 **Piano Literature: Romantic and Twentieth Century** - Romantic and Twentieth Century. Survey of piano literature. Requires consent of instructor. Prerequisite: None

519A - 2 **Vocal Pedagogy - Science, Physiology and Technique** - Physiology of the human voice as it applies to singing technique. Prerequisite: Undergraduate level MUS 440Q Minimum Grade of C

519B - 2 **Vocal Pedagogy - Methodology and Materials.** - Continuation of MUS 519A. A comparative study of various pedagogical vocal methods. Examination of appropriate materials and repertoire for singers of all ages and abilities. Prerequisite: Undergraduate level MUS 519A Minimum Grade of C

520 - 2 **Foundations of Music Education** - Examination of philosophical, psychological, and pedagogical notions about music education from early civilization through present to determine how societal developments influenced them. Prerequisite: Graduate level MUS 501 Minimum Grade of C and Graduate level MUS 500A Minimum Grade of C and Graduate level MUS 500B Minimum Grade of C

525 - 2 **Research in Music Education** - Students use their research and writing skills and their understanding of music teaching and learning to formulate, implement, and assess music education research. Prerequisite: Graduate level MUS 501 Minimum Grade of C and Graduate level MUS 500A Minimum Grade of C and Graduate level MUS 500B Minimum Grade of C

530 - 2 **Applied Theory & Ear Training** - Refinement of audition skills, with emphasis on practical applications of music theory. Prerequisite: Graduate level MUS 500A Minimum Grade of C and Graduate level MUS 500B Minimum Grade of C

535 - 2 **Principles of Music Curriculum & Instruction** - Principles of learning and human musical development as they relate to understanding, designing and implementing music curricula and instruction. Prerequisite: Graduate level MUS 520 Minimum Grade of C

539 - 2 **Advanced Diction** - Use of the International Phonetic Alphabet as it applies to vocal repertoire. Specifically designed for teachers who are preparing students for public performances and competitions. Prerequisite: Undergraduate level MUS 139A Minimum Grade of C and Undergraduate level MUS 139B Minimum Grade of C

540A - 2 or 4 **Private Applied Music: Violin** - Violin. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540B - 2 or 4 **Private Applied Music: Viola** - Viola. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentrations in performance usually take 4 hours. Concentrations in music

education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540C - 2 or 4 **Private Applied Music: Cello** - Cello. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540D - 2 or 4 **Private Applied Music: String Bass** - String bass. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540E - 2 or 4 **Private Applied Music: Flute** - Flute. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540F - 2 or 4 **Private Applied Music: Oboe** - Oboe. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540G - 2 or 4 **Private Applied Music: Clarinet** - Clarinet. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentrations in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540H - 2 or 4 **Private Applied Music: Bassoon** - Bassoon. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540I - 2 or 4 **Private Applied Music: Saxophone** - Saxophone. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540J - 2 or 4 **Private Applied Music: Percussion** - Percussion. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540K - 2 or 4 **Private Applied Music: Piano** - Piano. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540L - 2 or 4 **Private Applied Music: Horn** - Horn. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540M - 2 or 4 **Private Applied Music: Trumpet** - Trumpet. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540N - 2 or 4 **Private Applied Music: Trombone** - Trombone. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540O - 2 or 4 **Private Applied Music: Tuba** - Tuba. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540P - 2 or 4 **Private Applied Music: Baritone** - Baritone. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540Q - 2 or 4 **Private Applied Music: Voice** - Voice. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540R - 2 or 4 **Private Applied Music: Organ** - Organ. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540S - 2 or 4 **Private Applied Music: Harpsichord** - Harpsichord. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540T - 2 or 4 **Private Applied Music: Harp** - Harp. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration

or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540U - 2 or 4 **Private Applied Music: Guitar** - Guitar. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540W - 2 to 4 **Private Applied Music: Conducting** - Conducting. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

540X - 2 to 4 **Private Applied Music: Accompanying** - Accompanying. Offered at five levels in areas listed. Credit is given at 2 or 4 hours at each level. Consult with adviser for details of credit requirements. May be repeated for two semesters at each level. Students with concentration in performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Performance class required. Prerequisites: For 140, music concentration or secondary concentration or consent of music faculty; for higher levels, 2 semesters at previous level on same instrument or permit required.

541D - 2 or 4 **Private Jazz: Bass** - Individual instruction in performance of various jazz styles. Offered at the 400 and 500 levels in the areas listed. Credit is given at 2 or 4 hours on each level. Consult with advisor for details of credit requirements. May be repeated for three semesters. Students with concentration in performance usually take 4 credit hours. Concentrations in music education and all secondary concentrations usually take 2 credit hours. MUS 566 required for each semester of applied lesson. Prerequisites: audition; consent of instructor.

541I - 2 or 4 **Private Jazz: Saxophone** - Individual instruction in performance of various jazz styles. Offered at the 400 and 500 levels in the areas listed. Credit is given at 2 or 4 hours at each level. Consult with advisor for details of credit requirements. May be repeated for three semesters. Students with concentration in performance usually take 4 credit hours. Concentrations in music and education and all secondary concentrations usually take 2 credit hours. MUS 566 required for each semester of applied lesson. Prerequisites: audition; consent of instructor.

541J - 2 or 4 **Private Jazz: Percussion** - Individual instruction in performance of various jazz styles. Offered at the 400 and 500 levels in the areas listed. Credit is given at 2 or 4 hours at each level. Consult with advisor for details of credit requirements. May be repeated for three semesters. Students with concentration in performance usually take 4 credit hours. Concentrations in music and education and all secondary concentrations usually take 2 credit hours. MUS 566 required for each semester of applied lesson. Prerequisites: audition; consent of instructor.

541K - 2 or 4 **Private Jazz: Piano** - Individual instruction in performance of various jazz styles. Offered at the 400 and 500 levels in the areas listed. Credit is given at 2 or 4 hours at each level. Consult with advisor for details of credit requirements. May be repeated for three semesters. Students with concentration in performance usually take 4 credit hours. Concentrations in music and education and all secondary concentrations usually take 2 credit hours. MUS 566 required for each semester of applied lesson. Prerequisites: audition; consent of instructor.

541M - 2 or 4 **Private Jazz: Trumpet** - Individual instruction in performance of various jazz styles. Offered at the 400 and 500 levels in the areas listed. Credit is given at 2 or 4 hours at each level. Consult with advisor for details of credit requirements. May be repeated for three semesters. Students with concentration in performance usually take 4 credit hours. Concentrations in music and education and all secondary concentrations usually take 2 credit hours. MUS 566 required for each semester of applied lesson. Prerequisites: audition; consent of instructor.

541N - 2 or 4 **Private Jazz: Trombone** - Individual instruction in performance of various jazz styles. Offered at the 400 and 500 levels in the areas listed. Credit is given at 2 or 4 hours at each level. Consult with advisor for details of credit requirements. May be repeated for three semesters. Students with concentration in performance usually take 4 credit hours. Concentrations in music and education and all secondary concentrations usually take 2 credit hours. MUS 566 required for each semester of applied lesson. Prerequisites: audition; consent of instructor.

541Q - 2 or 4 **Private Jazz: Voice** - Individual instruction in performance of various jazz styles. Offered at the 400 and 500 levels in the areas listed. Credit is given at 2 or 4 hours at each level. Consult with advisor for details of credit requirements. May be repeated for three semesters. Students with concentration in performance usually take 4 credit hours. Concentrations in music and education and all secondary concentrations usually take 2 credit hours. MUS 566 required for each semester of applied lesson. Prerequisites: audition; consent of instructor.

541U - 2 or 4 **Private Jazz: Guitar** - Individual instruction in performance of various jazz styles. Offered at the 400 and 500 levels in the areas listed. Credit is given at 2 or 4 hours at each level. Consult with advisor for details of credit requirements. May be repeated for three semesters. Students with concentration in performance usually take 4 credit hours. Concentrations in music and education and all secondary concentrations usually take 2 credit hours. MUS 566 required for each semester of applied lesson. Prerequisites: audition; consent of instructor.

545 - 2 **Computer Applications in Music** - Use of computer-based music and multi-media hardware, peripherals, and applications software as mediating instruments to enhance music learning. Prerequisite: MUS 535 or consent of instructor.

550 - 2 **Leadership in Music Education** - This course defines skills and processes that are required for organizing, administering, and assessing school music programs effectively. Prerequisite: None

553A - 2 **Seminar in Materials & Techniques: Choral** - Choral. May be repeated to a maximum of 6 hours provided no topic is repeated. Prerequisite: None

553B - 2 **Seminar in Materials & Techniques: Instrumental** - Instrumental. May be repeated to a maximum of 6 hours provided no topic is repeated. Prerequisite: None

553C - 2 **Seminar in Materials and Techniques: Piano** - Piano. May be repeated to a maximum of 6 hours provided no topic is repeated. Prerequisite: None

553D - 2 **Seminar in Materials and Techniques: Vocal** - A training ground for Vocal Music students who teach various forms of literature: Musical Theater, Opera, etc. Prerequisite: None

560 - 2 **Seminar in Music Education** - Trends, practices, and philosophies. May be repeated once so long as no topic is repeated. Prerequisite: None

561A - 3 **Piano Pedagogy: Elementary to Early Intermediate** - Elementary to Early Intermediate. An extensive survey of methods and materials in teaching piano at elementary to early intermediate levels. Supervised student teaching is required. Requires consent of instructor. Prerequisite: None

561B - 3 **Piano Pedagogy - Late Intermediate to Advanced Levels** - Late Intermediate to Advanced. An extensive survey of methods and materials in teaching piano at late intermediate to advanced levels. Supervised student teaching is required. Requires consent of instructor. Prerequisite: None

565 - 2 **Advanced Piano Ensemble - Accompanying & Chamber Music** - Study and performance of literature for the piano in collaboration with vocalists and instrumentalist and piano duos. May be repeated to 4 hours. Prerequisite: None

566 - 1 or 2 **Instrumental Ensemble** - Participation in a chamber or large ensemble to study and perform literature in the field of the major instrument other than solo literature. May be repeated to a maximum of 4 hours. Prerequisite: None

567 - 1 or 2 **Vocal Ensemble** - Participation in a chamber or large ensemble to study and perform vocal ensemble literature other than solo literature. May be repeated to a maximum of 4 hours. Prerequisite: None

590 - 1 to 4 **Graduate Recital** - (Performance specialization) Public recital by candidates for major in performance. Prerequisites: MUS 501, MUS 502, MUS 540-8 or MUS 541-8.

591 - 1 to 4 **Graduate Recital** - Public recital and preparation of supporting document by candidates for the concentration in music education in lieu of thesis. Candidates must be approved through jury audition. Repeatable to a max of 4 hours. Prerequisites: MUS 501, MUS 502, MUS 540-4 or MUS 541-4.

593 - 2 **Practicum in Vocal Pedagogy** - Studio voice instruction and advanced study in the field of applied vocal pedagogy under faculty supervision, to be taken concurrently with MUS 519B. Prerequisite: Graduate level MUS 519A Minimum Grade of C

599 - 1 to 4 **Thesis** - NO DESCRIPTION Minimum of 4 hours required; maximum credit accumulation is 6 hours. Prerequisite: Permit required.

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- Nursing (NURS)
  - 491 - 3 **Foundations of Nursing Management** - Provides an overview of healthcare organizations and roles of nurse managers. Major principles of nursing management are examined. Population-based approach explores community healthcare services. Requires consent of department chair or program director. Prerequisite: None
  - 493 - 3 **Human Resource Management for Nurse Leaders** - Examines the knowledge and skills for effective human resource management. Content covers recruitment, hiring, retention, performance appraisals, professional development, conflict management, negotiation and labor relations. Prerequisite: Undergraduate level NURS 491 Minimum Grade of C
  - 500 - 3 **Theoretical Foundations of Nursing** - Systematic and critical analysis of nursing related concepts, models, and theories as a basis for Advance Nursing Practice. Prerequisite: None
  - 502 - 3 **Professional Writing for Advanced Practice Nurses** - Development of scholarly writing skills to enhance success in academic courses. Grammar, writing mechanics, plagiarism, and strategies to develop writing skills are discussed. Prerequisite: None
  - 503 - 3 **Teaching and Learning Principles for Healthcare Professionals** - Provides health professionals with overview of basic teaching and learning principles for adult learners in the classroom, hospital, or clinical settings. Emphasis on strategies for developing active learning and critical thinking skills. Graduate students in non-teaching specialties, hospital educators, or preceptors would benefit from this course. Prerequisite: None
  - 504 - 3 **Research in Advanced Nursing Practice** - Analyze, evaluate and synthesize health-related research and evidence-based practice reviews for the improvement of nursing practice. Prerequisite: Graduate level NURS 500 Minimum Grade of C
  - 505 - 3 **Health Policy and Advanced Nursing Practice** - Prerequisite: None
  - 509 - 3 **Interdisciplinary Health Care Informatics** - Introduces informatics terminology and theory, including searching, managing, and evaluating data, analyzing information systems, and integrating technology into practice. Prerequisite: None
  - 510 - 3 **Health Care Informatics** - Critical elements of healthcare informatics for advanced nursing practice including searching, managing, and evaluating data, analyzing information systems, and integrating technology into practice. Prerequisites: Admission to the program or permission of Assistant Dean for Graduate Programs.
  - 511 - 3 **Social, Ethical and Legal Issues in an Information Age** - Explores social, ethical and legal issues related to searching, storing and using health care information and the ethical and legal formation of informatics professionals. Prerequisite: None
  - 512 - 3 **Managing Quality and Safety in Healthcare** - Examination of processes and integration of concepts used to measure and improve the quality and effectiveness of health care. Examination and analysis of Research statistics. Prerequisite: None
  - 513 - 3 **Advanced Health Assessment & Practicum** - Development of advanced health assessment knowledge, techniques, and skills with emphasis on using assessment data for clinical decision making across the lifespan. Includes 60 practicum and 30 laboratory hours. Prerequisite: Graduate level NURS 514 Minimum Grade of C and Graduate level NURS 515 Minimum Grade of C
  - 513B - 1 **Advanced Health Assessment: Practicum** - Application of principles of advanced assessment in a mentored clinical setting under faculty guidance. Prerequisite: Undergraduate health assessment, graduate standing or consent of instructor. Co-requisite: NURS 513A.
  - 514 - 4 **Advanced Human Physiology** - An organ system approach is used to examine physiological processes across the lifespan. Requires Graduate standing. Prerequisite: None
  - 515 - 4 **Advanced Human Pathophysiology** - Focus on pathophysiological processes that result in altered function in selected organ systems across the lifespan. Prerequisite: Graduate level NURS 514 Minimum Grade of C
  - 516 - 3 **Pharmacology for Advanced Nursing Practice** - Study of pharmacokinetics, pharmacodynamics, and Pharmacotherapeutics of major drug categories for advanced nursing practice. Prerequisite: Graduate level NURS 514 Minimum Grade of C and Graduate level NURS 515 Minimum Grade of C
  - 518 - 3 **Advanced Human Pathophysiology for Educators** - Focus on pathophysiological processes that result in altered function in selected organ systems across the life-span. Prerequisite: None
  - 520 - 3 **Diagnostic Tests and Interpretation and Procedures for Nurse Practitioners** - Interpret diagnostic tests and perform selected procedural skills appropriate for advanced practice nursing. Prerequisite: Graduate level NURS 514 Minimum Grade of C and Graduate level NURS 515 Minimum Grade of C
  - 529 - 5 **Orientation to Nurse Anesthesia Practicum** - Orientation to the basic skills for safe entry into nurse anesthesia practice. Incorporates lecture and 90 hours of lab and practicum. Prerequisite: NURS 514, 515 and 564 with minimum grade of C or concurrent enrollment.
  - 555 - 3 **Topics in Health Care** - Special health-related topics not covered in regular course offerings. Content varies, depending on student interest and availability of faculty. May be repeated to a maximum of 6 hours as long as no topic is repeated. Requires Graduate standing. Prerequisite: None
  - 556 - 3 **Quality and Safety for Nurse Executives** - Identifying systems and process failures that lead to errors, monitoring and analyzing information, and initiating quality improvements within organizations. Includes 90 hours of practicum. Prerequisite: Graduate level NURS 590 Minimum Grade of C
  - 558 - 3 **Nurse Executive Leadership I** - Under guidance and supervision of a nurse executive preceptor, begin to design and implement an evidence-based scholarly project related to nurse executive role. Includes 45 hours of practicum. Prerequisite: Graduate level NURS 556 Minimum Grade of D and Graduate level NURS 590 Minimum Grade of D and Graduate level NURS 592 Minimum Grade of D and Graduate level NURS 593 Minimum Grade of D
  - 560 - 3 **Ethical, Legal, and Systemic Issues in Anesthesia Practice** - Fosters the formation of advanced practice nurses through exploration of legal, ethical, safety, wellness, business, regulatory, and social dimensions of nurse anesthesia practice. Prerequisite: None
  - 562D - 3 **Advanced Practicum and Seminar in Anesthesia Nursing** - Advanced clinical practicum and seminar synthesis course focusing on interpretation, critical thinking, and integration of didactic information and research into clinical practice. Prerequisite: NURS 561C.
  - 563 - 3 **Pharmacology Related to Anesthesia** - Pharmacological properties and therapeutic and clinical uses of anesthesia drugs and their interactions with other common therapeutic agents. Prerequisite: Graduate level NURS 516 Minimum Grade of C

564 - 3 **Chemistry and Physics Applied to Anesthesia** - Integration of chemistry, biochemistry and physics principles into nursing anesthesia care. Requires admission to the Anesthesia Nursing Specialization; undergraduate courses in Organic/Biochemistry & Physics. Prerequisite: None

565A - 5 **Theoretical Foundations of Anesthesia Nursing I** - Integration of basic anesthesia principles and nursing theory into nurse anesthesia role when caring for specific surgical populations. Prerequisite: Graduate level NURS 529 Minimum Grade of C and Graduate level NURS 563 Minimum Grade of C and Graduate level NURS 564 Minimum Grade of C

565B - 1 **Clinical Practicum in Nurse Anesthesia I** - Application of theoretical principles to care, providing anesthesia to patients while under the supervision of CRNA and/or Anesthesiologist preceptors. Prerequisite: Graduate level NURS 529 Minimum Grade of C and Graduate level NURS 563 Minimum Grade of C and Graduate level NURS 564 Minimum Grade of C

566A - 5 **Theoretical Foundations of Nurse Anesthesia II** - Integration of advanced anesthesia principles, natural sciences, nursing theory and pharmacology into nurse anesthesia care of specialty, complex patient populations. Prerequisite: Graduate level NURS 565A Minimum Grade of C and Graduate level NURS 565B Minimum Grade of C

566B - 2 **Clinical Practicum in Nurse Anesthesia II** - Application of theoretical principles to care, providing anesthesia to specialty patient populations while under the supervision of CRNA and/or Anesthesiologist preceptors. Prerequisite: Graduate level NURS 565A Minimum Grade of C and Graduate level NURS 565B Minimum Grade of C

567A - 5 **Theoretical Foundations of Nurse Anesthesia III** - Integration of advanced anesthesia principles, natural sciences, nursing theory, and pharmacology into nurse anesthesia care of complex specialty populations. Prerequisite: Graduate level NURS 566A Minimum Grade of C and Graduate level NURS 566B Minimum Grade of C

567B - 2 **Clinical Practicum in Nurse Anesthesia III** - Application of theoretical principles into care, providing anesthesia to complex patients while under the supervision of CRNA and/or Anesthesiologist preceptors. Prerequisite: Graduate level NURS 566A Minimum Grade of C and Graduate level NURS 566B Minimum Grade of C

570 - 3 **Health Promotion** - Clinical prevention across the lifespan including the impact of lifestyle, cultural, and environmental factors on health, psycho-social well-being, and health disparities in individuals, families, and populations. Prerequisite: Graduate level NURS 600 Minimum Grade of C

571 - 4 **Advanced Management of Adults Health in Primary Health Care I with Practicum** - Assessment and management of adult health in primary care settings focusing on the respiratory, cardiovascular, gastrointestinal, musculoskeletal, and hematological systems. Includes 90 practicum hours. Prerequisite: Graduate level NURS 513 Minimum Grade of C and Graduate level NURS 516 Minimum Grade of C and Graduate level NURS 520 Minimum Grade of C

572 - 4 **Advanced Management of Adult Health in Primary Health Care II with Practicum** - Assessment and management of adult health in primary care settings focusing on the neurological, psychological, dermatological, endocrine, immune, and genitourinary systems. Includes 90 practicum hours. Prerequisite: Graduate level NURS 571 Minimum Grade of C

573 - 3 **Advanced Management of Women's Health with Practicum** - Assessment and management of women's health, focusing on health promotion, health protection, disease prevention, and disease management in primary healthcare settings. Includes 90 practicum hours. Prerequisite: Graduate level NURS 513 Minimum Grade of C and Graduate level NURS 516 Minimum Grade of C and Graduate level NURS 520 Minimum Grade of C

576 - 4 **Advanced Management of the Pediatric Health with Practicum** - Assessment and management of pediatric health, focusing on health promotion, health protection, disease prevention and disease management in primary care settings. Includes 90 practicum hours. Prerequisite: Graduate level NURS 513 Minimum Grade of C and Graduate level NURS 516 Minimum Grade of C and Graduate level NURS 520 Minimum Grade of C

580 - 3 **Teaching and Learning Theory in Nurse Education** - Overview of classic and contemporary teaching and learning philosophies, theories, technologies and research as it relates to the development and socialization of nurse educators. Prerequisite: Admission to the Nurse Educator Specialization of consent of Assistant Dean of Grad Program.

581 - 3 **Curriculum Theory, Design, and Program Evaluation in Nursing Education** - Essential components of nursing curriculum theory, design and program evaluation will be examined. External and internal influences and barriers on the curriculum will be included. Prerequisite: Graduate level NURS 500 Minimum Grade of C

582 - 3 **Instructional Design, Assessment, and Evaluation for Nursing Education** - Explores innovative instructional design strategies, outcomes, evidence based assessment and evaluation tools in relation to classroom competence and clinical achievement which includes diverse population needs. Includes 90 hours practicum. Prerequisite: Graduate level NURS 504 Minimum Grade of C and Graduate level NURS 581 Minimum Grade of C

585 - 3 **Nurse Educator Role Synthesis** - In this course, the graduate student integrates evidence-based practice into the role of the specialty nurse educator. Includes 90 hours of practicum. Prerequisite: Graduate level NURS 581 Minimum Grade of C and Graduate level NURS 582 Minimum Grade of C and Graduate level NURS 586 Minimum Grade of C

586 - 3 **Advanced Specialty Nursing Practice for Nurse Educators** - Integrates evidence-based practice and advanced health assessment knowledge in learner's nursing specialty. Investigates the interrelationship among practice, theory, and research through clinical practicum in specialty area. Includes 90 hours practicum. Prerequisite: Graduate level NURS 513 Minimum Grade of C and Graduate level NURS 515 Minimum Grade of C and Graduate level NURS 516 Minimum Grade of C and Graduate level NURS 581 Minimum Grade of C and Graduate level NURS 582 Minimum Grade of C

590 - 3 **Organizational Behavior and Leadership for Nurse Executives** - Integration and application of organizational, management, and leadership theories incorporated in nurse executive practice. Explores healthcare models, structure, and design. Includes 45 hours practicum. Prerequisite: None

592 - 3 **Finance and Budgeting in Health Care and Nursing Administration** - Emphasizes management of diverse human resources in health care. Selected topics include professional growth, performance appraisal, recruitment, retention, promotion, conflict management, collective bargaining, and diversity; includes 45 hours practicum. Prerequisite: Graduate level NURS 590 Minimum Grade of C

593 - 3 **Management of Human Resources in Health Care** - Examines factors related to the management of diverse human resources in health care. Prerequisite: Graduate level NURS 590 Minimum Grade of C

594 - 3 **Nurse Executive Leadership II** - Under the guidance of a nurse executive preceptor in a planned practicum experience, applies knowledge, skills, and abilities related to the nurse executive role. Includes 90 hours practicum. Prerequisite: Graduate level NURS 590 Minimum Grade of C and Graduate level NURS 592 Minimum Grade of C and Graduate level NURS 593 Minimum Grade of C

596A - 1 **Capstone I** - The student will initiate the information systems design project which includes a feasibility study to determine the project scope and objectives, alternative design options, and cost-effectiveness. Prerequisite: Graduate level NURS 509 Minimum Grade of C and Graduate level CS 434 Minimum Grade of C and Graduate level CMIS 535 Minimum Grade of C and Graduate level CS 560 Minimum Grade of C

596B - 1 **Capstone II** - The student will develop the requirements for the design project including detailed analysis of the existing system and logical systems design for the proposed system. Prerequisite: Graduate level NURS 596A Minimum Grade of C and Graduate level CS 596A Minimum Grade of C and (Graduate level CMIS 596A Minimum Grade of C or Graduate level HCIM 596A Minimum Grade of C)

598 - 1 to 3 **Independent Study** - Guided study in nursing topics; organized to meet objectives of individuals or small groups of graduate students in particular area of interest. Total earned hours may not exceed 3. Requires consent of instructor. Prerequisite: None

600 - 3 **Theory Guided Practice** - Explores nursing and health care concepts, models and theories to develop a framework for designing, implementing, and evaluating innovative Doctor of Nursing (DNP) projects. Prerequisite: None

601 - 3 **Ethics Studies for Advanced Nursing Practice** - Explores ethical reasoning, theories, codes, and issues relevant for advanced nursing practice and research. Prerequisite: None

604 - 3 **Evaluating Evidence for Improving Practice and Health Care Outcomes** - Translate scientific and clinical evidence for application into practice to improve healthcare outcomes. Prerequisite: Admission to the School of Nursing Graduate Program.

605 - 3 **Health Policy and Finance for Advanced Nursing Leadership** - Explores current health policy and health care finance issues important to nursing practice. Prerequisite: None

606 - 3 **Leadership and Health Policy for Advanced Nursing Practice** - Exploration and analysis of knowledge and skills related to effective advanced nursing leadership in organizations, systems, and health policy development and finances. Advisor consent required. Nursing graduate majors only. Prerequisite: None

617 - 3 **Advanced Applications of Epidemiology in Practice** - Interpret epidemiologic data and synthesize research for advanced nursing practice with individuals and populations. Prerequisite: Graduate level NURS 600 Minimum Grade of C and Graduate level NURS 620 Minimum Grade of C

620 - 3 **Health Care Informatics** - Focus on critical elements of healthcare informatics for advanced nursing practice including searching, managing, and evaluating data; analyzing information systems; and integrating technology into practice. Prerequisite: None

640 - 3 **Neurobiology and Clinical Psychopharmacology** - Study of advanced concepts in neurobiology and the clinical management of targeted psychiatric symptoms, related to the psychopharmacologic treatment of various mental health conditions across the lifespan. Prerequisite: None

641 - 3 **Psychiatric Interviewing for Nurse Practitioners** - This course provides a comprehensive overview of the fundamentals of psychiatric interviewing, focusing on interviewing skills with patients across the lifespan and along the continuum of mental health complexities. Prerequisite: None

642 - 5 **Psychiatric Mental Health I** - Integration of current nursing theory, neurobiology, assessment, differential diagnoses, psychopharmacologic and non-pharmacologic treatment options into psychiatric patient care. Prerequisite: Graduate level NURS 640 Minimum Grade of C and Graduate level NURS 641 Minimum Grade of C

643 - 5 **Psychiatric Mental Health II** - Integration of current nursing theory, neurobiology, assessment, differential diagnoses, psychopharmacologic and non-pharmacologic treatment options into psychiatric patient care. Prerequisite: Graduate level NURS 640 Minimum Grade of C and Graduate level NURS 641 Minimum Grade of C

644 - 3 **Advanced Psychiatric Mental Health Role Synthesis** - This course builds on overall knowledge of psychiatric mental health advanced practice nursing and provides a synthesis experience. Prerequisite: Graduate level NURS 640 Minimum Grade of C and Graduate level NURS 641 Minimum Grade of C and Graduate level NURS 642 Minimum Grade of C and Graduate level NURS 643 Minimum Grade of C

668A - 3 **Clinical Correlations and Innovations in Anesthesia Practice I** - Analysis of correlations between complex anesthesia cases and relevant theoretical principles. Focus on evidence based practice and synthesis of learning to promote innovative care. Prerequisite: Graduate level NURS 567A Minimum Grade of C and Graduate level NURS 567B Minimum Grade of C

668B - 2 **Clinical Practicum in Nurse Anesthesia IV** - Application of advanced theoretical principles into nurse anesthesia care of critically ill or complex patients while under the supervision of CRNA and/or Anesthesiologist preceptors. Prerequisite: Graduate level NURS 567A Minimum Grade of C and Graduate level NURS 567B Minimum Grade of C

669A - 3 **Clinical Correlations and innovations in Anesthesia Practice II** - Analysis of correlations between complex anesthesia cases and the variables that impact patient outcomes. Prerequisite: Graduate level NURS 668A Minimum Grade of C and Graduate level NURS 668B Minimum Grade of C

669B - 2 **Clinical Practicum in Nurse Anesthesia V** - Application of advanced practice nursing role into care of critically ill/complex patients under supervision of CRNA and/or Anesthesiologist preceptors. Prerequisite: Graduate level NURS 668A Minimum Grade of C and Graduate level NURS 668B Minimum Grade of C

670A - 1 **Clinical Leadership in Anesthesia Seminar** - Exploration and analysis of critical skills and knowledge related to leadership within the nurse anesthesia practice environment. Prerequisite: (Graduate level NURS 567A Minimum Grade of C and Graduate level NURS 567B Minimum Grade of C) and Graduate level NURS 691 Minimum Grade of C

670B - 1 **Clinical Leadership in Anesthesia Practicum** - Application of theoretical principles into care of the perioperative patient with focus on leadership within the nurse anesthesia clinical setting. Prerequisite: (Graduate level NURS 567A Minimum Grade of C and Graduate level NURS 567B Minimum Grade of C) and Graduate level NURS 691 Minimum Grade of C

677 - 5 **Advanced Practicum and Role Synthesis** - Advanced, comprehensive practicum experience focusing on the advanced practice nursing role in primary care settings. Includes 270 practicum hours. Prerequisite: Graduate level NURS 572 Minimum Grade of C and Graduate level NURS 573 Minimum Grade of C and Graduate level NURS 576 Minimum Grade of C

691 - 3 **Organizational and Systems Leadership in Health Care** - Exploration and analysis of critical skills and knowledge related to leadership for advanced nursing practice. Prerequisite: None

695A - 1 **Introduction to DNP Projects** - Exploration of evidence based, innovative initiatives in health care. Prerequisite: Graduate level NURS 600 Minimum Grade of C and Graduate level NURS 620 Minimum Grade of C

695P - 1 to 4 **DNP Project** - Implement project proposals to improve patient safety, access, cost-effectiveness, and quality of care within healthcare systems. Prerequisite: None

697A - 1 **Doctoral Project Design and Management** - Focuses on identification and refinement of the final doctoral project topic and theoretical frameworks, based on a comprehensive literature review. Prerequisite: Graduate level NURS 695A Minimum Grade of C

697B - 1 **Doctoral Project II Design and Management** - Focuses on developing methods for final doctoral project implementation, based on stakeholder input, needs assessment, literature review, and projected outcome criteria. Prerequisite: Graduate level NURS 697A Minimum Grade of C

697C - 3 **Doctoral Project III Design and Management** - Focuses on initiating final doctoral project implementation, initial data collection, and assessment of plan effectiveness. Prerequisite: Graduate level NURS 697B Minimum Grade of C

697D - 1 **Doctoral Project IV Design and Management** - Focuses on completion of final doctoral project implementation, with emphasis on data analysis and development of recommendations. Prerequisite: Graduate level NURS 697C Minimum Grade of C

697E - 1 **Doctoral Project V Design and Management** - Focuses on dissemination of final doctoral project outcomes and recommendations. Prerequisite: Graduate level NURS 697D Minimum Grade of C

- Nutrition (NUTR)
  - 505 - 1 **Introduction to Professional Practice** - Provides an introduction to dietetic practice including standards and guided practice, professional performance, nutrition care process, and quality care standards. Prerequisite: None

507 - 3 **Introduction to Nutrition Care** - Introduction to the professional practice of dietetics. Using nutrition care process as a framework, students learn how to provide nutrition services to patients. Prerequisite: None

507P - 1 **Introduction to Nutrition Care Supervised Practice** - Using nutrition care process as a framework, students learn how to provide nutrition services to patients at area clinical sites. Prerequisite: None

508 - 2 **Nutrition Entrepreneurship** - Includes advanced analysis of the problems and considerations involved in establishing, organizing, and operating a nutrition-based business or clinical nutrition practice. Prerequisite: None

510 - 3 **Advanced Food Service Management** - Will apply management and systems theory to roles relevant to dietetics, with an emphasis on food service organizations. Prerequisite: None

510P - 1 **Advanced Food Service Management Supervised Practice** - Food Service management skills are developed through fieldwork and projects. Students also plan, prepare, and serve a meal to a community group. Prerequisite: None

511 - 2 **Medical Nutrition Therapy I** - Pathology, treatment, and nutritional therapy of chronic and acute diseases. Incorporates principles of nutrition assessment, diet prescription, care plans, and documentation. Prerequisite: Graduate level NUTR 507 Minimum Grade of B and Graduate level NUTR 507P Minimum Grade of B

511P - 3 **Medical Nutrition Therapy I Supervised Practice** - The clinical application of nutrition-related diagnoses and conditions discussed in NUTR 511. Prerequisite: Graduate level NUTR 507 Minimum Grade of B and Graduate level NUTR 507P Minimum Grade of B

512 - 2 **Medical Nutrition Therapy 2** - Study of biochemical and physiological basis for nutrition care in treating disease. This is the second semester of a two-semester course. Prerequisite: Graduate level NUTR 511 Minimum Grade of B and Graduate level NUTR 511P Minimum Grade of B

512P - 3 **Medical Nutrition Therapy 2 Supervised Practice** - The clinical application of nutrition care of those with nutrition-related diagnoses and conditions discussed in NUTR 512. Prerequisite: Graduate level NUTR 511 Minimum Grade of B and Graduate level NUTR 511P Minimum Grade of B

513 - 3 **Advanced Sport and Exercise Nutrition** - Exploration, analysis, and application of evidence-based nutrition information to sports and exercise. Prerequisite: None

521 - 3 **Community Nutrition** - Study of community nutrition needs and problems, the goals, organization, and history of selected government and private programs are investigated. Prerequisite: Graduate level NUTR 507 Minimum Grade of B and Graduate level NUTR 507P Minimum Grade of B

521P - 2 **Community Nutrition 1 Supervised Practice** - Provides supervised practice in community nutrition at area agencies, organizations, and programs. Prerequisite: Graduate level NUTR 507 Minimum Grade of B and Graduate level NUTR 507P Minimum Grade of B

522P - 1 **Community Nutrition 2 Supervised Practice** - Students develop, implement, and evaluate a community nutrition intervention. Prerequisite: Graduate level NUTR 521 Minimum Grade of B and Graduate level NUTR 521P Minimum Grade of B

531P - 8 **Advanced Nutrition Practicum 1** - First part of a two course sequence. It provides advanced supervised practice experiences in all of dietetics. Consists of 24 supervised practice hours/week. Prerequisite: Graduate level NUTR 511 Minimum Grade of B and Graduate level NUTR 511P Minimum Grade of B and Graduate level NUTR 521 Minimum Grade of B and Graduate level NUTR 521P Minimum Grade of B

532P - 8 **Advanced Nutrition Practicum 2** - Second part of a two course sequence. It provides advanced supervised practice experiences in all of dietetics. Consists of 24 supervised practice hours/week. Prerequisite: Graduate level NUTR 531P Minimum Grade of B

535 - 2 **Nutrition Seminar** - Seminar format. Students review/critique research and practically apply their knowledge. Students will have opportunity to gain hands-on practice with the credentialing examination for dietetics. Prerequisite: Graduate level NUTR 531P Minimum Grade of B

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- Operations Research (OR)
  - 440 - 3 **Operations Research Deterministic Models** - Linear programming, problem formulation, simplex algorithm, transportation and network problems, duality theory, sensitivity theory. Same as IME 415. Prerequisites: Knowledge of a programming language, MATH 250, or consent of instructor.
  - 441 - 3 **Operations Research Stochastic Models** - Probabilistic models, elementary queuing theory with single or multiple server systems, use of queues in facility designs, and elementary decision theory. Markov processes and decision-making. [Dist. NSM] Same as IME 461. Prerequisite: Undergraduate level STAT 380 Minimum Grade of C or Undergraduate level STAT 480A Minimum Grade of C
  - 442 - 3 **Operations Research: Simulation** - Design of simulation models using a high level simulation programming language. Applications in production, inventory, queuing, and other models. Same as IE 468. Prerequisites: IE 365 or IE 461 or OR 441 or STAT 380 or consent of instructor.
  - 495 - 1 to 3 **Independent Study** - Research in subjects such as mathematical programming, dynamic programming, simulation, queuing, Markov processes and production topics. May be repeated to a maximum of 9 hours. Requires written consent of adviser and instructor. Prerequisite: None
  - 585 - 3 **Advanced Simulation Modeling** - Simulation modeling using a high-level simulation programming language: clock mechanisms, data structures, output analysis, sample applications in queuing and production. Prerequisite: Undergraduate level STAT 380 Minimum Grade of C or Undergraduate level STAT 480B Minimum Grade of C
  - 586 - 3 **Theory and Techniques of Simulation** - Theory and techniques of simulation: generation of random variable, output analysis, variance reduction, and experimental design and optimization. Prerequisite: Undergraduate level IE 468 Minimum Grade of C or Undergraduate level OR 442 Minimum Grade of C or Undergraduate level OR 585 Minimum Grade of C
  - 587A - 3 **Mathematical Programming: Theory, Methods, & Applications of Linear & Network Programming** - Theory, methods and applications of linear and network programming. Prerequisites: OR 440, MATH 321, knowledge of Fortran.
  - 587B - 3 **Mathematical Programming: Theory, Methods, & Applications of Integer, Dynamic, & Nonlinear Program** - Theory, methods and applications of integer, dynamic and nonlinear programming. Prerequisite: Graduate level OR 587A Minimum Grade of CUndergraduate level OR 587A Minimum Grade of C
  - 590 - 1 to 3 **Seminar** - Intensive study of selected topics: mathematical programming; dynamic programming; simulation; queuing; stochastic processes; Markov processes; production. May be repeated to a maximum of 18 hours provided no topic is repeated. Requires written consent of advisor and instructor. Prerequisite: None
  - 595 - 1 to 3 **Special Project** - Independent study in mathematical programming, simulation, queuing Markov processes, or production. May be used to satisfy research paper requirement for M.S. degree in Mathematics. May be repeated to a maximum of 7 hours. Requires consent of research advisor. Prerequisite: None
  - 599 - 1 to 6 **Thesis** - Directed research to satisfy thesis requirement. May be repeated for total of 6 hours. Requires written consent of thesis advisor. Prerequisite: None

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- Pharmaceutical Science (PHPS)
  - 402 - 3 **Biochemistry for the Pharmaceutical Sciences** - Addresses molecular biology and biochemical basis for drug action and human diseases. Biochemical pathways, enzyme catalysis and regulation, and metabolism of nutrients covered. Prerequisite: Graduate level PHPS 420 Minimum Grade of C
  - 420 - 4 **Principles of Pharmacology** - Addresses modern pharmacology with emphasis on rational drug discovery, mechanism of drug action and toxic effects. Prerequisite: Undergraduate level CHEM 241A Minimum Grade of D and Undergraduate level CHEM 241B Minimum Grade of D and Undergraduate level CHEM 245 Minimum Grade of D and Undergraduate level CHEM 430A Minimum Grade of D and Undergraduate level BIOL 150 Minimum Grade of D and Undergraduate level BIOL 151 Minimum Grade of D
  - 500 - 3 **Current Targets for Drug Discovery** - This course provides an understanding of current drug targets and mechanisms of action of representative drug candidates by modulation of these targets. Prerequisites: undergraduate general chemistry, organic chemistry, biology and biochemistry with grades of C or better, or consent of instructor.
  - 501 - 3 **Principles of Rational Drug Discovery** - This course provides an understanding of the process of drug discovery from the identification/selection/validation of drug targets to the submission of candidates for clinical trials. Prerequisites: undergraduate general chemistry, organic chemistry, biology and biochemistry with grades of C or better, or consent of instructor.
  - 510 - 1 **Pharmaceutical Sciences Foundations and Research Methods** - Students will attend presentations of ongoing faculty research to aquire foundational knowledge necessary for selecting an area and conducting research in the pharmaceutical sciences. Prerequisite: Undergraduate level CHEM 241A Minimum Grade of C and Undergraduate level CHEM 241B Minimum Grade of C and Undergraduate level CHEM 245 Minimum Grade of C and Undergraduate level BIOL 150 Minimum Grade of C and Undergraduate level BIOL 151 Minimum Grade of C and Undergraduate level CHEM 121A Minimum Grade of C and Undergraduate level CHEM 121B Minimum Grade of C and Undergraduate level CHEM 125A Minimum Grade of C and Undergraduate level CHEM 125B Minimum Grade of C and (Undergraduate level BIOL 351 Minimum Grade of C or Undergraduate level CHEM 451A Minimum Grade of C)
  - 515 - 3 **Principles of Biostatistics for the Pharmaceutical Sciences** - Pharmaceutical Sciences graduate students will learn the basic principles of biostatistics for drug discovery applications. Prerequisite: None
  - 530 - 3 **Advanced Heterocyclic Chemistry** - Addresses historical and modern heterocyclic chemistry for application to drug discovery and the total synthesis of natural products. Prerequisite: Undergraduate level CHEM 120A Minimum Grade of D and Undergraduate level CHEM 120B Minimum Grade of D and Undergraduate level CHEM 241A Minimum Grade of D and Undergraduate level CHEM 241B Minimum Grade of D and Undergraduate level CHEM 245 Minimum Grade of D and Undergraduate level CHEM 430A Minimum Grade of D
  - 539 - 3 **Evolutionary Medicine** - Focus is on evolutionary (Darwinian) medicine which is the application of modern evolutionary theory to understanding human health and disease. Prerequisite: None
  - 540 - 3 **Pharmacokinetics** - Pharmacokinetic modeling and its application to optimization in drug discovery research. Focus is primarily from the industrial perspective. Prerequisites: undergraduate organic chemistry, physical chemistry, calculus, differential equations, and linear algebra.
  - 541 - 3 **Biopharmaceutics** - This course provides an understanding of the processes involved in drug administration and absorption. The pharmaceutical aspects of the major routes of administration are reviewed. Prerequisites: undergraduate organic chemistry, physical chemistry, calculus, differential equations, and linear algebra.
  - 595 - 1 **Graduate Seminar in the Pharmaceutical Sciences** - An advanced level seminar course required for all graduate students. Prerequisite: None
  - 598 - 1 to 3 **Pharmaceutical Sciences Research** - Research under the direction of a faculty member. Ten hours are required for completion of the MS degree. Prerequisite: Undergraduate level CHEM 121A Minimum Grade of C and Undergraduate level CHEM 121B Minimum Grade of C and Undergraduate level CHEM 125A Minimum Grade of C and Undergraduate level CHEM 125B Minimum Grade of C and Undergraduate level BIOL 150 Minimum Grade of C and Undergraduate level BIOL 151 Minimum Grade of C
  - 599 - 1 to 3 **Pharmaceutical Sciences Thesis Preparation** - This course provides time for the students to write a thesis. Three hours are required for the completion of the MS Degree. Prerequisite: Undergraduate level CHEM 121A Minimum Grade of C and Undergraduate level CHEM 121B Minimum Grade of C and Undergraduate level CHEM 125A Minimum Grade of C and Undergraduate level CHEM 125B Minimum Grade of C and Undergraduate level BIOL 150 Minimum Grade of C and Undergraduate level BIOL 151 Minimum Grade of C
  - 700 - 4 **Principles of Drug Action I** - Discussion of chemical and physical properties relating to drug action. Emphasis on absorption, distribution, metabolism, and elimination of drugs, receptors theory, and mechanisms of action. Prerequisite: None
  - 701 - 2 **Principles of Drug Action II** - Addresses toxicology and mechanisms of drug actions in endocrine and cardiovascular systems. Emphasis is placed on anatomy and physiology, disease states, and drug actions. Prerequisite: None
  - 702 - 3 **Biochemical Principles of Pharmacy** - Addresses chemical and molecular biology basis for drug action and human diseases. Biochemical pathways, enzyme structure and regulation, metabolism of nutrients and food constituents covered. Prerequisite: None
  - 703 - 2 **Principles of Pharmacogenomics** - Addresses techniques of molecular biology and pharmacogenomic principles applied to human disease states. Emphasized pathological states where therapeutic drug intervention exists or might be developed. Prerequisite: open to pharmacy student only or by consent of department chair.
  - 704 - 2 **Biopharmaceutics and Drug Delivery I** - Addresses drug absorption process, Fickian mass transport concepts and mathematical models. Common dosage forms and delivery systems are also presented. Prerequisite: None
  - 705 - 2 **Biopharmaceutics and Drug Delivery II** - Addresses drug product preformulation, formulation, and manufacture including influence on patient product performance. Physiocochemical factors relevant to drug administration, problem solving, and patient counseling emphasized. Prerequisite: None
  - 705N - 3 **Biopharmaceutics and Drug Delivery II** - Addresses drug product preformulation, formulation, and manufacture including influence on patient product performance. Physicochemical factors relevant to drug administration, problem solving, and patient counseling emphasized. Prerequisite: None
  - 707 - 2 **Pharmaceutics Skills and Techniques** - Addresses the mathematical and kinesthetic skills necessary for pharmacy practice. Laboratory sessions provide an envrionment in which to practice compounding skills. Prerequisite: None

707N - 1 **Pharmacy Calculations** - Addresses the mathematical skills necessary for pharmacy practice. Prerequisite: None

712 - 3 **Immunology and Immunization Training** - A study of principles of immunology, host responses to microbial infections/tumors, allergic reactions, autoimmune diseases, transplantations and appropriate vaccination strategies to improve public health. Prerequisite: None

720 - 3 **Biopharm&Drug Del III** - Addresses the physicochemical and manufacturing factors affecting drug absorption, distribution, metabolism and elimination. The mathematical modeling for determining patient's drug dosage regimen is covered. Prerequisite: None

720N - 3 **Pharmacokinetics** - Addresses mathematical and clinical basis for understanding drug absorption, distribution, metabolism, and elimination. The mathematical modeling for determining patients' drug dosage regimens is covered. Prerequisite: None

722 - 3 **Microbiology & Immunology** - A study of microbiology of infectious diseases and principles of immunology. The pharmacology and therapeutics of immunologic disorders are also covered. Prerequisite: None

745 - 2 **Pharmaceutical Biotechnology** - Survey of biotechnology therapeutics developed using modern biological approaches and review of basic science including mechanism of action at the biochemical level. Prerequisite: Open to Pharmacy students only.

- Pharmacotherapeutics (PHPT)
  - 724 - 5 **Integrated Pharmacotherapeutics: Cardiovascular** - Addresses pathophysiology, pharmacology, medicinal chemistry, and therapeutics of the cardiovascular system. Designing, implementing, monitoring, evaluating, and adjusting care plans emphasized. Prerequisite: None
  - 725 - 5 **Integrated Pharmacotherapeutics III: Infectious Diseases** - Addresses pathophysiology, pharmacology, medicinal chemistry and therapeutics of infectious diseases. Designing, implementing, monitoring, evaluating, and adjusting care plans emphasized. Prerequisite: None
  - 726 - 4 **Integrated Pharmacotherapeutics: Endocrine/Metabolic/Renal** - Addresses pathophysiology, pharmacology, medicinal chemistry and therapeutics of the endocrine, metabolic and renal systems. Designing, implementing, monitoring, evaluating, and adjusting care plans emphasized. Prerequisite: None
  - 727 - 4 **Integrated Pharmacotherapeutics: GI/Theumatology/Pulmonary** - Addresses pathophysiology, pharmacology, medicinal chemistry and therapeutics of the gastrointestinal, pulmonary and musculoskeletal systems. Designing, implementing, monitoring, evaluating, and adjusting care plans emphasized. Prerequisite: None
  - 730A - 4 **Integrated Pharmacotherapeutics I** - Integrates concepts of pathophysiology, pharmacology, medicinal chemistry and therapeutics. Students are expected to design, implement, monitor, evaluate, and adjust pharmaceutical care plans for patients. Prerequisite: None
  - 730B - 4 **Integrated Pharmacotherapeutics II** - Integrates concepts of pathophysiology, pharmacology, medicinal chemistry and therapeutics. Students are expected to design, implement, monitor, evaluate, and adjust pharmaceutical care plans for patients. Prerequisite: None
  - 730C - 4 **Integrated Pharmacotherapeutics III** - Integrates concepts of pathophysiology, pharmacology, medicinal chemistry and therapeutics. Students are expected to design, implement, monitor, evaluate, and adjust pharmaceutical care plans for patients. Prerequisite: None
  - 730D - 4 **Integrated Pharmacotherapeutics IV** - Integrates concepts of pathophysiology, pharmacology, medicinal chemistry and therapeutics. Students are expected to design, implement, monitor, evaluate, and adjust pharmaceutical care plans for patients. Prerequisite: None
  - 740 - 5 **Integrated Pharmacotherapeutics: Psychiatry and Neurology** - Addresses pathophysiology, pharmacology, medicinal chemistry, and therapeutics of psychiatric and neurological disorders. Designing, implementing, monitoring, evaluating, and adjusting care plans emphasized. Prerequisite: None
  - 741 - 4 **Integrated Pharmacotherapeutics: Oncology/Hematology** - Addresses pathophysiology, pharmacology, medicinal chemistry and therapeutics of oncologic and hematologic disorder. Designing, implementing, monitoring, evaluating, and adjusting care plans emphasized. Prerequisites: Open to School of Pharmacy Students only.
  - 742 - 2 **Integ Pharm: Women&Men's Hlth** - Addresses pathophysiology, pharmacology, medicinal chemistry and therapeutics of women and men's health problems. Designing, implementing, monitoring, evaluating, and adjusting care plans emphasized. Prerequisite: None
  - 743 - 2 **Integrated Pharmacotherapeutics: Other Topics** - Addresses pathophysiology, pharmacology, and therapeutics of various disorders not covered in previous therapeutics courses. Designing, implementing, monitoring, evaluating, and adjusting care plans emphasized. Prerequisite: None
  - 750A - 4 **Integrated Pharmacotherapeutics V** - Integrates concepts of pathophysiology, pharmacology, medicinal chemistry and therapeutics. Students are expected to design, implement, monitor, evaluate, and adjust pharmaceutical care plans for patients. Prerequisite: None
  - 750B - 4 **Integrated Pharmacotherapeutics VI** - Integrates concepts of pathophysiology, pharmacology, medicinal chemistry and therapeutics. Students are expected to design, implement, monitor, evaluate, and adjust pharmaceutical care plans for patients. Prerequisite: None
  - 750C - 4 **Integrated Pharmacotherapeutics VII** - Integrates concepts of pathophysiology, pharmacology, medicinal chemistry and therapeutics. Students are expected to design, implement, monitor, evaluate, and adjust pharmaceutical care plans for patients. Prerequisite: None
  - 750D - 4 **Integrated Pharmacotherapeutics VIII** - Integrates concepts of pathophysiology, pharmacology, medicinal chemistry and therapeutics. Students are expected to design, implement, monitor, evaluate, and adjust pharmaceutical care plans for patients. Prerequisite: None
- Pharmacy Administrative Sci. (PHAS)
  - 708 - 3 **Health Care Systems** - Examines the financing, and delivery of the U.S. healthcare system, introduces the concepts of health outcomes, population-based care, and social/economic factors that impact patient care. Prerequisite: None
  - 709 - 2 **Health Care & Financial Management** - Addresses principles of business, marketing, strategic planning, and financial management. The economic and political environment of the American health care system. Prerequisite: open to pharmacy students only or by consent of department chair.
  - 716 - 1 **Ethical Issues in Health Care** - The course is structured as an interprofessional course where pharmacy students will collaborate with dental students to discuss ethical issues encountered in health care. Prerequisite: None
  - 728 - 2 **Human Resources Mgmt** - Addressing principles for recruiting, hiring, training, developing, supervising, motivating, retaining, and evaluating professional and non-professional staff. Principles of effective leadership are covered. Prerequisite: None
  - 728N - 2 **Pharmacy Management I** - Addresses pharmacy communication theory, the management of human resources and leadership principles that are useful in maximizing pharmacy operations. Prerequisite: None
  - 733 - 3 **Pharmacy Law** - Covers legal requirements for medications and pharmacy practice. Prerequisite: None
  - 733N - 2 **Pharmacy Law** - Covers legal requirements in pharmacy practice and helps students apply laws to circumstances they may encounter in various practice settings. Prerequisite: None
  - 753 - 2 **Management Selective: Community Pharmacy** - This course is designed to provide an understanding of those topics relevant to the management and administration of a community pharmacy as a small business. Prerequisite: Open to Pharmacy Students Only.
  - 754 - 2 **Pharmacy Management II** - Introduction to leadership and management activities and resource use in the community, institutional and other pharmacy practice settings. Developing problem-solving abilities will be emphasized. Prerequisite: None
  - 755 - 2 **Management Selective: Institutional** - This course is designed to provide a foundational knowledge base and develop management and leadership skills relevant to institutional pharmacy practice. Prerequisites: Open to Pharmacy Students only.
  - 756 - 2 **Pharmacy & Population Health** - Introduces the concepts of population health, determinants and patterns of population health problems and identifying possible ways to improve population health. Prerequisite: None
- Pharmacy Elective (PHEL)
  - 400 - 3 **Introduction to Organic Medicinal Chemistry** - Introductory course in medicinal chemistry which addresses the relationship of chemical structure to

biological activity. Prerequisite: Undergraduate level CHEM 241A Minimum Grade of C and Undergraduate level CHEM 241B Minimum Grade of C and (Undergraduate level CHEM 351 Minimum Grade of C or Undergraduate level CHEM 451A Minimum Grade of C) and Undergraduate level BIOL 150 Minimum Grade of C and Undergraduate level BIOL 151 Minimum Grade of C

760E - 3 **Orientation to Teaching** - Explores learning and motivation theories, teaching philosophies, culture of higher education, scholarship of teaching and learning, design of learning units, active learning and assessment strategies. Prerequisite: None

761E - 3 **Instructional & Assessment Strategies** - Introduces various instructional and formative and summative assessment strategies with applications to the design of a learning unit. Prerequisite: Professional level PHEL 760E Minimum Grade of C or Professional level PHEL 760 Minimum Grade of C

764E - 2 **Pain & Palliative Care Pharmacotherapy** - Will provide the pharmacy student with an in-depth overview of pain management, hospice, and palliative care practice and health system models. Prerequisite: None

765E - 3 **Pediatric Pharmacotherapy** - Designed to enhance knowledge related to the pharmacotherapy of select childhood disease states for ensuring the proper care of children and adolescents. Prerequisite: None

766E - 3 **Diabetes Care and Experience** - Addresses specific patient populations, medical nutrition therapy, pharmacotherapy, advanced monitoring considerations and devices, applied teaching principles: identifying cultural competency and literacy skills. Prerequisite: None

768E - 2 **Addiction** - Provides a review of addiction medicine as it relates to the pharmacy professional and to serve a prevention function within the profession. Prerequisite: None

769E - 2 **Introduction to Drug Discovery Process** - Introduces the basic framework involved in designing a drug, taking it through the approval process, and bringing it to market. Prerequisite: None

770E - 3 **Medicinal Chemistry - Theory & Practice** - Introductory medicinal chemistry addressing chemical structure vs. pharmacological activity, emphasizing basic drug design and discovery concepts, drug-receptor interactions, physicochemical aspects of drug action and targets. Prerequisite: None

771E - 2 **Medical Devices & Supplies** - Designed to provide an overview of medical devices and supplies used by patients or health professionals in home and/or clinical settings. Prerequisite: None

772E - 2 **Introduction to Nuclear Pharmacy** - Introduction to the specialty of Nuclear Pharmacy including radiopharmaceuticals, instrumentation, radioactive decay, production of radionuclides, radiation protection and radiation biology. Prerequisite: None

773E - 2 **Advanced Pharmacogenomics** - Extension of the principles of pharmacogenomics from PHPS 703, conducting an in depth examination of genetic effects on drug metabolism and adverse events. Prerequisite: None

774E - 2 **Advanced Infectious Diseases Pharmacotherapy** - An in-depth review of clinical uses for antimicrobials and application of infectious diseases treatment guidelines which involves independent reading, peer teaching & team-based learning. Prerequisite: Professional level PHPT 730C Minimum Grade of C and Professional level PHPT 730D Minimum Grade of C

775E - 2 **Perspectives of Mental Health** - Enhance familiarity with the mental health system, psychopharmacology and the treatment of mental illnesses, and define the role of pharmacists in providing mental health care. Prerequisite: None

776E - 2 **Critical Care Pharmacotherapy** - Discusses the pathophysiology and the therapeutic management of commonly encountered acute intensive care medical problems. Prerequisite: Professional level PHPT 730A Minimum Grade of C and Professional level PHPT 730B Minimum Grade of C and Professional level PHPT 730C Minimum Grade of C and Professional level PHPT 730D Minimum Grade of C

777E - 2 **Application of Clinical Guidelines in Ambulatory Care** - Designed to review practice guidelines for common ambulatory care disease states and allow students to expand and apply their therapeutic knowledge. Prerequisite: Professional level PHPT 724 Minimum Grade of C and Professional level PHPT 726 Minimum Grade of C and Professional level PHPT 727 Minimum Grade of C and Professional level PHPT 740 Minimum Grade of C and Professional level PHPT 742 Minimum Grade of C

779E - 2 **Advanced Self Care** - A study of nonprescription drugs. Emphasis will be placed on selection of the appropriate nonprescription drug for a patient and patient counseling. Prerequisite: None

780E - 2 **Managed Care Pharmacy** - Fundamental concepts in managed care pharmacy and the impact on the health care system. Prerequisite: None

781E - 2 **Methods in Drug Discovery** - The drug discovery component of a Research & Development organization is presented. Focus on current technologies for drug research, with emphasis on computational methods. Prerequisite: None

782E - 2 **Advanced Cardiovascular Pharmacotherapy** - Allows students to become more familiar with disorders of the cardiovascular system through lecture, primary literature review and pharmaceutical care plan development. Prerequisite: Professional level PHPT 730A Minimum Grade of C and Professional level PHPT 730B Minimum Grade of C

783E - 2 **Acute Care Pharmacotherapy** - Develops patient care skills in health system clinical pharmacy using case-based patient scenarios to emphasize dynamic drug and disease state management. Prerequisite: Professional level PHPT 730A Minimum Grade of C and Professional level PHPT 730B Minimum Grade of C and Professional level PHPT 730C Minimum Grade of C and Professional level PHPT 730D Minimum Grade of C

784E - 3 **Spanish Language and Culture for Health Professionals** - Students will expand their knowledge of the Spanish language and culture with an emphasis on preparing them to work in health-related fields. Prerequisite: Undergraduate level SPAN 101 Minimum Grade of C and Undergraduate level SPAN 102 Minimum Grade of C

785E - 3 **Compounding** - Pharmaceutics topics are developed in the context of drug product formulation and pharmaceutical compounding. Lab exercises reinforce topics covered in lecture. Prerequisite: Professional level PHPS 720N Minimum Grade of C

786E - 2 **Precision Medicine** - Study of the precision medicine biomarkers and international programs that characterize human states of health and disease, especially the NIH ALLofUS project. Prerequisite: None

787E - 3 **Global Health** - This fully online course is intended to address global health challenges. The course will also focus on interprofessional collaboration. Prerequisite: None

788E - 2 **Advanced Clinical Hematology Oncology Overview** - Provides additional education in the area of clinical oncology. Students will learn about topics not addressed in the Integrated Therapeutics course on this topic. Prerequisite: None

789E - 2 **Medicinal Plants & Tropical Diseases** - Combines lectures, readings and projects with a field-based experiential component. The topics will cover a broad perspective including natural resources and tropical diseases. Prerequisite: None

790E - 2 **Advanced Community Pharmacy** - Focus on the application of community pharmacy practice topics. Rapid diagnostic testing, patient counseling, verification of prescriptions, and business aspects will be emphasized. Prerequisite: None

791E - 2 **Pharmacy Advocacy and Leadership Development** - Will focus on developing the student's leadership skills and communication skills as an advocate for the profession of pharmacy. Prerequisite: None

792E - 2 **Pharmacy and Population Health** - Will introduce the concepts of population health, determinants and patterns of population health problems and identifying possible ways to improve population health. Prerequisite: None

- Pharmacy Experiential Ed. (PHEP)
  - 714 - 1 **Introductory Pharmacy Practice Experience I: Professional Role Observations** - Provides an introduction to the practice of Pharmacy with experiences in both community and institutional pharmacy practice. Prerequisite: open to pharmacy students only or by consent of department chair.

715 - 1 **Introductory Practice Experience II: Service Learning** - Students provide a health-related service in a community setting and gain social and civic responsibility awareness. Prerequisite: open to pharmacy students only or by consent of department chair.

719A - 2 **Personal and Professional Development I** - One of six-course sequence where students gain personal and professional skills and participate in experiential learning necessary in their development as well-rounded healthcare professionals. Prerequisite: None

719B - 1 **Personal and Professional Development II** - One of six-course sequence where students gain personal and professional skills and participate in experiential learning necessary in their development as well-rounded healthcare professionals. Prerequisite: None

730 - 2 **Introductory Pharmacy Practice Experiences III** - Students gain experiences in community or health system pharmacy. Options for other practice settings such as long term care or home IV therapy exist. Prerequisite: None

731 - 2 **Introductory Pharmacy Practice Experience IV** - Students gain experiences in community or health system pharmacy. Options for other practice settings such as long-term care of home IV therapy exist. Prerequisite: None

732 - 1 **Pharmacy Rounds I** - Students participate in independent (self-learning) and professional development through a variety of suggested pharmacy learning activities and processes to promote life-long learning. Prerequisite: None

739A - 3 **Personal and Professional Development III** - One of six-course sequence where students gain personal and professional skills and participate in experiential learning necessary in their development as well-rounded healthcare professionals. Prerequisite: None

739B - 3 **Personal and Professional Development IV** - One of a six-course sequence where students gain personal and professional skills and participate in experimental learning necessary in their development as well-rounded healthcare professionals. Prerequisite: None

746 - 1 **Pharmacy Rounds II** - Students participate in the practical applications of pharmacy practice, with an emphasis on evidence-based medicine and integration of disease state management. Prerequisite: None

747 - 1 **Pharmacy Rounds III** - Students participate in the practical applications of advanced pharmacy practice, with an emphasis on evidence-based medicine and integration of complicated disease state management. Prerequisite: None

751 - 1 **Essentials of Research Application** - Review of basic research principles (from idea creation to writing conclusion) in preparation for the Advanced Pharmacy Practice Experience (APPE) research application rotation. Prerequisite: None

752 - 0 **Performance-Based Asessment - III** - The performance-based assessment is intended to be an evaluation of skills and abilities for a student at their current level of education. Prerequisite: None

759A - 1 **Personal and Professional Development V** - One of six-course sequence where students gain personal and professional skills and participate in experiential learning necessary in their development as well-rounded healthcare professionals. Prerequisite: None

759B - 1 **Personal and Professional Development VI** - One of six-course sequence where students gain personal and professional skills and participate in experiential learning necessary in their development as well-rounded healthcare professionals. Prerequisite: None

780 - 6 **Advanced Pharmacy Practice Experience: Community Pharmacy** - To place students in a community pharmacy practice environment where they can apply their didactic knowledge, develop core competencies, and gain patient care experience. Prerequisite: None

781 - 6 **Advanced Pharmacy Practice Experience: Hospital Pharmacy** - To place students in a hospital practice environment where they can apply their didactic knowledge, develop core competencies, and gain patient care experience. Prerequisite: None

782 - 6 **Advanced Pharmacy Practice Experience: Ambulatory Care** - To place students in an ambulatory care practice environment where they can apply their didactic knowledge, develop core competencies, and gain patient care experience. Prerequisite: None

783 - 6 **Advanced Pharmacy Practice Experience: Acute Care/ General Medicine** - To place students in an acute care setting where they can apply their didactic knowledge, develop core competencies, and gain patient care experience. Prerequisite: None

784 - 6 **Advanced Pharmacy Practice Experience: Specialized Practice** - To place students in a specialized practice environment where they can apply their didactic knowledge, develop core competencies, and gain practical experience. Prerequisite: None

785 - 6 **Advanced Pharmacy Practice Experience: Specialized Practice** - To place students in a specialized practice environment where they can apply their didactic knowledge, develop core competencies, and gain practical experience. Prerequisite: None

786 - 6 **Advanced Pharmacy Practice Experience: Specialized Practice** - To place students in a specialized practice environment where they can apply their didactic knowledge, develop core competencies, and gain practical experience. Prerequisite: None

789 - 3 **Advanced Pharmacy Practice Experience: ImPaCT (Improving Patient Care for Tomorrow)** - The ImPaCT experience requires the student to develop and complete a scholarly pharmacy related project. Prerequisite: None

795 - 0 to 4 **Independent Study** - Research and study in an area of interest in pharmaceutical sciences or pharmacy practice. May be repeated for a maximum of four hours. Permission of adviser required. Prerequisite: None

799C - 0 **Pharmacy Co-Curricular Experience: Community** - An entry-level pharmacy intern experience in community or health system pharmacy. Options for participation in other practice settings such as long term or home IV therapy are also offered. Students develop distribution and professional communication skills including patient counseling; apply patient care skills to the treatment of various patient populations; provide drug information; conduct medication usage reviews; participate as a member of an interdisciplinary health care team; develop IV preparation skills. Prerequisite: None

799H - 0 **Pharmacy Co-Curricular Experience: Health System** - An entry-level pharmacy intern experience in community or health system pharmacy. Options for participation in other practice settings such as long term care or home IV therapy are also offered. Students develop distribution and professional communication skills including patient counseling; apply patient care skills to the treatment of various patient populations; provide drug information; conduct medication usage reviews; participate as a member of an interdisciplinary health care team; develop iv preparation skills. Prerequisite: None

799L - 0 **Pharmacy Co-Curricular Experience: Long Term Care** - An entry-level pharmacy intern experience in community or health system pharmacy. Options for participation in other practice settings such as long term care or home iv therapy are also offered. Students develop distribution and professional communication skills including patient counseling; apply patient care skills to the treatment of various patient populations; provide drug information; conduct medication usage reviews; participate as a member. Prerequisite: Enrolled in Pharmacy school.

799O - 0 **Pharmacy Co-Curricular Experience: Other Practice Settings** - An entry-level pharmacy intern experience in community or health system pharmacy. Options for participation in other practice settings such as long term care or home IV therapy are also offered. Students develop distribution and professional communication skills including patient counseling; apply patient care skills to the treatment of various patient populations; provide drug information; conduct medication usage reviews; participate as a member of an interdisciplinary health care team; develop IV preparation skills. Prerequisite: Enrolled in Pharmacy School.

- Pharmacy Practice (PHPR)
  - 706 - 2 **Introduction to Pharmacy Practice** - Addresses communication and counseling skills needed for pharmacy practice, the pharmaceutical care planning process, basic drug information about top drug products, and medical terms. Prerequisite: Open to Pharmacy students only or by consent of department chair.

    710 - 3 **Biomedical Literature Evaluation** - Addresses process of critically reviewing biomedical and pharmaceutical literature by analyzing statistics and research design. Principles of outcomes research covered. Prerequisite: open to pharmacy students only or by consent of department chair.

    711 - 2 **Drug Information** - Focuses on drug information resources and medication safety. Emphasis is on developing abilities to retrieve literature and utilize resources for pharmacy practice. Prerequisite: None

    713 - 4 **Self Care & Alternative Medicines** - Addresses use of nonprescription medications and herbal products used for self-care. Patient counseling and problem solving skills emphasized. Prerequisite: Open to Pharmacy students only or by consent of department chair.

713N - 3 **Self-Care and Alternative Medicines** - Study of nonprescription medicines and dietary supplements used for self-care. Emphasis will be placed on selection of the appropriate nonprescription medication and patient counseling. Prerequisite: None

718A - 1 **Pharmacy Skills Lab I** - Will focus on the development of pharmacy practice skills, utilizing the pharmacist patient care process model. Prerequisite: None

718B - 1 **Pharmacy Skills Lab II** - Will focus on the development of pharmacy practice skills, utilizing the pharmacist patient care process model. Prerequisite: None

721 - 2 **Clinical Pharmacokinetics** - Students gain experiences in using mathematical models to design drug dosage regimens desired for optimal clinical outcomes. Prerequisite: None

735 - 3 **Physical Assessment and Patient Care Skills** - Develops physical assessment, laboratory tests interpretation and patient care skills for drug therapy and disease state management. Prerequisite: None

735N - 2 **Physical Assessment and Patient Care Skills** - Develops physical assessment, laboratory test interpretation and patient care skills for drug therapy and disease state management. Prerequisite: None

738A - 1 **Pharmacy Skills Lab III** - Will focus on the development of pharmacy practice skills, utilizing the pharmacist patient care process model. Prerequisite: None

738B - 1 **Pharmacy Skills Lab IV** - Will focus on the development of pharmacy practice skills, utilizing the pharmacist patient care process model. Prerequisite: None

744 - 2 **Health Promotion and Literacy** - Prepare to provide care to a diversity of individuals by understanding and respecting differences including attention to health literacy concerns. Prerequisite: None

748 - 2 **Medication Therapy Management Services** - An introduction to the core elements of Medication Therapy Services (MTMS) and application of MTMS principles to patient care plans. Prerequisite: None

749 - 1 **Infectious Disease Prevention and Immunization Training** - Students receive specialized training for prevention of infectious disease controlled through immunizations. Prerequisite: Open to Pharmacy students only.

758A - 1 **Pharmacy Skills Lab V** - Will focus on the development of pharmacy practice skills, utilizing the pharmacist patient care process model. Prerequisite: None

758B - 1 **Pharmacy Skills Lab VI** - Will focus on the development of pharmacy practice skills, utilizing the pharmacist patient care process model. Prerequisite: None

- Philosophy (PHIL)
  - 490 - 3 **Philosophy Seminar** - Seminar for qualified Philosophy majors and graduate students to pursue specific topics, traditions, or philosophers in depth. Variable content. May be repeated to a maximum of 12 hours so long as no topic is repeated. Prerequisite: 15 hours in Philosophy or consent of instructor.
  - 495 - 1 to 3 **Independent Readings** - Independent study on tutorial basis. Undergraduate students normally limited to 3 hours; graduate students normally limited to 9 hours. Requires consent of department chair or program director. Prerequisite: None
  - 497 - 3 **Topics in Metaphysics and Epistemology** - Variable content course. May include topics in ontology, theory of knowledge, philosophy of language, philosophy of mind, philosophy of science, or philosophy of mathematics. Prerequisite: None
  - 498 - 3 **Legal Theory** - Explores contemporary legal theory. Emphasis on law and morality; law and society; law and economics; judicial discretion; and fundamental doctrines and principles of a legal system. Same as POLS 498 Prerequisite: None
- Physics (PHYS)
  - 405A - 3 **Introduction to Electromagnetic Field Theory** - Prerequisite: Undergraduate level PHYS 321 Minimum Grade of C or Undergraduate level PHYS 323 Minimum Grade of C
  - 405B - 3 **Introduction to Electromagnetic Field Theory** - Vector treatment of the theory. Magnetism; magnetic materials; electromagnetic radiation. [Dist. NSM] Prerequisites: PHYS 405A.
  - 406 - 4 **Electromagnetic Fields** - Vector calculus, electric and magnetic fields. Scalar potential. Electric and magnetic dipoles. Maxwell's equations in integral and differential form, vector potential, introduction to electromagnetic radiation. Prerequisite: Undergraduate level PHYS 152 Minimum Grade of C and Undergraduate level PHYS 251 Minimum Grade of C
  - 410 - 3 **Optics** - Nature of light; photometric quantities; geometrical optics; interference and diffraction; polarization; introduction to lasers; optical properties of materials. May include laboratory component. Grades of C or better in all of: PHYS 201, 201L, 251, MATH 305 or Graduate status in Electrical Engineering.
  - 415A - 3 **Wave Mechanics & Atomic Physic** - Foundations of quantum mechanics: Wave functions; expectation values; operators; Schroedinger equation; simple applications including step potentials and harmonic oscillator, and perturbation theory. [Dist. NSM] Prerequisites: PHYS 302, MATH 305.
  - 415B - 3 **Wave Mechanics & Atomic Physic** - Topics in atomic and molecular systems: Angular momentum; electron spin; hydrogen atom; atomic transitions and spectra; exclusion principle; multi-electron atoms; and molecular structure. [Dist. NSM] Prerequisites: PHYS 415A.
  - 416 - 4 **Principles Quantum Mechanics** - Wave functions, packets, probabilities, eigenfunctions, operators, uncertainty relations, Schrodinger equation, square wells, harmonic oscillator, barriers, angular momentum, hydrogen atom, spin, identical particles, exclusion principle, applications. Prerequisite: Undergraduate level PHYS 304 Minimum Grade of C and (Undergraduate level PHYS 321 Minimum Grade of C or Undergraduate level PHYS 323 Minimum Grade of C) and (Undergraduate level MATH 321 Minimum Grade of C or Undergraduate level MATH 355 Minimum Grade of C)
  - 419 - 4 **Intro to Theoretical Physics** - Mathematical techniques: Vectors, tensors, matrices, differential equations, special function, boundary value problems; other selected topics. [Dist. NSM] Prerequisites: PHYS 302, MATH 305.
  - 430 - 3 **Physics and Astronomy Education Research** - Questions, methodology, data analysis, and results of physics and astronomy education research. Prerequisite: Undergraduate level PHYS 201 Minimum Grade of C and Undergraduate level PHYS 201L Minimum Grade of C and Undergraduate level PHYS 251 Minimum Grade of C
  - 431 - 3 **Instructional Strategies for Particle & Rigid Body Motion** - Pedagogical innovations, assessments, and inquiry based activities will be developed for particle and rigid body motion. Addresses Illinois professional teaching physics designation standard #2. Prerequisites: PHYS 211A and CI 200, or certified K-12 or physics graduate status.
  - 432 - 3 **Instructional Strategies for Physical Waves & Thermodynamics** - Pedagogical innovations, assessments and inquiry based activities will be developed for physical waves and thermodynamics. Addresses Illinois professional teaching physics designation #3 and #4. Prerequisites: PHYS 303 and CI 200, or certified K-12, or graduate status.
  - 433 - 3 **Instructional Strategies for Electricity & Magnetism** - Pedagogical innovations, assessments, and inquiry based activities will be developed for particle and rigid body motion. Addresses Illinois professional teaching physics designation standard #2. Prerequisites: PHYS 211B and CI 200, or certified K-12 or physics graduate status.
  - 434 - 3 **Instructional Strategies for Astronomy** - Pedagogical innovations, assessments, and inquiry based activities will be developed for astronomy. Addresses Illinois professional teaching earth and space science standards #3 and #4. Prerequisites: PHYS 356 and CI 200 or certified K-12 teacher, or physics graduate status.
  - 438 - 1 **Physics & Astronomy Education Research Seminar** - Seminar discussing current issues in physics and astronomy education research. May be repeated to a maximum of 4 hours provided no topic is repeated. Prerequisite: None
  - 439 - 1 to 3 **Physics Project for Educators** - Physics curriculum development project with the topic and educational level decided in consultation with the instructor. Not for physics undergraduate majors. Requires teaching certificate or instructor permission. Prerequisite: None
  - 450 - 3 **Solid-State Physics** - Crystal structures and binding; lattice vibrations; electronic states; band theory of solids; semiconductors; optical properties of solids; other selected topics. [Dist. NSM] Prerequisite: PHYS 323 with minimum grade of C or concurrent enrollment, and concurrent enrollment in PHYS 416.

471 - 3 **Laser Physics and Technology** - Interaction between light and matter, rate equations, resonators and cavity modes, mode locking, ultra-short pulse generation, laser systems. Applications may include communications, medicine, holography. Prerequisite: (Undergraduate level PHYS 201 Minimum Grade of C and Undergraduate level PHYS 201L Minimum Grade of C and Undergraduate level PHYS 251 Minimum Grade of C and Undergraduate level PHYS 410 Minimum Grade of C) or (Graduate level PHYS 410 Minimum Grade of C

472 - 3 **Photonics Laboratory** - Experimental techniques in photonics. May include: beam characterization, detectors, interferometers, optical fiber theory and applications, , coupling techniques, and fiber-optic communication. Prerequisite: (Undergraduate level PHYS 201 Minimum Grade of C and Undergraduate level PHYS 201L Minimum Grade of C and Undergraduate level PHYS 251 Minimum Grade of C and Undergraduate level PHYS 410 Minimum Grade of C) or (Graduate level PHYS 410 Minimum Grade of C

480 - 2 to 3 **Selected Topics in Physics** - Classroom instruction in topic of special interest not covered in other courses. May be repeated to a maximum of 6 hours as long as no topic is repeated. Requires consent of instructor. Prerequisite: None

504 - 3 **Applications of Fiber Optics** - Optical fiber characteristics; fiber preparation; single and multimode fibers; sources; coupling; communication systems; multiplexing techniques; fiber-optic sensors. Requires Graduate status or consent of instructor. Prerequisite: None

506 - 3 **Experimental Methods in Optics** - Experimental techniques in optics spectroscopy including absorption, fluorescence, and index of refraction spectroscopy; measurements of non- linear optical properties of materials using several techniques. Prerequisites: PHYS 410 or PHYS 514.

513 - 3 **Quantum Mechanics** - Vector-space formalism, periodic potentials, symmetries and conservation laws, ladder operators, angular momentum, spinors, perturbation theory, transition rates, photons and atoms, introductory second quantization, identical particles. Prerequisite: Undergraduate level PHYS 416 Minimum Grade of C

514 - 3 **Photonics I** - Ray and wave optics; Gaussian beams; Fourier optics; diffraction; imaging; holography; electromagnetic waves in dielectric media; polarization; and crystal optics. Prerequisite: PHYS 410 or consent of instructor.

515 - 3 **Photonics II** - Concepts governing applications of current interest in photonics including waveguides and fiber optics, electro-optics and acousto-optics, photonic switching and computing. Prerequisites: PHYS 514 or consent of instructor.

516 - 2 to 3 **Independent Study** - Supervised study in an area selected according to needs of the student. May be repeated for a maximum of 6 hours provided that no topic is repeated. Requires consent of instructor Prerequisite: None

517 - 3 **Principles of Lasers** - Population inversion, rate equations, laser resonators, q-switching, mode locking, gas lasers, solid state lasers, semiconductor lasers, dye lasers, laser applications in communications, medicine, and holography. Prerequisite: PHYS 514 or consent of instructor.

518 - 3 **Nonlinear Optics** - Maxwell's equations in nonlinear media, second-order nonlinearities, second-harmonic generation, parametric processes, third-order nonlinearities, Kerr-type nonlinearities, Raman amplification, two-photon absorption, and nonlinear crystals. Prerequisites: PHYS 512 and PHYS 513 or consent of instructor.

520 - 2 to 4 **Graduate Physics Project** - Individual investigation of a topic to be agreed upon with the instructor. May be experimental or theoretical. May be repeated for a maximum of 6 hours provided that no topic is repeated. Requires consent of instructor Prerequisite: None

575 - 1 **Colloquium** - Participation in departmental colloquia; student presentation on topic of current interest. May be repeated for a maximum of 2 hours provided that no topic is repeated. Prerequisite: Consent of instructor

580 - 2 to 4 **Selected Topics in Physics** - Classroom instruction in a topic of special interest not covered in other graduate courses. May be repeated for a maximum of 8 hours provided that no topic is repeated. Prerequisite: Consent of instructor

594 - 3 **Physics Teaching Methods For Secondary Schools** - Current teaching and resource materials. Ways to teach different topics in physics, problem-solving techniques and societal issues. Preparing for laboratory activities. Safety concerns. Prerequisite: None

598 - 1 to 6 **Advanced Research Project in Physics** - Prerequisite: None

599 - 1 to 6 **Thesis** - Thesis research in physics. May be repeated for a maximum of 6 hours. Requires consent of instructor Prerequisite: None

- Political Science (POLS)
  - 424 - 3 **Administrative Law** - Principles of administrative law in United States; extent of and limitations on powers of government regulatory agencies. [Dist. SS] Prerequisite: POLS 112.

    429 - 1 to 3 **Topics in Public Admin** - Selected administrative problem or process; content may vary from semester to semester. For advanced undergraduates and graduates. May be repeated to maximum of 6 hours. [Dist. SS] Prerequisite: POLS 320 or consent of instructor.

    440 - 3 **African American Politics** - Examination of the politics of African Americans. Description and analysis of the affect of political officials and institutions on African Americans and vice versa. Prerequisite: Undergraduate level POLS 112 Minimum Grade of D

    441 - 3 **Women and Politics in America** - Consideration of politics and power in gender roles, family, class, occupation and research, women and the political system and women and public policy. Complete all Foundations Requirements: Foundation Writing 1, Foundation Writing 2, Foundation Speech Communication, Foundation Reasoning and Argumentation, and Foundation Quantitative Reasoning courses and POLS 111 with minimum grade of D.

    444 - 3 **Political Scandals in American Politics** - Students learn what constitutes a scandal, how differing types of scandals progress, how to analyze and perform case studies about scandals, and the overall effects of scandals on American politics. Requires the stated prerequisite or consent of instructor. Prerequisite: Undergraduate level POLS 112 Minimum Grade of C

    445 - 3 **Voting and Elections** - Political legal, sociological, psychological bases of voting behavior; theories of electoral outcomes and consequences. [Dist. SS] Prerequisite: POLS 112 or consent of instructor.

    446 - 3 **Gay and Lesbian Politics** - This course provides a contextual investigation into the role of lesbian, gay, bisexual, transgender, queer, intersex, and allies (LGBTQIA) in government & society as a political minority. Requires completion of the stated prerequisite or consent of instructor. Complete all Foundations Requirements: Foundation Writing 1, Foundation Writing 2, Foundation Speech Communication, Foundation Reasoning and Argumentation, and Foundation Quantitative Reasoning courses and POLS 112 with minimum grade of C.

    449 - 1 to 3 **Topics in American Politics** - Selected topics in American politics; content may vary from semester to semester. For advanced undergraduate and graduate students. May be repeated to maximum of 6 hours. [Dist. SS] Prerequisite: POLS 112 or consent of instructor.

    451 - 3 **Comparative Law and Courts** - An introduction to comparative judicial systems and study of the interaction between law, courts and politics in countries throughout the world. Prerequisite: Undergraduate level POLS 111 Minimum Grade of C

    459 - 1 to 3 **Topics in Comparative Politics** - Selected topics in comparative politics; content may vary from semester to semester. Primarily for advanced undergraduate and graduate students. May be repeated to a maximum of 6 hours. [Dist. SS, II] Prerequisite: POLS 111 or consent of instructor.

    472 - 3 **International Organizations** - Past and present international organizations, origins, structure, decision making processes, functioning of United Nations and its specialized agencies, problems and prospects. [Dist. SS, II] Prerequisite: POLS 370 or consent of instructor.

    473 - 3 **United States Foreign Policy** - Formulation, implementation, content, general policy patterns, international, domestic sources, policy instruments, regional dimensions and implications. [Dist. SS, II] Prerequisite: POLS 370 or consent of instructor.

    479 - 1 to 3 **Topics International Relations** - Selected topics in international relations; content may vary from semester to semester. For advanced undergraduate or graduate students. May be repeated to maximum of 6 hours. [Dist. SS, II] Prerequisite: POLS 370 or consent of instructor.

    484 - 3 **Classical Political Theory** - Works of major political thinkers from ancient times to the renaissance, including Plato, Aristotle, St. Augustine, St. Thomas, and Machiavelli. Same as PHIL 440. Requires Junior standing. Prerequisite: None

485 - 3 **Modern Political Theory** - Works of major political thinkers from the renaissance to the present, including Hobbes, Locke, Rousseau, Hegel, Marx, Mill, and Nietzsche. [Dist. SS, IC] Cross-listed with PHIL 441. Prerequisite: None

489 - 1 to 3 **Topics in Political Theory** - Major issues in political theory or works of one major political thinker. [Dist. SS] Prerequisite: 385 or consent of instructor.

495 - 3 **Constitutional Law: Powers of Government** - Analyzes Supreme Court decisions regarding judicial, legislative, and executive power and the relationship between states and federal government in a range of policy areas. POLS 112 with a C or better; OR Graduate Status (GM).

496 - 3 **Constitutional Law: Civil Rights and Civil Liberties** - Analyzes Supreme Court decisions dealing with individual rights, particularly free speech and press, religion, rights of criminal defendants, voting, Constitutional protections against race and sex discrimination. POLS 112 with grade of C or better; OR Graduate status.

497 - 3 **Environmental Law** - Examines regulatory framework that has developed around the protection of various aspects of the environment over the past thirty years. Prerequisite: Undergraduate level POLS 111 Minimum Grade of D

498 - 3 **Legal Theory** - Explores contemporary legal theory; emphasis on law and morality; law and society; law and economics; judicial discretion; and fundamental doctrines and principles of a legal system. Cross-listed with PHIL 498. Prerequisite: None

499 - 3 **Topics in Public Law** - Selected topics in public law; content may vary from semester to semester. For advanced undergraduates and graduates. May be repeated to maximum of 6 hours. [Dist. SS] Prerequisite: Undergraduate level POLS 111 Minimum Grade of D or Undergraduate level POLS 112 Minimum Grade of D

500 - 3 **Scope and Concepts of Political Science** - Intensive survey of discipline; basic conceptual orientations; relationship to other disciplines. Course history: Course replaces the quarter based course Political Science 500A. Requires Graduate standing Prerequisite: None

501 - 3 **Quantitative Techniques of Political Science** - Research methodology and statistics; research design, data analysis, computer applications. Course history: Course replaces the quarter based course Political Science 500B. Requires Graduate standing Prerequisite: None

510 - 1 to 8 **Readings in Political Science** - Individualized program designed by instructor and student. Normal assignment is 1000 pages per credit hour; requirements determined prior to registration. May be repeated to a maximum of 8 hours. Not more than 6 hours may apply to degree. Requires consent of instructor. Prerequisite: None

520 - 3 **Seminar in Public Administration** - Selected topics on processes and problems; subject may vary from semester to semester. May be repeated to a maximum of 6 hours if topics vary. Requires consent of instructor. Prerequisite: None

540 - 3 **Seminar in American Politics** - Selected topics on processes and problems; subject may vary from semester to semester. May be repeated to a maximum of 6 hours if topics vary. Requires consent of instructor. Prerequisite: None

550 - 3 **Seminar in Comparative Politics** - Selected topics on processes and problems; subject may vary from semester to semester. May be repeated to a maximum of 6 hours if topics vary. Requires consent of instructor. Prerequisite: None

570 - 3 **Seminar International Relations** - Selected topic on processes and problems; subject may vary from semester to semester. May be repeated to a maximum of 6 hours if topics vary. Requires consent of instructor. Prerequisite: None

580 - 3 **Seminar in Political Theory** - Major issues in political theory or works of one major political thinker. Subject may vary from semester to semester. May be repeated to a maximum of 6 hours if topics vary. Requires consent of instructor. Prerequisite: None

590 - 3 **Seminar in American Public Law** - Selected topic on processes and problems; subject may vary from semester to semester. May be repeated to a maximum of 6 hours if topics vary. Requires consent of instructor. Prerequisite: None

595 - 1 to 4 **Individual Research** - Supervised research and writings in selected subjects. May be repeated to a maximum of 4 hours. Requires consent of instructor. Prerequisite: None

599 - 1 to 6 **Thesis** - Supervised individual research on selected and approved topic. May be repeated to a maximum of 6 hours. Requires consent of instructor. Prerequisite: None

- Production (PROD)
  - 490 - 1 to 6 **Independent Study in Operations Management** - Topical areas in greater depth than regularly titled courses permit. Individual or small group readings of projects. May be repeated by permission to a maximum of 6 hours. Requires consent of department chair or program director. Prerequisite: None
  - 529 - 3 **Operations Management and Process Analysis** - A process view of operations management concepts such as process design, capacity, flow time, supply chain and logistics in manufacturing and service organizations is presented. Prerequisite: Graduate level MBA 521 Minimum Grade of C and Graduate level MBA 522 Minimum Grade of C
  - 568 - 3 **Seminar in POM** - Decision-making in manufacturing: integration of many individual topics covered in POM. Prerequisite: Graduate level PROD 529 Minimum Grade of C
- Psychology (PSYC)
  - 407 - 3 **Multicultural Issues in Psychology** - Students will develop a critical framework for working at the concept of "culture" in contemporary America. Students will explore how culture impacts psychological services. Prerequisite: Undergraduate level PSYC 111 Minimum Grade of D
  - 409 - 3 **History & Systems of Psychology** - Important antecedents of contemporary scientific psychology; issues, conceptual development, major schools and systems. Prerequisite: Undergraduate level PSYC 111 Minimum Grade of D
  - 411 - 3 **Psychology of Sustainable Behavior** - To explore why people do or do not do the things they should related to the environment. Specifically, it is regarding how psychology can help us understand, predict and change sustainable behavior. Prerequisite: Undergraduate level PSYC 111 Minimum Grade of C
  - 413 - 3 **Pseudoscience in Psychology** - Skepticism; debunking common psychology myths; critical thinking about the distinction between science and pseudoscience. Why do people believe strange things? Prerequisite: Undergraduate level PSYC 111 Minimum Grade of D
  - 420 - 3 **Applied Behavior Analysis** - Learning principles, evaluation methods, techniques of managing and modifying human behavior, based upon operant and respondent conditioning. Prerequisite: Undergraduate level PSYC 111 Minimum Grade of D
  - 421 - 3 **Psychological Tests & Measure** - Principles of psychological measurement, test construction and evaluation; problems in assessment and prediction. Prerequisite: Undergraduate level PSYC 220 Minimum Grade of D
  - 422 - 3 **Data Analysis with SPSS** - Comprehensive overview of SPSS. Focus on creating databases, analyzing data and interpreting results. Build students' confidence in using the software on their own. Prerequisite: Undergraduate level PSYC 220 Minimum Grade of C or Undergraduate level PSYC 221 Minimum Grade of C
  - 431 - 3 **Psychopathology** - Overview of psychological disorders like those described in the most recent edition of the DSM. Prerequisite: Undergraduate level PSYC 111 Minimum Grade of C
  - 442 - 3 **Adlerian Psychology: Theory and Application** - In-depth summary of theory and application of Alfred Adler and Rudolf Dreikurs, applied to mental health and human relations in family, school, clinic, and workplace. Prerequisite: Undergraduate level PSYC 111 Minimum Grade of D
  - 461 - 3 **Advanced Social Psychology** - In-depth readings course on current issues in social psychology. May include social cognition, attitudes, attraction, social influence, aggression, and other issues. Prerequisite: Undergraduate level PSYC 206 Minimum Grade of D
  - 473 - 3 **Personnel Psychology** - Psychological principles and techniques used in job selection, placement, training, employee evaluation. Prerequisite: Undergraduate level PSYC 320 Minimum Grade of D or Undergraduate level MGMT 341 Minimum Grade of D
  - 474 - 3 **Organizational Psychology** - Relationship between organizational functioning and job satisfaction, motivation, performance, and psychological climate in work setting. Prerequisite: Undergraduate level PSYC 320 Minimum Grade of D

478 - 3 **Psychology of Stress and Stress Management** - Physiological, psychological, social, and organizational factors involving stress, are covered, as are theories and models of stress and stress management. Prerequisite: Undergraduate level PSYC 111 Minimum Grade of C

487 - 3 **Psychology of Aging** - Biological, psychological and sociocultural factors in development and aging; age changes learning, memory, intelligence, personality; special issues such as retirement, Alzheimer's disease, elder abuse. Prerequisite: Undergraduate level PSYC 204 Minimum Grade of D

491 - 1 to 6 **Research & Experiential Learning in Psychology** - Research under faculty supervision. May be repeated for a total of 27 hours; only 9 hours of PSYC 491, PSYC 493 and PSYC 496 (no more than 6 hours in any one course) may be applied toward major in Psychology, 3 hours toward minor in Psychology. Requires consent of instructor and GPA above 2.5. Prerequisite: None

495 - 3 **Selected Topics in Psychology** - Offered occasionally when needed. May be repeated to a maximum of 9 hours so long as no topic is repeated. Prerequisite: None

507 - 3 **Multicultural Counseling and Psychotherapy** - This course is focused on broadly defined multicultural issues in counseling and psychotherapy, with emphasis placed on becoming an effective multicultural counselor/psychotherapist via increased awareness. Prerequisite: None

514 - 3 **Advanced Biopsychology** - Advanced study of biological foundations of behavior; structure and function of brain related to personality behavior, and health. Prerequisite: Undergraduate level PSYC 314 Minimum Grade of D

520 - 3 **Research Design & Inference I** - Research methods; philosophy of science; research writing; review of basic statistics; using computer for statistical analysis and research writing. Requires consent of instructor. Prerequisite: None

521 - 3 **Research Design & Inference II** - Design, analysis and interpretation of experimental research designs including anova, ancova, and trend analysis; design, analysis, and interpretation of field research; multiple regression. Requires consent of instructor. Prerequisite: None

523 - 1 to 6 **Practicum in Clinical Adult Psychology** - Practicum experience in professional setting under staff supervision. May be repeated to a maximum of 12 hours. Prerequisite: Graduate level PSYC 538 Minimum Grade of C and Graduate level PSYC 543B Minimum Grade of C

524 - 1 to 12 **Practicum Clinical Child/School Psych** - Practicum experience in professional setting under staff supervision. Prerequisite: None

525 - 1 to 6 **Practicum Industrial/Organization Psych** - Practicum experience in professional setting under staff supervision. May be repeated to a maximum of 12 hours. Prerequisite: None

527 - 1 to 6 **Practicum: Teaching Psychology** - Practicum teaching experience in professional setting under staff supervision. May be repeated to a maximum of 12 hours. Prerequisite: None

531 - 3 **Advanced Psychopathology** - Provides a general survey of the field of adult psychopathology. Course also focuses on use of the current version of the DSM. Prerequisites: PSYC 431; graduate standing in psychology.

535 - 3 **Cognitive Behavior Psychotherapy** - Review the theory, research and application of cognitive behavioral psychotherapy. Specific treatment programs designed to treat various disorders will be reviewed. Requires consent of instructor. Prerequisite: Graduate level PSYC 531 Minimum Grade of C or Graduate level PSYC 533 Minimum Grade of C

537A - 3 **Counseling & Psychotherapy with Adolescents & Family** - Psychotherapeutic approaches, methods, and procedures with children, adolescents, and families. Developmental approach and multicultural perspective. Prerequisite: None

537B - 3 **Counsel & Psychotherapy Adult** - Major approaches. Aspects of therapeutic situation and changes during psychotherapy with adults. Evaluation of both theory and practice. Prerequisite: None

538 - 3 **Group Counseling and Psychotherapy** - Current theory and research in group, family, and marital therapy. Prerequisite: Graduate level PSYC 537A Minimum Grade of C or Graduate level PSYC 537B Minimum Grade of C

539 - 3 **Crisis Intervention & Crisis Therapy** - Crisis theory and intervention strategies for major situational and developmental life crises. Prerequisite: Graduate standing in Psychology or instructor approval.

541A - 3 **Cognitive Assess Children & Adolescents** - Administration and interpretation of psychological measures to assess cognitive abilities in youth, including the exceptional child. Developmental approach and multicultural perspective. Prerequisite: None

541B - 3 **Cognitive Assessment Adult** - Training in administration/interpretation of psychological techniques used to assess cognitive abilities. Prerequisite: None

543A - 3 **Behavioral & Emotional Assessment of Children & Adolescents** - Administration and interpretation of psychological measures to assess behavior and emotion in youth, including the exceptional child. Developmental approach and multicultural perspective. Prerequisite: None

543B - 3 **Personality Assessment Adult** - Theory underlying use of objective and projective methods of assessing adult personality. Application of techniques to personality; clinical diagnosis; research. Prerequisite: Graduate level PSYC 541B Minimum Grade of C

544 - 3 **Response to Intervention: Evaluating the Effectiveness of Academic and Behavioral Treatments** - Assessing student, including the exceptional child, response to intervention, single-case study design, and measuring progress through curriculum based measurement and other techniques. Prerequisite: Graduate level PSYC 541A Minimum Grade of C

545 - 3 **Psychoeducational Assessment and Intervention** - Psychoeducational functioning of youth, including the exceptional child, through norm-referenced and alternative data-based methods. Empirically-validated interventions and instructional methods in reading, writing, and mathematics. Prerequisite: Graduate level PSYC 541A Minimum Grade of C

550 - 3 **Ethical and Professional Issues in Psychology** - Ethical and professional issues in the field of psychology, especially as outlined in the Code of Ethics of the American Psychological Association. Prerequisite: None

553 - 3 **Seminar in Clinical Child Psychology: Psychopathology of Children & Families** - Theories of childhood psychopathology; typical psychological disorders; therapeutic interventions. Prerequisite: None

556 - 3 **Seminar in Community Psychology: Prevention Programs for Children & Families** - Review and development of intervention programs in social systems that promote wellness and prevent psychopathology in children and their families. Requires consent of instructor. Prerequisite: None

557 - 3 **Seminar in Developmental Psychology: Infancy & Early Childhood** - Developmental principles and theories; normal and atypical development; assessment methods; intervention approaches. Prerequisite: Undergraduate level PSYC 201 Minimum Grade of D

565 - 3 **Consultation: Theory & Practice** - Principles and methods of consulting in schools and mental health organizations. Includes management and instructional methods for typically developing and exceptional children. Prerequisite: None

571 - 3 **Seminar Work Motivation & Leadership** - Factors affecting motivation and leadership in organizations as well as their measurement, evaluation and application. Prerequisite: None

572 - 3 **Seminar in Work Attitudes** - Measurement, evaluation, and consequences of different work attitudes with a specific emphasis on job satisfaction, organizational commitment, and other issues. Requires consent of instructor. Prerequisite: None

573 - 3 **Seminar Personnel Psychology** - Research and practice of personnel psychology. Topics include employee recruitment, selection, training, and performance appraisal, job analysis and legal issues. Requires consent of instructor. Prerequisite: None

574 - 3 **Seminar Organizational Psych** - Issues and research on interaction between person, position, and organization variable. Theoretical and practical issues; focus on individual and organization. Requires consent of instructor. Prerequisite: None

575 - 3 **Seminar in Employee Selection** - Theory, research and practice of employee selection. Topics include selection techniques, validation, job analysis and legal issues. Requires Graduate standing in Psychology or consent of instructor. Prerequisite: None

576 - 3 **Seminar Organization Develop** - Early history, assumptions, concepts, and various change strategies. Human process approaches to planned change within systems framework. Prerequisite: None

580 - 3 **Psychology of Employee Development** - Theory, research, and practice of employee training, career development, and performance appraisal. Prerequisite: None

584 - 3 **Evidence-based Assessment and Intervention in Autism Spectrum Disorders** - Best practices in the assessment of Autism Spectrum Disorder, evidence-based interventions, and progress monitoring. Prerequisite: Graduate level PSYC 541A Minimum Grade of C and Graduate level PSYC 543A Minimum Grade of C

588 - 0 **Graduate Psych Internship** - Psychology-related work in a business, government or not-for-profit setting under the supervision of an employer. Minimum cumulative GPA of 3.0. Consent of Career Development Center.

589 - 0 **Graduate Psychology Co-Op** - Psychology-related work in a business, government or not-for-profit setting under the supervision of an employer. Minimum cumulative GPA of 3.0. Consent of Career Development Center.

590 - 1 to 3 **Readings in Psychology** - Selected topics under faculty supervision. May be repeated to a maximum of 16 hours so long as no topic is repeated. Requires consent of instructor. Prerequisite: None

591 - 1 to 6 **Research in Psychology** - Research under faculty supervision. May be repeated to a maximum of 18 hours. Requires consent of instructor. Prerequisite: None

594 - 3 **Seminar in School Psychology** - History, theory, and practice of school psychology; psychoeducational assessment and remediation with variety of exceptionalities. Requires Graduate standing in Psychology and completion of 24 hours or consent of instructor. Prerequisite: None

595 - 1 to 3 **Graduate Seminar: Selected Topics** - Varied content. May be repeated to a maximum of 8 hours so long as no topic is repeated. Requires consent of instructor. Prerequisite: None

596 - 5 **Internship in School Psychology** - Professional training in school settings; full time for one academic year. Must be repeated once for a total of 10 hours. Requires consent of instructor. Prerequisite: None

598 - 3 **Research Project in Clinical Child and School Psychology** - A paper reviewing theory and research on a topic approved and supervised by a faculty committee. Prerequisite: None

599 - 1 to 6 **Thesis** - Design and implementation of psychological research study. May be repeated to a maximum of 6 hours. Prerequisite: None

- Public Admin and Pol Analysis (PAPA)
  - 410 - 1 **Introduction to Microcomputing** - Introduction to personal computers and development of skills using word processing and database applications common to the public sector. Course replaces: PAPA 516 and PAPA 556. Prerequisite: None
  - 411 - 1 **Spreadsheet Applications** - Development of skills in spreadsheet construction and public sector applications. Course replaces: PAPA 516 and PAPA 556. Prerequisite: None
  - 412 - 1 **Introduction to SPSS** - Skills in using SPSS-PC: importing files; data entry; data analysis; exporting files. Prerequisite: Concurrent enrollment in PAPA 420 or consent of instructor.
  - 420 - 3 **Quantitative Analysis** - Research design; descriptive statistics; hypothesis testing; nonparametric statistics; analysis of variance; correlation; regression. Prerequisite: None
  - 499 - 1 to 3 **Seminar in Public Admin** - Intensive study of selected topic. Topics chosen by department to supplement regular course offerings. May be repeated to a maximum of 9 hours, provided no topic is repeated. Prerequisite: None
  - 500 - 3 **Fundamentals of Public and Nonprofit Administration** - Concepts, issues, and problems as confronted in the public sector and nonprofit organizations. Organizational structure and behavior, personnel, budgeting; leadership; planning and decision making. Prerequisite: None
  - 501 - 3 **Public Organizations** - Theoretical analysis of environment; structure; communication patterns; leadership; informal groups; decision making of government and nonprofit agencies. Prerequisite: None
  - 506 - 3 **Public Law** - Legal concepts; regulatory agencies and rule making; federal and state relations; employee relations; civil rights; administrator liability. Prerequisite: None
  - 507 - 3 **Values & the Practice of Public Administration** - Role of organizational, societal, and individual values in ethical public administration; models for resolving ethical and values-based conflict in public organizations. Prerequisite: None
  - 510 - 3 **Public Information Management** - Challenges to public information management such as freedom of information and right to privacy. Development of skills in designing decision support applications and management information applications. Prerequisite: None
  - 525 - 3 **Program Evaluation** - Research design and execution of quantitative approaches in application of statistical techniques for analysis of administrative programs and policies. Prerequisite: Undergraduate level PAPA 420 Minimum Grade of C
  - 526 - 3 **Advanced Quantitative Methods** - Skills in advanced statistical techniques for public managers; factor analysis; advanced regression applications; discriminant analysis; multivariate analysis of variance. Prerequisite: Undergraduate level PAPA 420 Minimum Grade of C
  - 530 - 3 **Public Budgeting** - Budgeting topics include revenue, governments and economic activity, history, process, approaches, politics, and reform. Prerequisite: None
  - 535 - 3 **Public Financial Admin** - Includes accounting: auditing, revenue, expenditure, pension, debt, and investment administration; purchasing, cash and risk management; cost analysis; economic development; assessing financial conditions. Prerequisite: Graduate level PAPA 530 Minimum Grade of C
  - 536 - 3 **Fund Accounting** - Practical, hands-on orientation to fund accounting as used by governments and nonprofit organizations. Prerequisite: None
  - 540 - 3 **Public and Nonprofit Human Resources Administration** - Personnel functions as applied to public organizations: evolution of civil service; theory and practice of recruitment; P testing; job evaluations; training and the legal environment. Prerequisite: None
  - 545 - 3 **Public Sector Labor Relations** - Public sector collective bargaining: right to organize; representation elections; impasse resolution; unfair labor practices; contact administration; grievance arbitration; right to strike. Prerequisite: None
  - 546 - 3 **Performance Appraisal For the Public Sector** - Current research and applications of performance evaluations in the public sector. Topics include review of appraisal literature, legal issues, and current methodologies. Prerequisite: None
  - 548 - 3 **Public Supervisory Practices** - Case study approach to common supervisory problems in public and nonprofit sectors. Work scheduling; managing declining public resources; problem solving; coaching; disciplining; conflict management; leadership. Prerequisite: None
  - 550 - 3 **Public Policy: Context, Process & Analysis** - Policy making environment; policy process; policy formulation; implementation strategies; policy analysis techniques. Prerequisite: None
  - 555 - 1 to 3 **Topics in Policy Analysis** - Special topics not treated in other course offerings. Content varies, depending on student interest and availability of faculty. May be repeated to a maximum of 9 hours as long as no topic is repeated. Prerequisite: None
  - 561 - 3 **Application of Biostatistics and Epidemiology Principles to Health Care** - Application of Biostatistics with statistical software and Techniques of Epidemiology to health care management and policy. Prerequisite: None
  - 565 - 3 **Intro to Health Care Management** - Current policy issues in management of health services, focusing on acute and ambulatory care services. Cost, quality, and access considerations in delivery of these services. Prerequisite: None

566 - 3 **Health Care Financing** - Private and public insurance (Medicare, Medicaid) systems. Evolution of hospital financial reimbursement capital allocation practices. Cost containment from perspective of providers, insurance, and employers. Physician payment and forms. Prerequisite: None

567 - 1 to 3 **Topics of Health Care** - Current policy issues in management of health care services. Content varies, depending on student interest and availability of faculty. May be repeated to a maximum of 9 hours as long as no topic is repeated. Prerequisite: None

575 - 3 **Nonprofits** - Role of independent sector in U.S. society; unique problems of nonprofit administration; role of leadership in nonprofit organizations. Prerequisite: None

576 - 3 **Strategic Planning & Organizational Dev** - Skills and methods of strategic planning as tools to lead, strengthen, and develop the public and/or nonprofit organization. Prerequisite: None

577 - 3 **Needs Assessment & Strategic Marketing** - Effective nonprofit leadership in systematically assessing community needs; in marketing the nonprofit organization; in obtaining, public, private, and nonprofit action in addressing community problems. Prerequisite: None

578 - 3 **Fund Raising** - Administration and management of fund raising process; principles, skills, methods and techniques of fund raising; direct mail, telephone, major gifts, capital campaigns, and other methods. Prerequisite: None

579 - 3 **Grantsmanship** - Administration and management of grantsmanship process; basic principles, skills, methods, and techniques of grantsmanship for public and nonprofit organizations. Prerequisite: None

580 - 3 **Public and Nonprofit Leaders** - Exploration and discussion of leadership in public and nonprofit organizations; introduction to the behaviors, knowledge, skills, and abilities required to lead public and nonprofit organizations. Prerequisite: None

581 - 3 **Leadership with Public and Nonprofit Boards** - Exploration and discussion of the board's role in public and nonprofit organizations, leading alongside boards and councils, and using leadership to influence organizational direction. Prerequisite: None

582 - 3 **Leading in Public and Nonprofit Organizations** - Exploration, discussion, and application of the skills and abilities required of public and nonprofit employees to lead at all levels of the organization. Prerequisite: None

583 - 3 **Leading Innovation in Public and Nonprofit Organizations** - Course focuses on the role of public and nonprofit leaders in innovation and change. Examines knowledge, skills, and abilities related to innovation and creativity in organizations. Prerequisite: None

584 - 3 **Community Leadership** - Focuses on knowledge, skills, and abilities related to the role of public and nonprofit leaders in contributing to change in the community and region. Prerequisite: Must be enrolled in MPA or Certificate in Leading Organizations, or have permission of Department (PAPA) Chair or Program Director

585 - 3 **Local Government Administration** - Situation and functions of general purpose local government. Situational elements include legalities, politics, and intergovernmental relations. Functions include public safety, human services, and public works. Prerequisite: None

586 - 3 **Local Government Law** - Formation, power, and duties of units of local government; contract, torts, planning and zoning intergovernmental relations. Prerequisite: None

595 - 3 **Public Administration Internship** - Service in approved public administration work assignment under faculty supervision. May be repeated up to 5 times. Only 3 credit hours may be counted among the 39 hours required for graduation. Requires approval of Department Chair or MPA Program Director. Prerequisite: None

596 - 1 to 3 **Individualized Research** - Independent research and study of approved topic. May be repeated to a maximum of 3 hours. Requires approval of Department Chair or MPA Program Director. Prerequisite: None

597 - 1 to 3 **Readings** - Supervised readings on selected topics. Students explore interests not satisfied by regular course offerings. May be repeated to a maximum of 3 hours. Requires approval of Department Chair or MPA Program Director. Prerequisite: None

599 - 1 to 3 **Seminar in Public Administration** - Intensive study of selected topic. Topics chosen by department to supplement regular course offerings. May be repeated to a maximum of 9 hours if topics vary. Prerequisite: None

- Public Health (PBHE)
  - 405 - 3 **Health Coaching** - Theories of health behavior and behavior change. Exploration of helping role as it relates to health behavior, health assessment analysis, decision making, problem solving, and referral skills. Prerequisite: Undergraduate level HED 305 Minimum Grade of D or Undergraduate level PBHE 305 Minimum Grade of D
  - 455 - 3 **Introduction to Epidemiology** - Epidemiologic terminologies. Description and analysis of disease occurrence using appropriate epidemiologic measurements. Exploration of causal relationships. Identification of epidemiologic roles in disease control and prevention. Prerequisite: Undergraduate level PBHE 353 Minimum Grade of C
  - 462 - 1 to 3 **Special Topics in Public Health** - Relevant health issues. Topic and credit hours announced. May be repeated to a maximum of 6 hours so long as no topic is repeated. Prerequisite: None
  - 470 - 3 **Sexuality Education** - Individual, family, school, and community concerns and approaches. Physiological, psychosocial and environmental factors affecting sexuality as related to learning experience. Prerequisite: (Undergraduate level HED 210 Minimum Grade of D or Undergraduate level PBHE 210 Minimum Grade of D) and (Undergraduate level HED 370 Minimum Grade of D or Undergraduate level PBHE 370 Minimum Grade of D)
  - 495 - 3 **Grant Writing in Public Health** - Practical application in the development of a grant for a public health agency or community. Strategies for exploring funding, collaboration, and preparation of quality proposals. Prerequisite: PBHE 491 with a D or better or taken concurrently.
  - 500 - 3 **Core Principles in Public Health and Public Health Leadership** - A case-based approach to introduce students to leadership theories and research, provide a context for leadership in public health, and help students learn core leadership skills. Prerequisite: None
  - 510 - 2 **Theory and Practice** - Examines health-related behavior through the study of relevant leadership, psycho-sociological, ecological, and political theory. Emphasis is on application of theories in designing and leading programs. Prerequisite: None
  - 511 - 2 **Health Promotion and Disease Prevention: Theory and Practice Lab** - Emphasis is on application of theories. Using case studies to examine how leadership and behavior change theories are applied to public health programming and organizational leadership. Prerequisite: None
  - 520 - 3 **Public Health Data Analysis** - This applied biostatistics course is designed to develop skills in collecting, analyzing, and using public health data to lead organizations and make programmatic decisions. This course is an introduction to biostatistics. Prerequisite: None
  - 530 - 3 **Epidemiology** - An overview of principles to study, prevent and control of health-related conditions in the human population and practices related to public health leadership and epidemiology. Prerequisite: None
  - 540 - 3 **Public Health Policy and Administration** - Overview of leadership and administrative issues in public health, including principles, practices and skills, factors that shape the health care system and public health services, and ethics. Prerequisite: None
  - 550 - 3 **Research and Evaluation Methods** - Introduction to research and evaluation. Types of research, process of scientific inquiry and critical analysis of research. Topic selection and development of a research proposal. Prerequisite: None
  - 560 - 3 **Applied Program Planning** - Students will complete an applied project/internship for a public health organization that demonstrates attainment of at least five domains. Projects and domains will vary. Prerequisite: None
  - 570 - 3 **Environmental Health** - Addresses core principles and concepts of environmental health, analyze the impacts of human activity and the role of global leadership to control environmental hazards. Prerequisite: None

580 - 3 **Public Health Interventions** - Overview of theories for program planning/implementation in public health. Using logic models, community organizing, evaluation/assessment, social marketing and advocacy for leading public health programs/organizations. Prerequisite: None

598 - 3 **Grantwriting** - Practical application in public health grant development. Explores funding, collaboration, and preparation of quality proposals. Prerequisite: None

599A - 3 **Capstone Semester 1** - Students complete 300 to 450 hours in an approved public health agency completing a project emphasizing leadership skills and one or more core public health competencies. Prerequisite: None

599B - 3 **Capstone Semester 2** - Students complete 300 to 450 hours in an approved public health agency completing a project emphasizing leadership skills and one or more core public health competencies. Prerequisite: Graduate level PBHE 599A Minimum Grade of B

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- Science (SCI)
  - 401 - 2 to 4 **Selected Topics in Physics** - New discoveries and/or methodologies and techniques in the field. Demonstration and laboratory experiences to support the learning process. May be repeated to a maximum of 8 hours as long as no topic is repeated. Primarily for teachers of science. Requires consent of instructor. Prerequisite: None
  - 405 - 2 to 4 **Selected Techniques in Physics** - Modern experiments, demonstrations, and equipment; advances in technology; laboratory management and safety. May be repeated to a maximum of 8 hours as long as no topic is repeated. Primarily for teachers of science. Prerequisites: Two years of college science and mathematics.
  - 411 - 2 to 4 **Selected Topics in Chemistry** - New discoveries and/or methodologies and techniques in the field. Demonstration and laboratory experiences to support the learning process. May be repeated to a maximum of 8 hours as long as no topic is repeated. Primarily for teachers of science. Prerequisites: Two years of college science and mathematics.
  - 414 - 1 to 3 **History of Chemistry** - Topics in history of chemistry. May be repeated to a maximum of 6 hours so long as no topic is repeated. Requires consent of instructor. Prerequisite: None
  - 415 - 2 to 4 **Selected Techniques in Chemistry** - Modern experiments, demonstrations, and equipment; advances in technology; laboratory management and safety. May be repeated to a maximum of 8 hours as long as no topic is repeated. Primarily for teachers of science. Prerequisite: Two years of college science and mathematics.
  - 421 - 2 to 4 **Selected Topics in Biology** - New discoveries and/or methodologies and techniques in the field. Demonstration and laboratory experiences to support the learning process. May be repeated to a maximum of 8 hours as long as no topic is repeated. Primarily for teachers of science. Prerequisites: Two years of college science and mathematics.
  - 425 - 2 to 4 **Selected Techniques in Biology** - Modern experiments, demonstrations, and equipment; advances in technology; laboratory management and safety. May be repeated to a maximum of 8 hours as long as no topic is repeated. Primarily for teachers of science. Requires consent of Instructor. Prerequisite: None
  - 431 - 2 to 4 **Selected Topics in Earth & Environmental Science** - New discoveries and/or methodologies and techniques in the field. Demonstration and laboratory experiences to support the learning process. May be repeated to a maximum of 8 hours as long as no topic is repeated. Primarily for teachers of science. Requires consent of instructor. Prerequisite: None
  - 435 - 2 to 4 **Selected Techniques in Earth & Environmental Science** - Modern experiments, demonstrations, and equipment; advances in technology; laboratory management and safety. Primarily for teachers of science. Prerequisites: Two years of college science and mathematics.
  - 442 - 1 to 4 **Special Topics in Teaching Science in Elementary School** - Topics of special interest in teaching science. Lecture and/or laboratory format. May be repeated to a maximum of 8 hours as long as no topic is repeated. Prerequisite: Two years of college science and mathematics.
  - 451 - 3 **Integrated Science** - Laboratory-based integrated science course. Interactions of the sciences-earth and space, physical, life sciences and mathematics. Research project, paper, and presentation. Prerequisite: Completed 24 semester hours of science credit; 2.5 or higher GPA.
  - 452 - 1 to 4 **Special Topics in Teaching Science in Secondary School** - Topics of special interest in teaching science. Lecture and/or laboratory format. May be repeated to a maximum of 8 hours as long as no topic is repeated. Requires consent of instructor. Prerequisite: None
  - 462 - 1 to 4 **Special Topics in Teaching Science in College** - Topics of special interest in teaching science. Lecture and/or laboratory format. May be repeated to a maximum of 8 hours as long as no topic is repeated. Prerequisite: Two years of college science and mathematics.
  - 489 - 1 to 3 **Independent Study in Science Education** - Supervised study of assigned material based on needs of student. May be repeated to a maximum of 9 hours as long as no topic is repeated. Primarily for teachers of science. Requires consent of instructor. Prerequisite: None
- Social Work (SOCW)
  - 420 - 3 **Substance Abuse** - The course is designed to help students understand the etiology, course, and treatment of substance use disorders and other addictions. Special emphasis will be given to biological, psychological, and sociological theories of addiction. Addictions will be viewed within a “person-in-environment” context. Prerequisite: Undergraduate level ENG 101 Minimum Grade of C and Undergraduate level ENG 102 Minimum Grade of C
  - 430 - 3 **Integrating Spirituality and Religion in Social Work Practice** - Explores the concept of spirituality as it relates to social work practice. Prerequisites: junior or senior standing. ENG 101 and 102 with a grade C or higher or enrollment in the Masters of Social Work Program.
  - 440 - 3 **International & Global Issues in Social Work** - Explores social work practice with international populations within and outside the United States. Prerequisites: junior or senior standing. ENG 101 and 102 with a grade C or higher or enrollment in the Masters of Social Work Program.
  - 461 - 3 **Children, Youth and Family Services** - Study of practice models, ethical and cultural issues, and intervention skills for work with children and families, including those in child welfare. Prerequisite: None
  - 466 - 3 **Disaster Preparedness, Response, Recovery, & Mitigation** - Future human service professionals learn about disaster preparedness, response recovery, and mitigation to help individuals, families, and communities in need. Prerequisite: Undergraduate level ENG 102 Minimum Grade of C
  - 486 - 3 **Street Gangs: Critical Perspectives** - Will provide an alternative understanding of street gangs as a form of social organization in urban communities. ENG 101 and 102 (or equivalent) with a grade of C or better; or graduate standing.
  - 501 - 3 **Generalist Practice: Individuals & Families** - Generalist practice methods with individuals, families, and groups for enhancement of social functioning. Special focus on gender, age, race, ethnicity, and class. Prerequisite: for social work graduate students, admission to the MSW program; for non-social work graduate students, permission of MSW program director.
  - 502 - 3 **Generalist Practice with Organizations and Communities** - General practice in communities, including locality development, social planning, advocacy, and social action. Strategies for working within organization to promote change. Prerequisite: for social work graduate students, admission to the MSW program; for non-social work graduate students, permission of MSW program director.
  - 503 - 3 **Counseling Skills Development** - Micro skills of counseling for generalist social work practice. Lab based. Specific focus on cultural competency, professional values/ethics, and social justice for oppressed populations. Prerequisite: for social work graduate students, admission to the MSW program; for non-social work

graduate students, permission of MSW program director.

504 - 3 **Social Welfare Policy** - Social welfare policies and services, including their historical evolution, inherent values and ideology, and their effects on social problems and the social work profession. Prerequisite: for social work graduate students, admission to the MSW program; for non-social work graduate students, permission of MSW program director.

505 - 3 **Generalist Practice with Groups** - Social group work intervention within the generalist framework. Leadership skills to conduct treatment and task groups. Special knowledge and skills for diverse populations. Prerequisite: for social work graduate students, admission to the MSW program; for non-social work graduate students, permission of MSW program director.

506 - 3 **Research Methods & Data Analysis** - Theory and application of quantitative and qualitative research methods for social work theory and practice. Focus on research designs and data analysis, and on interpreting research findings. Includes lab. Prerequisite: for social work graduate students, admission to the MSW program; for non-social work graduate students, permission of MSW program director.

507 - 3 **Human Behavior in the Social Environment** - Examination of biophysical, psychological, and social aspects of human development across the life course, within the ecological systems perspective, including challenges of minority groups. Prerequisite: for social work graduate students, admission to the MSW program; for non-social work graduate students, permission of MSW program director.

508 - 3 **Diversity, Values, Ethics, and Social Justice Principles and Practice** - Understanding diverse groups distinguished by race/ethnicity, class, gender, religion, sexual orientation, age, and ability. Implications for social justice practice and NASW Code of Ethics. Prerequisite: None

526 - 3 **Field Instruction I** - Prerequisite: Graduate level SOCW 501 Minimum Grade of C and Graduate level SOCW 503 Minimum Grade of C and Graduate level SOCW 507 Minimum Grade of C and Graduate level SOCW 508 Minimum Grade of C

527 - 3 **Field Instruction II** - The second of two supervised social work practice experiences of at least 225 hours each in an approved social service setting. Includes an integrative seminar. Prerequisite: SOCW 526 and permission of Director of Practica.

528 - 3 **Advanced Field Instruction III** - The first of two supervised concentration field experiences of at least 250 hours each in an approved setting. Includes an integrative seminar. Requires completion of foundation curriculum or advanced standing status, and permission of Director of Practica. Prerequisite: Graduate level SOCW 501 Minimum Grade of C and Graduate level SOCW 502 Minimum Grade of C and Graduate level SOCW 504 Minimum Grade of C and Graduate level SOCW 507 Minimum Grade of C and Graduate level SOCW 526 Minimum Grade of B and Graduate level SOCW 527 Minimum Grade of B

529 - 3 **Advanced Field Instruction IV** - The second of two supervised concentration field experiences of at least 250 hours each in an approved setting. Includes an integrative seminar. Prerequisite: SOCW 528 and permission of Director of Practica.

530 - 3 **Adv Social Policy With Children and Families** - Analysis of social policy development and implementation that affect children and families. Requires completion of foundation curriculum or advanced standing status. Prerequisite: None

531 - 6 **Block Field Instruction I** - Supervised social work practice experience (minimum of 450 hours) in an approved social service setting. Includes a seminar to integrate knowledge and practice. Substitutes for SOCW 526 and SOCW 527. Prerequisite: Graduate level SOCW 501 Minimum Grade of C and Graduate level SOCW 503 Minimum Grade of C and Graduate level SOCW 507 Minimum Grade of C and Graduate level SOCW 508 Minimum Grade of C

532 - 6 **Block Field Instruction II** - Supervised concentration field experience of at least 500 hours. Includes an integrative seminar. Substitutes for SOCW 528 and SOCW 529. Requires completion of foundation curriculum or advanced standing status and permission of Director of Practica. Prerequisite: None

533 - 2 **Social Work Practice in Schools** - Examines the history of school social work, the legal mandates, and institutional policies that impact social work practice in public schools. Prerequisites: Admission to MSW school social work program and SPE 400.

537 - 3 **Psychopathology and Diagnostic Assessment** - Comprehensive examination of forms of psychopathology and skills for DSM-IV-TR diagnosis. Social work values, ethics, and perspectives related to medical model explored. Requires admission to MSW program or consent of MSW Director. Prerequisite: None

546 - 3 **Applied Social Science Research** - Methods of both basic and applied social research. Students conduct either a program evaluation or write a grant proposal for agency use. Prerequisite: completion of all foundation courses or advanced standing status. Prerequisite: 501, 502, 503, 504, 505, 506, 507 (Foundation courses) or permission of MSW program director.

550 - 3 **Advanced Micro Practice** - This course focuses on advanced social work practice with individuals, families, and groups; it builds on the foundation courses in generalist social work practice and human behavior. Prerequisite: Graduate level SOCW 501 Minimum Grade of C and Graduate level SOCW 502 Minimum Grade of C and Graduate level SOCW 503 Minimum Grade of C and Graduate level SOCW 504 Minimum Grade of C and Graduate level SOCW 505 Minimum Grade of C and Graduate level SOCW 506 Minimum Grade of C and Graduate level SOCW 507 Minimum Grade of C and Graduate level SOCW 508 Minimum Grade of C and Graduate level SOCW 526 Minimum Grade of C and Graduate level SOCW 527 Minimum Grade of C

551 - 3 **Social Work: Advanced Policy** - The course will review and provide in-depth coverage of the areas of social policy that students have an entering knowledge of, and students will engage in focused research related to a specific social welfare policy and problem which is of particular interest to them, looking in-depth at both micro- and macro-level impacts of the social problem and policy Prerequisite: Graduate level SOCW 501 Minimum Grade of C and Graduate level SOCW 502 Minimum Grade of C and Graduate level SOCW 503 Minimum Grade of C and Graduate level SOCW 504 Minimum Grade of C and Graduate level SOCW 505 Minimum Grade of C and Graduate level SOCW 506 Minimum Grade of C and Graduate level SOCW 507 Minimum Grade of C and Graduate level SOCW 508 Minimum Grade of C and Graduate level SOCW 526 Minimum Grade of C

552 - 3 **Advanced Macro Practice** - The course involves an in-depth analysis of the various theoretical, socio-political, and environmental factors that shape the dynamics of macro-practice. The course addresses the impact of these macro-level domains on micro-level systems. Prerequisite: Graduate level SOCW 501 Minimum Grade of C and Graduate level SOCW 502 Minimum Grade of C and Graduate level SOCW 503 Minimum Grade of C and Graduate level SOCW 504 Minimum Grade of C and Graduate level SOCW 505 Minimum Grade of C and Graduate level SOCW 506 Minimum Grade of C and Graduate level SOCW 507 Minimum Grade of C and Graduate level SOCW 508 Minimum Grade of C and Graduate level SOCW 526 Minimum Grade of C and Graduate level SOCW 527 Minimum Grade of C

560 - 3 **Mental Health Services** - Models and skills used in psychosocial treatment of mental disorders. Examination of managed care, political, and economic influences on service delivery systems. Prerequisite: completion of all foundation courses and advanced standing status. Prerequisite: 501, 502, 503, 504, 505, 506, 507 (Foundation courses) or permission of MSW program director.

561 - 3 **Children, Youth and Family Services** - Study of practice models, ethical and cultural issues, and intervention skills for work in public child welfare, juvenile justice, and other child and adolescent services. Prerequisite: completion of all foundation courses or advanced standing status. Prerequisite: 501, 502, 503, 504, 505, 506, 507 (Foundation courses) or permission of MSW program director.

563 - 3 **Gerontology Services** - Surveys theories of aging and teaches methods and skills of work with older Americans. Issues of cultural compatibility, social action and empowerment strategies. Prerequisite: completion of all foundation courses or advanced standing status. Prerequisite: 501, 502, 503, 504, 505, 506, 507 (Foundation courses) or permission of MSW program director.

564 - 3 **Substance Abuse Services** - Examines treatment methods and teaches skills for treatment of alcohol and other drugs. Examines ethical, cultural and policy issues of "war on drugs." Prerequisite: completion of all foundation courses or advanced standing status.

565 - 3 **Capstone** - Integration of theories and practice models of entire MSW curriculum. Emphasis on critical thinking, diversity issues, and social/economic justice in all fields of practice. Prerequisites: Completion of all foundation and advanced standing courses except those offered concurrently with this course.

567 - 2 **Seminar in School Social Work** - Advanced seminar in school social work integrating MSW practice knowledge and skills with school field practicum experience. Prerequisites: Admission to MSW school social work program and SOCW 533.

568 - 4 **Advanced Field III School Social Work** - Advanced directed practicum in approved school setting in which student develops and demonstrates competence for social work practice in schools. Minimum 300 hours. Requires admission to MSW school social work specialization or post MSW school social work professional development sequence and Consent of Director of Practica. Prerequisite: Undergraduate level SPE 400 Minimum Grade of B

569 - 4 **Advanced Field IV School Social Work** - The second of two advanced level directed practicums in approved school setting in which student develops and demonstrates competence for social work practice in schools. Minimum 300 hours. Requires consent of Director of Practica. Prerequisite: Graduate level SOCW 568 Minimum Grade of B

572 - 7 **Post-MSW School Internship** - Block internship consisting of a minimum of 600 clock hours in an Illinois public school setting under supervision of an MSW from a CSWE accredited program. Prerequisites: SPE 400 and admission to the Post-MSW Professional Development Sequence. Concurrent enrollment in SOCW 533.

596 - 1 to 6 **Readings in Social Work** - Supervised readings in selected subjects. May be repeated to a maximum of 6 hours. Requires consent of instructor and MSW director. Prerequisite: None

- Sociology (SOC)
  - 411 - 3 **Social Movements** - Reviews the emergence, endurance and outcomes of social movement activism mainly in the US. Looks at the theory and empirical realities, paying special attention to political opportunity structures, internal mobilizing structures, and cultural approaches. Prerequisite: None
  - 420 - 3 **Leadership** - Leadership as parents, teachers, counselors, employers, and change agents. Group problem-solving process. Social movements. Prerequisite: None
  - 421 - 3 **Individual and Society** - Integration of individual and society; role structure and orientation to society; habits, communication, channels of meaning, emergence, presentation and defense of self. Prerequisite: None
  - 422 - 3 **White Collar Crime** - An examination of the nature, extent, and distribution of white-collar crime as well as its causes, correlates and control. Prerequisite: Undergraduate level CJ 272 Minimum Grade of D or Undergraduate level SOC 272 Minimum Grade of D
  - 431 - 3 **Employment & Workplace Change** - Practical application and critical analysis of theories, approaches, strategies of organizational and workplace change. Organizations as mechanistic, organic cultures, political systems and arenas of conflict. Prerequisite: None
  - 440 - 3 **Sociology of Popular Culture** - Relevant theories, methodologies, and works of original research. Students apply knowledge gained by analyzing examples from contemporary popular culture. Prerequisite: None
  - 441 - 3 **Health Illness and Society** - Social determinants of sickness and death; illness as social behavior; patient-practitioner, hospitals, issues in organization and delivery of health care. Prerequisite: None
  - 470 - 3 **Sociology of Deviance** - Behavior such as prostitution, drug use, murder, racism, sexual variances, rape and insanity examined theoretically and empirically. Prerequisite: None
  - 472 - 3 **Explaining Crime** - Examination of the relationship between classical and contemporary criminological theory, research, and policy. Same as CJ 472. Prerequisite: Undergraduate level SOC 272 Minimum Grade of D or Undergraduate level CJ 272 Minimum Grade of D
  - 474 - 3 **Victims and Society** - Sociological analysis of war, crime, inequality, racism, sexism and other victim-generating conditions and processes; a non-lecture, active-learning course. Prerequisite: Undergraduate level SOC 111 Minimum Grade of D
  - 490 - 3 **Special Topics in Sociology** - Topics not included in regular course offerings. May be repeated once to a maximum of 6 hours provided no topic is repeated. Prerequisite: None
  - 500 - 3 **Professionalization Seminar** - This class is designed to assist new graduate students as they actively plan out their time in the Sociology MA program. Class time will focus on practical skills that can be used while enrolled and over the life of their careers. Practical skills include: time management, goal setting, research resources, networking, professional interactions, and career pathways. Prerequisite: None
  - 501 - 3 **Survey of Theory** - Classical and contemporary theory connecting to historical context, vision, research, application, and other seminars in the sociology graduate programs. Prerequisite: None
  - 502 - 3 **Seminar in Intergroup Relations** - Cross-cultural study of racial, ethnic, and intra-faith relations. Causes of conflict; accommodation; domination; acculturation; assimilation; pluralism. Prerequisite: None
  - 503 - 3 **Seminar in Applied Sociology** - Applied sociology: its history; the application of sociology in its varied forms and contexts; and the roles, skills and methods that sociological practice involves. Prerequisite: None
  - 515 - 3 **Research Methods & Study Design in Sociology** - Basic research methods and designs; analysis of social science data; logic of scientific inquiry. Includes preparation of thesis/internship research proposal. Prerequisite: None
  - 518 - 3 **Advanced Data Analysis** - Data analysis methods used in quantitative social research, including statistical analysis with SPSS and demographic techniques. Descriptive and inferential statistics including multivariate techniques. Prerequisite: One course in statistics.
  - 521 - 3 **Seminar in Social Psychology** - Survey of theoretical systems; progress toward integrated body of behavior theory. Course history: Prerequisite: None
  - 536 - 3 **Alternatives to Bureaucracy** - Structural characteristics and conditions for emergence of bureaucratic organization; contrasting systems of control and democracy; alternative forms of organization. Prerequisite: None
  - 538 - 3 **Seminar in Industrial Sociology** - Analyze theoretical, research and policy issues; technological change and the organization of production; deindustrialization, plant closings, industrial relations and industrial policies in the global economy. Course history: Course replaces quarter based SOC 538. Prerequisite: None
  - 540 - 3 **Alternatives to Capitalism** - A historical and contemporary examination of the various types of capitalisms internationally and the many social and theoretical movements challenging them. Prerequisite: None
  - 542 - 3 **Seminar in Gender & Gender Inequality** - Theoretical perspectives on the creation, reproduction and maintenance of gender and gender inequality. Course history: Course replaces quarter based SOC 542. Prerequisite: None
  - 574 - 3 **Seminar in Deviance** - Theoretical approaches to such phenomena as drug addiction, mental illness, sexual variances, suicide, and criminal behaviors; emphasis on cross-cultural, historical and empirical data. Course history: Course replaces quarter based SOC 574. Prerequisite: None
  - 578 - 3 **Seminar in Criminology** - Classical and contemporary criminology research and theory. Class performs original research; replicates a significant existing study; theoretical interpretation and/or critique of important criminological work. Prerequisite: None
  - 590 - 3 **Special Topics** - Seminar on topic not included in regular course offerings. May be repeated provided no topic is repeated. Prerequisite: None
  - 592 - 3 **Research Practicum** - Experience in carrying out and reporting a research project, includes hypothesis; generation; data collection and analysis; and oral presentation and written report. Prerequisite: 18 hours of graduate, including SOC 515, or permission of graduate adviser.
  - 593A - 3 **Graduate Internship Experience** - Supervised work experience in research or public service organization; requires 140 hours of work time. May be counted toward completion of MA exit requirement. Requires consent of graduate coordinator. Prerequisite: None
  - 593B - 3 **Graduate Internship Report** - Written report relating sociological concepts to internship experience. Counts toward completion of MA exit requirements in combination with successful completion of SOC 593A. Prerequisite: SOC 593A.
  - 595 - 1 to 6 **Individual Research** - Supervised research projects. May be repeated to a maximum of 6 hours. Course history: Replaces quarter based SOC 595. Requires consent of instructor and graduate coordinator. Prerequisite: None

596 - 1 to 6 **Readings in Sociology** - Supervised readings in selected subjects. May be repeated to a maximum of 6 hours. Requires consent of instructor. Prerequisite: None

599 - 3 to 6 **Thesis** - Supervised research in approved topic; written proposal &oral defense required. May be repeated to a maximum of 6 hours. Course history: Course replaces quarter based SOC 599. Requires consent of department chair or program director. Prerequisite: None

- Spanish (SPAN)
  - 412A - 3 **U.S.A. Hispanics: Mexican Americans** - Hispanic cultures in the U.S.A. study of the unique contributions of Mexican Americans through their language, literature and the arts. Prerequisite: Undergraduate level SPAN 301 Minimum Grade of D or Undergraduate level SPAN 302 Minimum Grade of D
  - 412B - 3 **U.S.A. Hispanics: Cuban & Puerto Rican Americans** - Hispanic cultures in the U.S.A. study of the unique contributions of Cuban Americans and Puerto Rican Americans through their language, literature and the arts. Prerequisite: Undergraduate level SPAN 301 Minimum Grade of D or Undergraduate level SPAN 302 Minimum Grade of D
  - 440 - 3 **Contemporary Spanish American Cinema** - This course offers a survey of Latin America cinema, concentrating on the critical analysis of representative films, with particular attention to different national cultures. Prerequisite: Undergraduate level SPAN 311 Minimum Grade of C or Undergraduate level SPAN 312 Minimum Grade of C
  - 454 - 3 to 6 **Seminar** - Critical and analytical study of selected topics of literature or literary criticism. May be repeated to a maximum of 6 hours provided that no topic is repeated. Prerequisite: Undergraduate level SPAN 301 Minimum Grade of D or Undergraduate level SPAN 302 Minimum Grade of D
  - 457 - 3 **Don Quixote** - Critical and analytical study of Cervantes' masterpiece. Prerequisite: Undergraduate level SPAN 301 Minimum Grade of D or Undergraduate level SPAN 302 Minimum Grade of D
  - 461 - 3 **Spanish Stylistics** - Writing style: Application of stylistics to development of skill in written expression. Advanced work in principles of grammar and composition. Prerequisite: 6 hours of 300 level courses.
  - 491 - 3 to 6 **Cultural & Language Workshop - Spanish** - Comparative or contrastive linguistics, advanced methodology and techniques. In-depth study of foreign cultures, travel-study abroad. Supervised projects in foreign studies. May be repeated to a maximum of 6 hours provided no topic is repeated. Prerequisite: None
  - 492 - 3 **Service Learning for the Advanced Student** - Projects. Study abroad in a service-learning context. Hands on field study with emphasis on target culture and language, oral and written communication and supervised individual [Dist. FAH, IC, IGR] Prerequisite: SPAN 301 or permission of instructor.
  - 499 - 3 **Readings in Spanish** - Selected areas of language, literature, and culture. Individual work or small groups supervised by Spanish faculty. Requires consent of instructor. Prerequisite: None
  - 550 - 3 **Seminar in the New Narrative & Poetry of Spanish America** - Short stories and poetry. Prerequisite: None
  - 551 - 3 **Seminar On A Selected Spanish Author** - Intensive study of one author. May be repeated once for a total of 6 hours, if authors vary. Course history: Course replaces the quarter based course Spanish 501. Prerequisite: None
  - 552 - 3 **Seminar in Latin American Fiction** - Representative works of major authors. Course history: Course replaces the quarter based course Spanish 500. Prerequisite: None
  - 553 - 3 **The Renaissance & Golden Age** - Literature of the golden age in Spain and histories of the Indies. Course history: Course replaces the quarter based course Spanish 506. Prerequisite: None
  - 554 - 3 **The Generation of 1898** - Philosophical trends in representative authors. Course history: Course replaces the quarter based course Spanish 508. Prerequisite: None
  - 555 - 3 **The Picaresque Novel** - The Lazarillo with collateral readings of other masterpieces of this genre. Course history: Course replaces the quarter based course Spanish 505. Prerequisite: None
  - 556 - 3 **The Spanish Ballads** - This genre in the literature and folklore of Spain and the New World. Course history: Course replaces the quarter based course Spanish 525. Prerequisite: None
  - 557 - 3 **Seminar On A Selected Spanish American Author** - Intensive study of one author. May be repeated for a total of 6 hours, if authors vary. Course history: Course replaces the quarter based course Spanish 502. Prerequisite: None
  - 558 - 3 **Spanish American Essay** - Representatives of genre. Course history: Course replaces the quarter based course Spanish 534. Prerequisite: None
  - 559 - 3 **Special Topics in Latin American Literature** - Issues such as the Gaucho, the Indian, revolution and social change. Maybe repeated once to a total of 6 hours, if topics vary. Course history: Course replaces the quarter based course Spanish 559. Prerequisite: None
  - 561 - 3 **Seminar in Syntax** - Stylistics and grammatical analysis. Course history: Course replaces the quarter based course Spanish 520. Prerequisite: None
- Special Education (SPE)
  - 400 - 3 **The Exceptional Child** - Psychology, identification, and methods of teaching individuals with exceptionalities, including individuals with learning disabilities. Prerequisites: Admission to teacher education program or instructor approval.
  - 415 - 3 **Instructional and Assistive Technology** - Overview of use of instructional and assistive technology. Course will review hardware, software, Internet technologies and application of assistive technology. Not for graduate credit. Prerequisite: Undergraduate level SPE 100 Minimum Grade of B
  - 417A - 3 **Introductory Reading and Language Arts Methods in Special Education** - Candidates will learn and apply foundational theory and methods for teaching reading and language arts to students with disabilities. Prerequisite: None
  - 417B - 3 **Advanced Reading and Language Arts Methods in Special Education** - Candidates will learn and apply advanced methods of assessment and instruction in reading and language arts for teaching students with disabilities. Prerequisite: None
  - 421 - 3 **Mathematics Methods in Special Education** - Preparation of pre-service teachers with knowledge and skill in the use of effective teaching techniques in mathematics for persons with disabilities. Prerequisite: None
  - 430 - 3 **Classroom Management and Behavior Support in Special Education** - Designing effective learning environments and individualized behavior support plans and applying research-based behavioral practices. Not for graduate credit. Prerequisite: Undergraduate level SPE 100 Minimum Grade of B
  - 430A - 3 **Introduction to Classroom Management and Behavior Support** - Designing effective learning environments that use evidence-based practices to prevent problems and support social interaction and appropriate classroom behavior. Prerequisite: None
  - 440 - 3 **Infants and Toddlers with Special Needs and Their Families** - Characteristics and interactions of infants and toddlers with special needs and their families; emphasizes collaboration with families and current research, theory and federal/state policies. Prerequisite: Undergraduate level SPE 400 Minimum Grade of D
  - 441 - 3 **Assessment of Preschool Children with Special Needs** - Instruments for assessment of academic, cognitive, perceptual-motor development. Diagnosis and remediation. Prerequisite: Undergraduate level SPE 440 Minimum Grade of D
  - 442 - 3 **Methods and Procedures for Teaching Early Childhood Students with Disabilities** - Knowledge and skills needed to provide educational services and supports to early childhood students with disabilities and their families. Requires 10 hours field experience. Not for graduate credit. Prerequisite: Undergraduate level SPE 440 Minimum Grade of D
  - 450 - 3 **Instructional Planning and Professional Collaboration in Special Education** - Course covers content in service delivery models, program planning and collaboration. Not for graduate credit. Prerequisite: None
  - 470 - 2 **Transition Planning** - Overview of transition planning and programming for students with disabilities. Prerequisite: None

496 - 1 to 6 **Reading & Independent Study in Special Education** - Specific problem areas in education of individuals with disabilities. Topic conditions of study approved via contract. Not for graduate credit. Prerequisite: consent of instructor.

498 - 3 to 6 **Workshop: Selected Topics in Special Education** - Topical workshop on concepts, strategies, and concerns in special education. May be repeated to a maximum of 6 hours. Prerequisite: None

500 - 3 **Research in Special Education** - The course will provide students with foundational knowledge on research in education so students can become competent consumers of research. The course will include information on developing a literature review, quantitative and qualitative research designs, data collection methods, and methods for analyzing and interpreting data. Prerequisite: None

501 - 3 **Readings or Special Research Problem** - Readings or research in special education. Topics and conditions approved via contract. May be repeated once to a maximum of 6 hours. Requires consent of adviser. Prerequisite: None

502 - 3 **Characteristics of Individuals with Disabilities** - Provides teachers with an understanding of the characteristics of students with disabilities including ethical considerations, interventions and educational modifications. Prerequisite: None

504 - 3 **Parents, Teachers and Disabled Children** - Prescriptive parent programming. Analysis of models of parent education and training. Prerequisite: SPE 500 or consent of instructor.

506 - 3 **Collaboration, Consultation, and Conduct in Special Education** - Strategies for assisting parents with issues relating to disabilities and for collaborative teaming between school and home. Prerequisite: None

507 - 1 to 6 **Social and Emotional Learning (SEL)** - Examination of current topics in social and emotional learning (SEL) in the areas of self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. Prerequisite: None

511 - 3 **Individualized Educational Assessment** - Formal and informal assessment strategies as applied to the identification, evaluation and ongoing development of the individual with a disability. Prerequisite: None

513 - 3 **Developmental Implications of Prenatal Drug Exposure** - Effects of prenatal exposure to cocaine, heroin, alcohol, over-the-counter drugs, tobacco, aspirin and others on cognitive, emotional, and motor development. Instruction and programming. Prerequisite: Graduate level SPE 500 Minimum Grade of C

514 - 3 **Legal Aspects of Special Education** - State and federal regulations, statutes, and court cases affecting implementation of special education services. Prerequisite: None

515 - 3 **Administration & Supervision of Special Education Services** - Models and practices for supervision and administration of special education programs and districts. Prerequisite: Graduate level SPE 514 Minimum Grade of C

516 - 3 **Instructional and Assistive Technology** - Focus on enhancing the technology skills of teachers who teach students with learning/behavior problems. Prerequisite: None

517 - 3 **Special Education Finance** - An overview of fiscal issues in special education administration addressing certification/licensure requirements for the Illinois Director of Special Education endorsement. Prerequisite: None

518 - 1 to 12 **Workshop in Special Education** - Examination of current topics in special education. This course can be repeated up to 12 hours for credit. Prerequisite: None

519 - 3 **Community Instruction of Students with Disabilities** - Advantages and disadvantages of community integration and instruction. Transition from school to community. Prerequisite: Graduate level SPE 500 Minimum Grade of C

520 - 3 **Teaching Individuals with Diverse Needs** - Advanced knowledge of issues relating philosophical, historical and legal foundations of education, characteristics of learners and planning for instruction. Prerequisite: Graduate level SPE 500 Minimum Grade of C

522 - 3 **Instructional Methods for Students with Mild/Moderate Disabilities** - Emphasis on current research and application of instructional methodology. Prerequisite: None

523 - 3 **Instructional Methods for Students with Severe Disabilities** - Program characteristics, assessment, instruction and curriculum across educational environments; data-based decision-making; collaboration and leadership in programs for students with moderate/severe disabilities. Prerequisite: None

524 - 3 **Curriculum Adaptations and Modifications for Individuals with Disabilities** - Advanced knowledge and application of instructional strategies. Prerequisite: None

530 - 3 **Early Childhood Education of the Disabled** - In-depth study of developmental disabilities; theories of early childhood education and curriculum appropriate for variety and severity of handicaps encountered in preschool classrooms. Prerequisite: Graduate level SPE 500 Minimum Grade of C

532 - 3 **Assessment of the Young Children with Disabilities** - Formal and informal diagnostic techniques for planning and implementing prescriptive programs. Case study evaluation; task analysis; IEPS; record keeping; child find. Prerequisite: Graduate level SPE 530 Minimum Grade of C

540 - 3 **Behavioral Issues and the Learning Environment** - Analysis of theory and practice of behavior management education; application in special education and general education settings is emphasized. Prerequisite: None

542 - 3 **Rehabilitation Services and the Disabled** - The rehabilitation process: law, department of rehabilitation services; role of secondary school work study coordinator, special educator, employer, and employment agencies; impact on community services. Prerequisite: Graduate level SPE 500 Minimum Grade of C

546 - 3 **Vocational Appraisal and Placement Procedure** - Tests and procedures used to assess individual's functional abilities, interests, and work attitudes. Methods used in selection, placement, and follow-up of individuals with disabilities. Prerequisite: Graduate level SPE 500 Minimum Grade of C

578 - 1 to 6 **Field Study** - School or community based education experiences in special education required for teacher certification or professional growth and development. Prerequisite: None

595 - 3 **Action Research in Special Education** - Course is for advanced master's level students. Focus on the knowledge and skills necessary to design and implement an action research project. Prerequisite: None

- Speech Pathology and Audiology (SPPA)
  - 469 - 1 **Clin Proc Ind w.Hearing Disord** - Clinical course in audiological assessment, interpretation, and management. Course includes supervised clinical labs in audiometric test procedures and hearing screenings on and off-campus. Prerequisite: 461 and 3.0 GPA.
  - 498 - 3 **Augmentative and Alternative Communication** - Examination of transdisciplinary field of augmentative and alternative communication (AAC) as well as to the assistive technologies and diagnostic/treatment approaches critical for AAC. Prerequisite: Undergraduate level SPPA 444 Minimum Grade of D and Undergraduate level SPPA 446 Minimum Grade of D and Undergraduate level SPPA 452 Minimum Grade of D
  - 503 - 3 **Research Methods** - Aspects related to evidence-based research, various types, designs, validity, quantitative and qualitative data analysis and its clinical applications. Prerequisite: None
  - 510 - 1 to 3 **Independent Study in Speech-Language Pathology** - Independent study and reading in Speech-Language Pathology. Prerequisite: None
  - 511 - 2 **Counseling Strategies for Speech-Language Pathologists** - Counseling theory, process, and application to individuals who present a variety of communication disorders and the families of these individuals. Prerequisite: None
  - 515 - 1 to 3 **Special Topics in Speech-Language Pathology & Audiology** - Readings, individual studies, and research. Varied content to be offered as student and faculty interest and time permit. May be repeated to a maximum of 6 hours if topics vary. Requires consent of instructor. Prerequisite: None
  - 520 - 3 **Advanced Neuroanatomy and Neurophysiology of Communication** - An advanced course in neuroscience of normal and disordered language and cognition as they relate to communication. Prerequisite: None

540 - 3 **Child Language Disorders: Birth to Five** - Comprehensive approach to evaluation, assessment and treatment of communication deficits in infants, toddlers and preschoolers with special needs. Prerequisite: None

541 - 3 **Advanced Seminar in Child Speech Sound Disorders** - Theoretical and clinical perspectives on the etiology, assessment and treatment of child speech sound disorders. Prerequisite: None

542 - 3 **Seminar in Voice Disorders** - Course dealing with etiology, assessment, and treatment strategies for voice disorders throughout the lifespan. Prerequisite: None

543 - 3 **Fluency Disorders** - Etiological factors, assessment, and intervention for individuals who experience dysfluencies from pre-school age through adulthood. Prerequisite: None

544 - 3 **Child Language Disorders in School-Aged Children** - Comprehensive approach to evaluation, assessment and treatment of communication deficits in school-aged children. Prerequisite: None

545 - 4 **Acquired Communication Disorders in Adults** - Examines characteristics of the acquired neurogenic disorders of aphasia, right hemisphere dysfunction, dementia, and other cognitive disorders. Prerequisite: None

547 - 3 **Motor Speech Disorders** - Evaluation and treatment of individuals with dysarthria and apraxia of speech due to static and degenerative conditions. Prerequisite: None

548 - 3 **Dysphagia** - Course dealing with etiology, assessment, & treatment strategies for individuals with feeding and swallowing disorders from infancy through adulthood. Prerequisite: None

549A - 1 to 6 **Graduate Practicum in Speech-Language Pathology I** - Supervised clinical practice at the SIUE speech, language and hearing center. May be repeated to 15 hours. Prerequisite: None

549B - 5 to 8 **Graduate Practicum in Speech-Language Pathology II** - Supervised clinical practice in the treatment and diagnoses of children with communication disorders in an educational setting. May be repeated up to 15 hours under the supervision of certified SLPS. Prerequisite: None

549C - 3 to 8 **Graduate Practicum in Speech-Language Pathology III** - Supervised clinical practice in the treatment and diagnoses of children with communication disorders in a medical setting. May be repeated up to 15 hours. Prerequisite: None

549D - 3 to 8 **Graduate Practicum in Speech-Language Pathology IV** - Supervised clinical practicum in the treatment and diagnoses of children or adults with communication disorders. May be repeated to a maxium of 12 hours. Prerequisite: None

551 - 3 **Seminar in Orofacial Anomalies** - Etiology of oral facial anomalies. Interdisciplinary team approaches to physical management, feeding issues, communication disorders and psychosocial issues. Prerequisite: None

555 - 3 **Acquired Brain Injury** - Examines neurophysiological, cognitive, neuropsychological, and social/emotional issues associated with acquired brain injury. Prerequisite: None

558 - 3 **Advanced Course in Augmentative and Alternative Communication** - Evaluation and treatment using augmentative and alternative communication including communication boards and speech-generating devices. Prerequisite: None

560 - 3 **Professional Issues in Speech-Language Pathology** - Seminar addressing ethical and professional issues in speech-language pathology and audiology. Includes information related to foundations, policies and procedures in educational and medical settings. Prerequisite: None

599 - 1 to 6 **Thesis** - May be repeated to a maximum of 6 hours. Prerequisite: None

- Statistics (STAT)
  - 410 - 3 **Statistical Analysis** - Design of surveys and experiments. Inferential statistics, including confidence intervals and hypothesis testing. Simple and multiple regression. May not be used to satisfy requirements of a mathematics or statistics concentration or minor. Prerequisite: Undergraduate level MATH 130 Minimum Grade of C or Undergraduate level MATH 150 Minimum Grade of C

  478 - 3 **Time Series Analysis** - Statistical analysis of time series. Regression and exponential smoothing. Box-Jenkins methodology. Prerequisite: Undergraduate level STAT 380 Minimum Grade of C or Undergraduate level STAT 480B Minimum Grade of C

  480A - 3 **Introduction to Mathematical Statistics** - Mathematical statistical theory. Probability models, distributions of random variables, sampling distributions, generating functions, central limit theorem, limiting distributions, parameter estimation, statistical hypotheses, and linear models. Must be taken in sequence. Prerequisite: Undergraduate level MATH 250 Minimum Grade of C

  480B - 3 **Introduction to Mathematical Statistics** - Parameter estimation, statistical hypotheses, and linear models. Prerequisite: Undergraduate level STAT 480A Minimum Grade of C

  481 - 3 **Design & Analysis of Experiments with Applications to Science and Engineering** - Design for experimentation and statistical inference with engineering and science applications. One-way, two-way classification; complete and incomplete block designs. Factorial and fractional factorial designs.Crosslisted with IE 464. Prerequisite: Undergraduate level STAT 380 Minimum Grade of C or (Undergraduate level STAT 480A Minimum Grade of C and Undergraduate level STAT 480B Minimum Grade of C)

  482 - 3 **Regression Analysis** - Inference in simple, multiple, polynomial and non- linear regression. Stepwise regression, subset selection; residual analysis, transformations and diagnostics. Prerequisite: Undergraduate level STAT 380 Minimum Grade of C or (Undergraduate level STAT 480A Minimum Grade of C and Undergraduate level STAT 480B Minimum Grade of C)

  483 - 3 **Sample Surveys** - Simple random sampling, stratified sampling, one- stage and two-stage cluster sampling. Ratio, regression, difference estimation. Estimation of population size. Prerequisite: Undergraduate level STAT 380 Minimum Grade of C or (Undergraduate level STAT 480A Minimum Grade of C and Undergraduate level STAT 480B Minimum Grade of C)

  484 - 3 **Reliability Engineering** - Probabilistic models for the reliability of coherent systems. Statistical models for lifetimes of components and for repairable systems. Reliability estimation and production. MIL standards. Same as IE 463. Prerequisites: STAT 480b or STAT 380 or IE 365 with grades of C or better; or consent of instructor.

  485 - 3 **Stochastic Processes** - Markov chains with applications. Poisson processes. Markov processes with discrete states in continuous time. Renewal theory and queuing theory. Brownian motion and stationary processes. Prerequisite: Undergraduate level STAT 480A Minimum Grade of C

  486A - 3 **Actuarial Mathematics** - Utility theory, risk models, survival distributions, life tables. Life insurance models, life annuities, premium calculation, and valuation theory for pension plans. Prerequisite: Undergraduate level MATH 340 Minimum Grade of C and (Undergraduate level STAT 380 Minimum Grade of C or Undergraduate level STAT 480A Minimum Grade of C)

  486B - 3 **Actuarial Mathematics** - Utility theory, risk models, survival distributions, life tables. Life insurance models, life annuities, premium calculation, and valuation theory for pension plans. Prerequisite: Undergraduate level MATH 340 Minimum Grade of C and Undergraduate level STAT 380 Minimum Grade of C or Undergraduate level STAT 480A Minimum Grade of C

  488 - 3 **Design and Control of Quality Systems** - Quality design by experimental design; determination of process capability; quality control using statistical control charts; acceptance sampling. Same as IME 465. Prerequisite: Undergraduate level STAT 480A Minimum Grade of C and Undergraduate level STAT 480B Minimum Grade of C or Undergraduate level IME 365 Minimum Grade of C

  489 - 3 **Applied Statistical Learning & Data Mining** - Survey of supervised learning methods and prediction models. Linear and logistical regression, linear discriminant analysis, resampling, regularization, generalized additive models, decision trees, bagging and boosting. STAT 380 with a C or better or admission to graduate Math and programming experience or consent of instructor.

490 - 1 to 3 **Topics in Statistics** - Selected topics in statistics. Prerequisite: None

495 - 1 to 3 **Independent Study** - Research and reading in specified area of interest such as analysis of variance, design of experiments, estimation, testing hypotheses, linear models, robust procedures, reliability. May be repeated to a maximum of 9 hours. Requires written consent of adviser and instructor. Prerequisite: None

535 - 3 **Statistics Content, Pedagogy, and Connections** - A focused look at data analysis and probability, best practices in pedagogy, and connections to other areas. Within the Department of mathematics and Statistics credit can only be earned for the Postsecondary mathematics Education specialization. Prerequisite: Undergraduate level STAT 244 Minimum Grade of C or Undergraduate level MATH 250 Minimum Grade of C

575 - 3 **Statistical Computing** - Numerical methods for statistical analysis. Numerical linear algebra for multiple regression. Unconstrained optimization for approximation of maximum likelihood estimates. Numerical integration and function approximation. Prerequisite: Undergraduate level STAT 480B Minimum Grade of C and Undergraduate level MATH 465 Minimum Grade of C and Undergraduate level MATH 466 Minimum Grade of C

579 - 3 **Discrete Multivariate Analysis** - Models for discrete data, two dimensional and higher dimensional tables. Categorical data analysis, chi- square goodness of fit tests. Maximum likelihood estimation of parameters. Prerequisite: Undergraduate level STAT 480A Minimum Grade of C and Undergraduate level STAT 480B Minimum Grade of C

581 - 3 **Advanced Experimental Design** - Robust design and Taguchi methods. Orthogonal arrays and first-order models. Steepest ascent. Response surface designs, including central composite and Box-Behnken designs. Prerequisite: (Undergraduate level STAT 480A Minimum Grade of C or Graduate level STAT 480A Minimum Grade of C) and (Undergraduate level STAT 482 Minimum Grade of C or Graduate level STAT 482 Minimum Grade of C) and (Undergraduate level STAT 480B Minimum Grade of C or Graduate level STAT 480B Minimum Grade of C)

582 - 3 **Linear Models** - Matrix algebra; quadratic forms and their distributions; estimation; hypothesis testing for full rank model; estimation and testing for less than full rank model. Prerequisite: Undergraduate level STAT 480A Minimum Grade of C and Undergraduate level STAT 480B Minimum Grade of C and Undergraduate level STAT 482 Minimum Grade of C

583 - 3 **Survey Sampling** - Methods of designing and analyzing survey investigation: simple random, stratified, multistage, cluster sampling; data quality; validity and efficient sample plans; reading and project assignments. Prerequisite: Undergraduate level STAT 380 Minimum Grade of C or Undergraduate level FIN 320 Minimum Grade of C and Undergraduate level MS 251 Minimum Grade of C

584 - 3 **Reliability Theory** - Reliability of complex systems. Statistical analysis of methods for reliability. Statistical analysis of models for repairable systems, including the nonhomogeneous Poisson process. Accelerated life testing. Prerequisite: Undergraduate level STAT 480A Minimum Grade of C and Undergraduate level STAT 480B Minimum Grade of C and Undergraduate level STAT 484 Minimum Grade of C

588 - 3 **Advanced Quality Control** - Prerequisite: Undergraduate level STAT 480A Minimum Grade of C and Undergraduate level STAT 480B Minimum Grade of C

589 - 3 **Multivariate Analysis** - Matrix algebra; multivariate normal distribution; inference for a mean vector; comparison of several mean vectors; principle components; clustering; discrimination and classification. Prerequisite: Undergraduate level STAT 480A Minimum Grade of C and Undergraduate level STAT 480B Minimum Grade of C

590 - 3 **Seminar** - Intensive study of topics such as analysis of variance, design of experiments, estimation, nonparametric methods, robust procedures, linear models and reliability. Requires written consent of adviser and instructor. Prerequisite: None

595 - 1 to 7 **Special Project** - Independent study in topics such as analysis of variance, experimental design, estimation, linear models, multivariate analysis, nonparametric statistics, quality control and reliability. May be used to satisfy research paper requirement for M.S. degree. Repeatable to a maximum of 7 credit hours. Requires consent of research adviser. Prerequisite: None

599 - 1 to 6 **Thesis** - Directed research to satisfy thesis requirement. May be repeated to a maximum of 6 hours. Requires consent of thesis adviser. Prerequisite: None

- Study Abroad (SAB)
  - 400 - 1 to 16 **Study Abroad** - University approved study abroad in a country and institution of the student's choosing. For undergraduate and graduate credit. Student must be a Sophomore (30+ hours) and in good standing. Prerequisite: None

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- Theater & Dance (THEA)
  - 485 - 1 to 3 **Special Projects in Computers** - Individual or small group project work in computers as related to performing arts. Computer graphics, computer animation, video enhancing, multi-image slide productions. May be repeated to a maximum of 9 hours. Prerequisites: Advanced undergraduate or graduate standing and consent of instructor.
  - 590 - 1 to 6 **Independent Projects** - Completion of a creative or scholarly project under the direction of a graduate faculty member. May be repeated for a total of 6 hours. Requires consent of instructor. Prerequisite: None

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- University Experience (UNIV)
  - 500 - 0 **Continuing Enrollment** - Classified, master's level students, who are not otherwise enrolled during an academic term, can maintain access to university resources only by enrollment in UNIV500. No grade is assigned for the course. Ordinary tuition and fees do not apply. Prerequisite: None

Graduate Catalog 2020-2021

Course Descriptions

Graduate Courses

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

- Women's Studies (WMST)
  - 428 - 3 **Topics in European Women's History** - Selected topics in women's history since the middle ages. Chronological framework will vary from semester to semester. Same as HIST 428. Prerequisite: None
  - 440 - 3 **Women in American Social History** - Women from various social classes; ethnic and racial groups; and geographic regions. Social institutions such as family, church, schools, etc. Colonial era to present. Same as HIST 440. Prerequisite: None
  - 441 - 3 **Women and Politics in America** - Consideration of politics and power in gender roles, family, class, occupation and research, women and the political system and women and public policy. Same as POLS 441. Complete all Foundations Requirements: Foundation Writing 1, Foundation Writing 2, Foundation Speech Communication, Foundation Reasoning and Argumentation, and Foundation Quantitative Reasoning courses and POLS 111 with minimum grade of D.
  - 445 - 3 **American Masculinity** - Gender history exploring the different manifestations of manhood as it has been constructed by Americans from the seventeenth century to the present. Same as HIST 445 Prerequisite: None
  - 451 - 3 **Gender and Education** - Policies and practices related to sex-role stereotyping, teacher expectations and gender, curricular bias, discrimination, personnel policies, strategies for change. Same as EPFR 451 Prerequisite: None
  - 452 - 3 **Native American Women** - Investigates Native American gender roles, particularly women's roles, from an ethnohistorical perspective. Same as HIST 452. Prerequisite: None
  - 456 - 3 **Seminar on Women Writers** - Fiction, nonfiction, drama, and poetry. Taught in English. For credit in FL, term paper must be written in French. Same as FR 456 Prerequisite: None
  - 478 - 3 **Studies in Women, Language & Literature** - Relationships among society, gender, language and literature: ways women are affected by and depicted in language and literature; literature written by women; feminist criticism. Same as ENG 478. Complete all Foundations Requirements: Foundation Writing 1, Foundation Writing 2, Foundation Speech Communication, Foundation Reasoning and Argumentation, and Foundation Quantitative Reasoning courses.
  - 490 - 3 **Special Problems** - Varying topics, in depth study of gender and women's experience or feminist theory. Content and format to be arranged with instructor. May be repeated for a maximum of 6 hours provided no topic is repeated. Requires consent of department chair or program director. Prerequisite: None
  - 495 - 1 to 4 **Independent Study** - Individual research in women's experience or feminist theory. Content and format to be arranged with instructor. Requires consent of department chair or program director. Prerequisite: None
  - 499 - 3 **Practicum in Women's Studies** - Practical learning experience in women-oriented activities or organizations. Ten hours weekly plus readings or paper. Requires consent of department chair or program director. Prerequisite: None
  - 578 - 3 **Women and Language** - Study of recent research into ways gender affects language: speaking, reading, and writing. Same as ENGL 578. Prerequisite: None