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Courses numbered 095-599 are offered by Murray State University for undergraduate credit; courses numbered 600-999 are for graduate credit. The University reserves the right to make any adjustments in the *Bulletin* which are deemed necessary. Course prefix, number, title, credit hours, and description shall be in effect with the most recent catalog at the time the course was taken. **Note:** Repeated 100T *Transitions* courses (regardless of course prefixes or departmental requirements) will be treated as duplicate courses, with only one course allowed to count toward graduation requirements. The subject-matter areas and course prefixes are shown below and appear in prefix order on the following pages.

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ACCOUNTING
(ACC)

ACC 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic success; and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

ACC 200 Principles of Financial Accounting (3). An introduction to the basic concepts and techniques of financial accounting, including the accounting cycle and the communication of financial information to external users. The course focuses on the nature and measurement of assets, liabilities, equities, dividends, revenues, and expenses. Emphasis is placed on the proper preparation and understanding of the financial statements. Prerequisite: sophomore standing. (ACC majors may be second semester freshmen.)

ACC 201 Principles of Managerial Accounting (3). The application of accounting to business management with emphasis on planning, control of operations, and decision-making, including study of cost behavior; the use of cost data in job order, process and standard cost systems; the application of differential analysis to decision making; the use of overhead allocation methods; the preparation and interpretation of budgets; and the study of pricing methods. The course also introduces topics such as the statement of cash flows and financial statement analysis. Prerequisite: ACC 200. (ACC majors must have a grade of *B* or higher in ACC 200.) Corequisite: ACC 202 (Students enrolled in accounting programs.)

ACC 202 Accounting Applications Laboratory (1). A study of basic accounting applications with emphasis on the use of spreadsheets in analyzing and solving accounting problems and making business decisions. The course focuses on the process of building models for generating and evaluating accounting information. Specific accounting applications include depreciation schedules, revenue and expense distribution analysis, inventory management and profit maximization. Prerequisites: ACC 200 and CSC 199. Corequisite: ACC 201.

ACC 300 Intermediate Accounting I (3). A review of the fundamental processes of accounting; the measurement of financial position and periodic revenues and expenses; and an introduction to selected, more advanced accounting issues. Some of the topics studied include standard setting processes; the accounting cycle; the income statement and balance sheet; cash and receivables; inventories; acquisition and disposition of property, plant and equipment; depreciation and depletion; intangible assets; and liabilities and contingencies. Prerequisites: junior standing; ACC 200, ACC 201 and ACC 202 with a minimum grade of *B* in each.

ACC 301 Intermediate Accounting II (3). Intensive study of the theory and methods of financial accounting with a focus on the impact of business transactions on financial reporting. Some of the course topics include liabilities, stockholders equity, dilutive securities, investments, revenue recognition, income tax allocation, pensions and post-retirement benefits, leases, accounting changes and error analysis, and cash flows. Prerequisites: junior standing; ACC 300 with a minimum grade of *C*.

ACC 302 Federal Income Tax (3). Federal income tax fundamentals under the latest amendments to the Internal Revenue Code; rates, credits; inclusions in and exclusions from gross income; recognition of and basis for gain or loss; capital gains and losses; dividends; deductions; with emphasis on individual income tax returns. Prerequisites: junior standing; ACC 200 and 201 with a minimum grade of *B* in each.

ACC 303 Cost Accounting (3). The study of financial and nonfinancial accounting information for strategic and operational decision making. Topics include traditional and contemporary product/service costing; planning; control; performance measurement; and nonroutine managerial decisions. Prerequisites: junior standing; ACC 200, ACC 201, and ACC 202 with a minimum grade of *B* in each.

ACC 308 Accounting Information Systems (3). Course emphasizes the principles of accounting systems design, development, implementation, and maintenance. Topics include: types of computerized accounting systems and transaction processes, fundamental networking and telecommunications approaches, security and internal control concepts, data modeling and normalization theory, and CAATTs (Computer Assisted Audit Tools and Techniques). Students use a database management system to create database objects for the assignments required in this class. A student may receive credit for one of the following courses: ACC 308, BUS 355 or CIS 307. Prerequisites: junior standing; ACC 200, ACC 201 and ACC 202 with a minimum grade of *B* in each; and CSC 199.

ACC 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

ACC 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

ACC 490 Survey of Accounting (3). Designed for students who have an inadequate background in accounting. Covers the same material covered in ACC 200 and 201 or the equivalent. Not open to students who have credit for ACC 200 and 201 or the equivalent.

ACC 500 Advanced Accounting (3). A comprehensive examination of some of the most complex accounting problems including consolidated financial statements, partnerships, foreign subsidiaries, estates and trusts, and consignment and installment sales. Prerequisite: ACC 301.

ACC 501 Accounting for Governmental and Nonprofit Entities (3). Accounting and reporting principles, standards and procedures applicable to (1) state and local governments, including counties, cities, townships and villages; (2) the federal government; and (3) other not-for-profit institutions such as universities and hospitals. Prerequisite: ACC 300.

ACC 502 Advanced Income Tax (3). Continued study of the Internal Revenue Code and Regulations with emphasis on the advanced aspects of income; deductions, exclusions and credits, especially as they are related to the tax issues of individuals, corporations, and partnerships. Prerequisite: ACC 302.

ACC 503 Cost Management in the Global Economy (3). A decision-based approach to the study of selected cost management topics that enable managers to compete globally. Topics include strategic cost management, activity-based management, the balance scorecard, quality cost management, capital investment decisions, and inventory management. A business simulation requires the application of cost management information in product costing, planning, control, performance evaluation, and decision making. Prerequisite: ACC 303.

ACC 506 Principles of Auditing and Assurance Services (3). An introduction to internal and external auditing and audit-related services. The nature and purposes of audit, attestation, assurance and compilation services are studied. Other topics include: reporting, professional ethics, sampling, auditing for fraud, audit evidence, engagement planning, materiality and risk assessment, internal control, and operational audits. Prerequisites: ACC 301 and 308.

ACC 507 Professional Issues (1). Study of contemporary issues in accounting. Topics include professional certifications, emerging practices, career preparation, and professional development. Restricted to accounting area students. Graded pass/fail. Prerequisite: ACC 301.

ACC 509 Accounting Theory (3). Designed as a critical examination of relevant AICPA literature, especially Accounting Research Bulletins, Accounting Principles Board's Opinions and Statements, and the Financial Accounting Standards Board's Statements. Contemporary developments are examined in the accounting literature and through reports. Prerequisite: ACC 301.

ACC 586 International Experience in Accounting (3). A short-term study abroad program highlighting selected historical and modern contributions to accounting and business from another country and culture. Course will also meet weekly during the semester. Graded pass/fail. Prerequisite: permission of instructor.

ACC 595 Special Problems (3). Research by students in fields of special interests. Includes project research studies and intensive reading programs, accompanied by conferences with professors in fields involved. Prerequisite: permission of instructor.

ACC 600 Advanced Accounting (3). A comprehensive examination of some of the most complex accounting problems including consolidated financial statements, partnerships, foreign subsidiaries, estates and trusts, and consignment and installment sales. Prerequisite: ACC 301.

ACC 601 Accounting for Governmental and Nonprofit Entities (3). Accounting and reporting principles, standards and procedures applicable to (1) state and local governments, including counties, cities, townships and villages; (2) the federal government; and (3) other not-for-profit institutions such as universities and hospitals. Prerequisite: ACC 300.

ACC 602 Advanced Income Tax (3). Continued study of the Internal Revenue Code and Regulations with emphasis on the advanced aspects of income; deductions, exclusions and credits, especially as they are related to the tax issues of individuals, corporations, and partnerships. Prerequisite: ACC 302.

ACC 603 Cost Management in the Global Economy (3). A decision-based approach to the study of selected cost management topics that enable managers to compete globally. Topics include strategic cost management, activity-based management, the balance scorecard, quality cost management, capital investment decisions, and inventory management. A business simulation requires the application of cost management information in product costing, planning, control, performance evaluation, and decision making. Prerequisite: ACC 303.

ACC 604 Accounting for Decision Making (3). An in-depth study of management accounting techniques and methods needed for effective management of business enterprises. The trade-offs management makes in acquiring and using accounting information for decision-making and control are discussed. Specific topics include cost behavior and estimation, short-term decision making, budgeting, performance evaluation, cost allocation, and product costing. Prerequisite: ACC 201 or ACC 490.

ACC 605 Corporate Governance and Accounting Ethics (3). Course involves a dual study of corporate governance and accounting ethics. The course focuses on corporate governance practices in general, with particular emphasis on: (1) the responsibilities of and relationships among a company's board of directors, management and shareholders; (2) corporate and capital structures; and (3) corporate changes. This course also involves a study of the legal and ethical environment of the accounting profession.

ACC 606 Auditing Theory and Practice (3). Emphasizes independent auditing services that CPAs provide. Engagement planning and documentation, internal control, evidence accumulation for major categories of processes and accounts, reporting, statistical sampling, and audits of computer-based systems are the major topics. Prerequisite: ACC 506 or equivalent.

ACC 608 Accounting Information Technologies (3). Course emphasizes advanced coverage of accounting information systems topics, provides real-world simulation of the use of data extraction and analysis technology for assurance services and fraud detection, and requires individual research projects that result in formal papers and presentations. A significant component of this course includes skill development in the use of CAATTs (Computer Assisted Audit Tools and Techniques). Prerequisites: ACC 308 and ACC 506 or equivalent.

ACC 609 Issues in Corporate Financial Reporting (3). An examination of corporate financial reporting issues including the application of accounting techniques and theory under generally accepted accounting principles (GAAP) to financial reports of large companies. In addition to covering traditional financial reporting issues, the course also emphasizes financial reporting issues related to initial public offerings, mergers and acquisitions, environmental contingencies, international accounting standards, and other contemporary topics. Prerequisites: ACC 300 and ACC 301.

ACC 610 International Accounting (3). International accounting examines accounting issues unique to multinational enterprises and international business activity. Specific course topics include International Financial Reporting Standards (IFRS); auditing the global firm; financial reporting outside the United States; international financial disclosure issues such as segmental, social, and environmental; accounting harmonization; ethics; taxation; foreign exchange; and cultural issues. Prerequisite: ACC 301.

ACC 612 Tax Planning and Research (3). The study of tax research methodology. Emphasis is placed on the sources of tax law and their relationship to tax research. Administrative tax procedures and principles of tax planning as related to tax research are explored and evaluated. Prerequisite: ACC 302 or equivalent.

ACC 644 Graduate Cooperative Education (3). May be repeated to a maximum of six credits. Cannot be used to meet M.B.A., M.P.A., or M.S. degree requirements. Graded pass/fail. Prerequisite: permission of chair.

ACC 695 Special Problems (3). Entails research by graduate students in fields of special interests. Includes specialized research projects and intensive reading assignments that are accompanied by conferences with professors in the fields involved. Prerequisites: 12 hours of graduate credit in business and permission of instructor. May be repeated for a maximum of 6 credit hours.

ADULT EDUCATION (ADE)

ADE 199 Workshop in Adult Education (1-3). This course covers workshops conducted for paraprofessionals, persons employed by local school districts to visit home-bound adult students. Accumulated workshop credits are not allowed to exceed six credit hours.

ADMINISTRATION AND SUPERVISION (ADM)

ADM 600 Introduction to Educational Leadership (3). This introductory course examines the theoretical concepts and organizational patterns of governance and management of schools within the social and philosophical structure of our culture. Field research project required. Note: Recommended initial course in school administration.

ADM 601 School Leadership, Culture, and Community (3). This course examines school leader effectiveness from a variety of perspectives, with emphasis on the roles of the school principal in the development of a school culture and as a community leader. Field-experience required. Prerequisite: admission to program.

ADM 602 Socio-Political Dimensions of School Leadership (3). This course provides students with an understanding of the formal and informal socio-political structure within a school-community, as well as strategies for communicating with the public, and collaborating with community stakeholders. A school problem is identified and investigated through collaborative processes. Field experience required. Prerequisite: admission to program.

ADM 611 Instructional Leadership and Coaching (3). This course is a study of the supervisory functions associated with curriculum and program evaluation. In addition, instructional coaching and other strategies for leading program and curricular change to increase achievement will be emphasized. Prerequisites: admission to program.

ADM 612 Development of School Personnel (3). This course focuses candidates on research and best practices as related to formal induction, mentoring, professional development and supervision/evaluation of staff. Skills related to the supervision/evaluation of staff are modeled. Models of instructional leadership and faculty supervision are explored. Approaches to instructional coaching are modeled and evaluation. Prerequisite: admission to program.

ADM 627 School Law and Finance for Teachers (3). A study of the laws and finance pertaining to the teachers as they work with students, administrators, colleagues, and community interest groups.

ADM 630 Methods of Research (3). A study of procedures used to locate sources of information, organize and interpret collected data, and apply results of published research. Various research methods are studied and used.

ADM 631 Organization and Operation of Schools (3). This course will develop competencies and skills in the management of financial and personnel processes and structuring of the school to increase achievement. The principal's

role as related to the site-based council policies and processes are emphasized. Prerequisite: admission to the program.

ADM 632 Principal Internship I (3). This course will develop competencies and skills in the allocation of resources and structuring of the organization to improve student learning within the context of best practices and related Kentucky statute and regulation. Field experience required. Prerequisite: admission to program.

ADM 644 Survey of Research in Effective Schools (3). A survey of research in the school as it pertains to effective teaching, learning, and leadership.

ADM 645 Educational Resources Management (3). A survey of resources available to a public institution to support the mission of the institution and related programs. This is a general overview of public finance, site-based budgeting techniques, linking of resources to programs based on data and accountability. Identification and reallocation of resources will be tied to the learning mission of the unit. Resources other than financial will be included and special emphasis will be given to human resources including personnel and site-based councils.

ADM 650 Clinical Supervision (3). A study of clinical supervision principles and practices for the aspiring supervisor or principal. Topics include the nature and functions of supervision, strategies for use in supervision and the coaching nature of supervision as well as skills in observing and analyzing along with in-service programs and staff development. Field research project required.

ADM 655 Curriculum and Program Development (3). A study of the supervisory functions dealing with curricular and program evaluation and analysis and techniques for bringing about program and curricular change and improvement within the local school system. Field research project required.

ADM 656 School Improvement Processes for Teachers (3). Course provides educational leaders with an overview of the processes and tools for school improvement, including the standards and indicators of school improvement, professional learning communities, school improvement planning, standards for professional development, and the role of school-based decision-making in school improvement.

ADM 657 Educational Policy and Ethics (3). Course explores policy development at the local, state, and federal levels as related to school improvement, social justice and the ethical dimensions of leadership. Contemporary issues of educational policy and ethics at the local, state, and national levels will be highlighted in the course.

ADM 663 School Law (3). A study of the legal aspects of education. Critical legal content from constitutional law, court decisions, state statutes, state administrative regulations, attorney general opinions, and local school district policies will be covered. Note: Course may be taken as an elective by a person not pursuing an administrative certificate.

ADM 664 School Principal (3). A study of modern administrative theories, processes and techniques applicable to the school, grades P-12. The emphasis is on the principal's role as the instructional leader engaged in needs assessment, collection and use of data, formulation of educational goals, design and implementation of improvement strategies. Field research project required.

ADM 667 Pupil Personnel Accounting (3). The specific procedures in pupil accounting which are the responsibility of the director of pupil personnel. A study of systematized records management including some attention to machine data processing. Field research project required.

ADM 668 Practicum/Seminar in Educational Leadership (3). Managed field practicum experience where the student works with a building principal to develop depth of experience in areas of responsibility such as scheduling , professional development, school improvement planning, etc. At intervals, students will be convened to share and gain a broader perspective on their experiences. This course is recommended to be taken last, but may be in the last nine hours. Repeatable to six hours of credit.

ADM 669 Seminar in School Administration (3). For advanced graduate students in school administration. Deals with current problems and issues and stresses independent investigation.

ADM 670 Topics in Educational Technology (3). Critical aspects of the management and administration of educational technology will be addressed. Topics covered may include administration and instruction, school and classroom management, networking, distance learning, statistical reporting, pupil scheduling, information retrieval systems, and technology policy issues.

ADM 671 Principal Internship II (3). This course prepares school leaders to engage stakeholders in the strategic dialogue regarding the vision and mission of the organization, and the allocation of resources and decision-making authority accordingly. Field experience required. Prerequisite: Admission to program.

ADM 672 Legal and Ethical Issues in Schools (3). This course addresses critical aspects of the legal system as related to school issues. Ethical dimensions of the role are explored. Prerequisite: Admission to program.

ADM 674 Directed Study in School Administration (1-3). Designed for advanced graduate students who want to do in-depth research on special problems. Requires advanced study and analysis of literature and preparation of substantial research documents. May be repeated for up to six hours of credit.

ADM 675 Introduction to Alternative Education Settings (3). Course serves as an overview to effective teaching and administrative practice in the alternative education settings. Students enrolled in the course must maintain a portfolio of course assignments and documentation of field experiences for evaluation for university credit. Field hours are required.

ADM 677 Crisis Management in Educational Settings (3). The content of this course provides educators with the skills and information to analyze safety data, plan for both school safety interventions and procedures and to manage crises in an educational setting. Field hours are required.

ADM 678 School Safety Assessment (3). Course develops competencies in the assessment of threats to student and faculty safety. Students will utilize research-based resources to assess individual threats due to violence , as well as environmental scans of threats due to poorly planned or maintained facilities. Field experience required.

ADM 679 Current Topics in School Safety (3). Course develops depth of understanding of safety-related issues that impact safety in schools. This is the capstone course for the School Safety Endorsement. Field experience required. Prerequisite: permission of instructor.

ADM 681 Instructional Leadership for Diverse Learners (3). This course addresses issues surrounding the needs of students and families from diverse backgrounds and of diverse abilities. Cultural proficient leadership practices, an understanding developmentally appropriate instructional practices, and school organization as related to students with disabilities and gifted/talented students is addressed. Prerequisite: admission to program.

ADM 682 Principal Internship III (3). This practicum is taken concurrent with ADM 681 and provides students with opportunities to implement and evaluate interventions for diverse learners, as well as support for the completion of the capstone project. Field experience required. Prerequisite: admission to program**.**

ADM 690 Roles & Functions of the Central Office (3). An in-depth study of the coordination and oversight of the following central office functions: state/federal grant resources, state/federal assessment programs, district technology, and state/ federal personnel reporting. Transportation, food service, and facilities maintenance will be addressed more generally. The roles of the instructional supervisor, Director of Pupil Personnel, District Assessment Coordinator, Director of Special Education and other central office support positions will be emphasized. Prerequisite: admission to program.

ADM 700 World Class Teaching and Learning (3). The purpose of this course is to develop an understanding of world-class expectations for teaching and learning and to develop the skills and abilities of school leaders to lead efforts to respond to these expectations. This course is designed to support participants in the Executive Development Program for School Leaders in association with the National Institute for School Leadership. Graded pass/fail. Prerequisite: permission of instructor.

ADM 720 Advanced School Personnel Evaluation (3). A study and application of appropriate techniques used to evaluate the act of teaching. All ethical and legal aspects along with a sustained articulation methods, personnel records, and necessary personal skills will be covered. Study will exceed state and local evaluation systems and requirements.

ADM 723 Advanced School Program Evaluation (3). A study and application of appropriate techniques used to evaluate methods, programs, and strategies used in public elementary and secondary education. All legal and ethical aspects along with an accurate assessment of the results of school programs will be covered. Study will include the relationship of goals, objectives, and activities related to the learning outcomes. Extensive data will be collected, organized, analyzed and presented as a measurement of program effectiveness.

ADM 725 Advanced Methods of Quantitative Research in Education (3). A study of quantitative research methods and statistics used in educational studies. Preparation for quantitative research and conducting an abbreviated inquiry, collecting and analyzing data as well as improving professional writing skills are the focus of this class. Prerequisite: ADM 630 or comparable research course.

ADM 730 Advanced Educational Research (3). The knowledge and skill necessary to conduct educational research at an advanced level. Preparation to conduct research at the doctoral level is emphasized. Prerequisite: ADM 630 or equivalent.

ADM 735 Institutional Research, Assessment and Accreditation (3). Course provides an overview of best practices of institutional research. Additionally, students have the opportunity to develop strategies to investigate relevant trends or problems within an institution. Field experience required. Prerequisites: ADM 630.

ADM 739 Roles and Responsibilities of the School Superintendent (3). The role of the school district superintendent is analyzed with reference to job responsibilities of the position, and knowledge, skill, and dispositions necessary to serve successfully in the position. Field experience required.

ADM 740 Instructional Improvement and Mentoring (1-3). The purpose of this course is to develop mentoring strategies appropriate to assist new educators in the transition to teaching and to improve their instructional practice. This course is designed to support teachers and administrators engaged in mentoring, including, but not limited to, student teacher supervision, the Kentucky Principal Internship Program, and the Kentucky Teacher Internship Program. Graded pass/fail. Repeatable up to six hours. Prerequisite: permission of instructor. (Same as TLE 740.)

ADM 745 Trends and Innovations in P-20 Education (3). The purpose of this course is to investigate contemporary issues impacting P-20 education. Current trends and innovations are critical themes for educational leaders to explore. Special topics explored in this course may include globalization, advances in technology and learning, college and career readiness initiatives, workforce development programs and best practices of P-20 initiatives.

ADM 749 School District Management (3). Course focuses on school system operations including financial management and policy, administration of auxiliary services, human resources planning and management, federal and state programs, facilities planning and management, school safety and governance support. Field experience required.

ADM 750 Philanthropy and Community Engagement: Institutional Advancement in Education (3). The purpose of this course is to refine the knowledge, skills, and dispositions needed to plan and execute innovative approaches to advance the educational institution's mission by increasing private and public financial support, promoting awareness of the institution to key publics, and involving constituents in the life of the institution. In this era of declining publicly appropriated funds for education at all levels, the role of outside private funds from alumni, friends, corporations, foundations, and other key community stakeholders is growing and increasingly important. Institutional advancement focuses on attracting and generating private support through the identification, research, cultivation, asking, closing, and stewardship of donors and private gifts.

ADM 751 Sustaining Transformation through Capacity and Commitment (3). The purpose of this course is to develop leadership strategies for transforming the school organization to support world-class teaching and learning. This course is designed to support participants in the Executive Development Program for School Leaders in association with the National Institute for School Leadership. Graded pass/fail. Prerequisite: permission of instructor.

ADM 755 The Role of Community Partnerships and Outreach in Education (3). The course is designed to equip innovative educational leaders with key strategies for developing partnerships among private and public sector organizations for the purposes of assessing and improving the educational climate and the community as a whole. Students explore strategies that mobilize and leverage community support services and incorporate diverse community perspectives. Topics include collaborative leadership, coalition development, developing a constituency/partnership, and the role of an educational leader as an advocate.

ADM 759 Instructional Planning in Education (3). Course examines the planning processes used by leaders to direct educational change and instructional improvement. Field experience required.

ADM 760 Executive Leadership (3). Course offers an in-depth examination of factors that contribute to innovative executive leadership practice in a wide variety of educational and organizational settings. Topics in this course include authentic leadership presence, sustainability and leadership, strategic leadership, resiliency strategies and factors of life/work integration. In addition, attention will be placed on common challenges of executive-level leadership.

ADM 779 The Superintendency Capstone (1-3). The roles and responsibilities of the school district superintendent are explored with emphasis on change and instructional improvement. This is the capstone course. Field experience required.

ADM 798 Specialty Study (3). This course is designed to enable the student, with the supervision of his/her graduate faculty committee, to select a problem directly related to the student's area of concentration, survey the research literature, collect and analyze research data and prepare the research paper.

ADM 799 Specialty Study (3). Continuation of ADM 798.

ADM 800 Seminar in Individual Leadership Development (3). Course is designed as a professional leadership development seminar that operationalizes key elements of the doctoral program including program philosophy, signature pedagogy, and expectations of doctoral students. Additionally, the course focuses on individual leadership development and professional growth strategies for educational leaders.

ADM 810 Leadership and Ethics in a Diverse Society (3). The moral and ethical dimensions of leadership and diversity are the focus of this course. This course is designed to prepare educational leaders to meet the challenges of diversity and rapid societal change within P-20 organizations and learning communities. Techniques, tools and strategies that support ethical leadership and decision-making in the context of P-20 organizations will be examined.

ADM 820 Foundations of P-20 Education (3). Course examines the P-20 reform movement from a historical, philosophical, social, and economic perspective with emphasis on the practical manifestations in the current policy environment.

ADM 830 Development of P-20 Learners (3). Course examines the characteristics and needs of today's learners from early childhood to adulthood and the congruence of the current instructional systems and strategies in meeting learners' needs. The similarity of current and emerging practices at all levels of P-20 education will be examined from a developmental perspective.

ADM 900 Clinical Practice I: P-20 Leadership (3). This clinical experience offers intensive, field-based experience for P-20 and community leaders. Students become immersed in the field of leadership practice where they have the opportunity to study effective leadership practices first-hand, be mentored by exceptional practitioners, and practice field-based problem solving. Students develop leadership abilities, administrative competencies and executive-level management skills. Field experience required. Alternatively, prior field experience may be considered on a case-by-case basis, wherein documentation (e.g. a professional portfolio) may be assessed for course credit.

ADM 910 Clinical Practice II: P-20 Learner (3). Course applies teaching and learning theories to practice through the design and alignment of learning outcomes, assessments, and teaching methods at the college level. The clinical instructional experience provides P-20 educational and community leaders an opportunity to explore issues related to P-20 instruction. Field experience required. Alternatively, prior field experience may be considered on a case-by-case basis, wherein documentation (e.g. a professional portfolio) may be assessed for course credit. Prerequisite: permission of instructor.

ADM 920 Dissertation Seminar I (3). Course is designed to familiarize students with the academic expectations and requirements for the doctoral dissertation, improve inquiry skills, and make significant progress toward successful completion of the dissertation. This course may be repeated for a total of six hours. Graded pass/fail. Prerequisite: candidacy status in the Ed.D. Program.

ADM 930 Dissertation Seminar II (3). The emphasis of this course is to develop and implement the methodology section of the dissertation. Students will conduct the study as outlined in the method and analyze collected data. This course may be repeated for a total of nine hours. Graded pass/fail. Prerequisite: ADM 920.

ADM 940 Dissertation Seminar III (1-3). The emphasis of this course is to develop the discussion and conclusion section of the dissertation. Students will complete a written manuscript and engage in an oral defense of the completed dissertation. This course may be repeated for a total of nine (9) hours. Graded pass/fail. Prerequisite: ADM 930.

AGRICULTURAL EDUCATION (AED)

AED 104 Ag Education, Leadership and Life Knowledge (3). An elective course for high school students interested in pursuing a career in agriculture education which will serve as a bridge class between high school and collegiate level teacher education courses. The course will include an exploration of the professional qualities and expectations of the teacher/educator. Roles, responsibilities, and challenges in the field of education, leadership, and Life Knowledge will be examined. Course will include a minimum of four full classroom observations for field experience. Prerequisite: permission of instructor.

AED 250 Special Problems in Agricultural Education (1). Individual study and projects in agricultural education requiring up to 25 hours of clinical and field experience. Graded pass/fail. Repeatable. Prerequisite: permission of instructor.

AED 380 Agricultural Education, Extension and Leadership (3). Essential aspects and fundamentals of career preparation, entry, adjustment and advancement in agricultural education, extension, and youth leadership careers. Prerequisite: Six prior credit hours in agriculture or permission of instructor.

AED 421 Student Teaching in Agricultural Education (8). The student teaches in a center selected by the university agricultural education staff and approved by the Kentucky Department of Education. Graded pass/fail. (Spring)

AED 501 Methods in Teaching Agricultural Education (3-6). Philosophy and objectives of teaching agricultural education in a comprehensive program. Course concepts include preparing and delivering lesson plans that involve problem-solving method, lecturing, and laboratory based modules. Additional methods include instruction in supervising occupational experience programs and coordinating FFA programs. Learning theory, multicultural education and education of the exceptional child are also included. Field and clinical experiences are also employed. May be repeated for a maximum of six hours credit. Prerequisite: AED 380.

AED 582 Supervision in Agricultural Education (3). Application of principles and techniques of supervising individuals and groups in the field of agricultural education. (With sufficient demand)

AED 593 Practicum in Agricultural Education, Extension, and Public Service Leadership (3). Comprehensive course including topics of instructional and operational methods for the discipline, extension field tours and mentoring experiences, supervised visits in an educational or public service setting or agency, and completion of practicum/professional clinical hours. Prerequisite: AED 380 or six hours of discipline specific courses within agriculture.

AED 601 Methods in Teaching Agricultural Education (3-6). Philosophy and objectives of teaching agricultural education in a comprehensive program. Course concepts include preparing and delivering lesson plans that involve problem-solving method, lecturing, and laboratory based modules. Additional methods include instruction in supervising occupational experience programs and coordinating FFA programs. Learning theory, multicultural education and education of the exceptional child are also included. Field and clinical experiences are also employed. May be repeated for a maximum of six hours credit. Prerequisite: AED 380.

AED 680 Research in Agricultural Education (3). Advanced individual problems of special interest in the field of agricultural education. May be repeated once for a maximum of six hours. (Fall, Spring or Summer)

AED 681 Supervising Student Teachers in Agricultural Education (3). Competencies needed by the local supervising teacher to develop effective techniques of working with student teachers in agricultural education. Orientation, communication, supervising and evaluating student teachers. (With sufficient demand.)

AED 682 Instructional Design for Agricultural Education (3). Developing and using four-year course of study for high school students in agricultural education. Includes gathering and interpreting local data as a basis for course building. (With sufficient demand.)

AED 683 Instructional Material in Agricultural Education (3). Selecting, procuring, developing and using instructional materials in the field of agricultural education. (With sufficient demand.)

AED 684 Beginning Teacher Workshop (1-2). Problems of beginning teachers of agriculture relevant to planning, developing, implementing and evaluating local instructional programs. May be repeated for a total of three credits. (Fall)

AED 685 Teaching Adults in Agriculture (3). Teaching and learning in formal and non-formal instructional programs for adult learners. Emphasis will be placed on teaching and training methods appropriate for use in agribusiness and industry, the Agricultural Extension System, and other non-youth education programs.

AED 686 Administration and Supervision in Agricultural Education (3). Principles of administration and supervision. Organizational structure of the various levels, including the state plan. Primarily for agriculture teachers, supervisors, counselors and school administrators. (With sufficient demand.)

AED 687 Teaching Agricultural Mechanics (3). Role of agricultural mechanics in the vocational agriculture curriculum. Course building, selecting, procuring, developing and using instructional aids in teaching agricultural mechanics with emphasis on demonstrating use of such materials. Building and equipment needs. (With sufficient demand.)

AED 688 Modern Problems in Agricultural Education (3). Classwork, not individual problem work, on modern problems in the field of agricultural education common to the group of students enrolled. May be repeated for a maximum of six credits. (With sufficient demand.)

AED 693 Practicum in Agricultural Education, Extension and Public Service Leadership (1-3). Individual problems in areas of special interest in the field of agricultural education. May be repeated up to six hours. (Fall, Spring or Summer)

AED 735 Qualitative Inquiry in Agricultural Education (3). An examination into the qualitative research methods genre as related to agricultural education. Students will develop skills and abilities related to case study, phenomenology, and other methods as a means to crically analyze and apply qualitative scholarly publications and methods. Prerequisite: must be admitted to the MS in Agriculture/Agricultural Education Concentration.

AED 791 Instructing Out-of-School Groups (3). Philosophy of vocational education for out-of-school youth and adults in agricultural occupations. Application of principles and techniques for organizing, conducting and evaluating instructional programs. Field-clinical experiences. (Spring)

AED 900 Trends and Advocacy in Agricultural Leadership (3). As a means to support sustainability in agricultural education, this course will engage students in the local, state, and national governmental structures, networking, legislative guidelines, and processing for testifying. Further focus will be placed on communicating the outcomes of an agricultural education program in an effective manner to community, administrative, and parental stakeholders. Prerequisite: admission to the agricultural education doctoral program.

AED 910 Agricultural Education Stewardship in Practice (3). An examination of the processes required to understand community needs, garnering a shared vision, program planning, and creating a preferred future for agricultural education on the local and state levels. Theories of stewardship and sustainability will be explored and placed into practice.

AED 920 Seminar in Agricultural Education Leadership (3). Students enrolled in this course will analyze and make application of concepts related to leadership theory in agricultural environment. This course will focus on key characteristics and elements of leadership.

AED 930 Training and Presentation Development Strategies for Agricultural Audiences (3). Students will develop skills in organizing and offering agricultural employee training and professional development for others. Emphasis will be placed on training, teaching, and demonstrating technical agricultural content.

AED 940 Agricultural Education Supervision in Practice (3). This course will provide students experiences in supervising preservice and new professionals as an onsite supervising teacher using practices grounded in the cognitive coaching model of theory, rehearsal, modeling, and feedback.

AGRICULTURE (AGR)

AGR 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Course is required of all entering freshmen. Graded pass/fail. (Fall)

AGR 100 Animal Science (3). This is a basic course in animal science including the importance and place of livestock in agriculture; types, market classes and grades of beef, sheep, poultry and swine; origin and characteristics of breeds; and the judging of beef, sheep and swine.

AGR 101 Basic Stock Seat Horsemanship (3). Designed for students with previous experience in the handling and riding of horses. Includes instruction in grooming, saddling, bridling and mounting, and the development of basic riding skills at the walk, trot and canter. Prerequisite: permission of instructor.

AGR 102 Beginning Equitation I (0). Designed for beginner riders in their first year and for riders that are considered safe to ride an unfamiliar horse in a group at a canter. Heavy emphasis is placed on developing a competent rider with proper hunt seat equitation skills. Weekend participation in Intercollegiate Horse Show Association horse shows is mandatory. Participation in weekend riding clinics is required. Graded pass/fail. May be repeated as many times as taken. Prerequisite: permission of instructor.

AGR 103 Intermediate Hunt Seat Equitation (1). Designed for intermediate riders in their first or second year of riding and for riders that are considered safe to ride an unfamiliar horse in a group at a canter. A higher degree of proficiency at the walk, sitting trot, posting trot, two point, and canter is required more than in AGR 102. Emphasis is placed on learning suppling exercises for horse and rider in addition to developing a competent rider with proper hunt seat equitation skills. Weekend participation in Intercollegiate Horse Show Association horse shows is mandatory. Participation in weekend riding clinics is required. May be repeated for a maximum of three hours. Prerequisites: permission of instructor.

AGR 104 Advanced Hunt Seat Equitation (1). Designed for advanced riders that are considered safe to ride an unfamiliar horse in a group at a canter and gallop. A higher degree of proficiency at the walk, sitting trot, posting trot, two point, center and gallop is required more than in AGR 103. Emphasis is placed on the correct application of riders natural aids, suppling of the horse, collection and riding on the bit. To develop competent riders with professional equitation skills. Weekend participation in Intercollegiate Horse Show Association horse shows is mandatory. Participation in weekend riding clinics is required. Prerequisites: AGR 103 and permission of instructor. May be repeated for a maximum of three hours.

AGR 105 Introduction to Rodeo (2). An introduction to rodeo designed to develop a better understanding of the events and rules of the sport through lectures, demonstrations, rodeo films, and hands-on practice. The course will include instructions in equipment care and preparation and mental and physical training using weights, calisthenics, etc. May be repeated once for additional credit.

AGR 106 Beginning Equitation II (0). Designed for beginner riders in their first or second year of riding and for riders that are considered safe to ride an unfamiliar horse in a group at a lope. Emphasis is placed on developing a competent well-rounded stock seat rider with proper stock seat equitation skills. Weekend participation in Intercollegiate Horse Show Association horse shows is mandatory. Participation in weekend riding clinics is required. Graded pass/fail. May be repeated as many times as taken. Prerequisite: permission of instructor.

AGR 107 Intermediate Stock Seat Equitation (1). Designed for the intermediate rider in their first or second year of riding and for riders that are considered safe to ride an unfamiliar horse in a group at a canter. A higher degree of proficiency at the walk, jog or lope is required more than in AGR 106. Emphasis is placed on learning suppling exercises for horse and rider in addition to developing a competent rider with proper stock seat equitation skills. Weekend participation in Intercollegiate Horse Show Association horse shows is mandatory. Participation in weekend riding clinics is required. Prerequisite: permission of instructor. May be repeated for a maximum of three hours.

AGR 108 Advanced Stock Seat Equitation (1). Designed for the advanced rider that is considered safe to ride an unfamiliar horse in a group at a lope. A higher degree of proficiency at the walk, jog, and lope is required more than in AGR 107. Emphasis is placed on the correct application of the riders natural aids, suppling of the horse, collection, and riding on the bit. In addition to developing a competent stock seat equitation rider. Weekend participation in Intercollegiate Horse Show Association horse shows is mandatory. Participation in weekend riding clinics is required. Prerequisites: AGR 107 and permission of instructor. May be repeated for a maximum of three hours.

AGR 109 Beginning Horsemanship Experience (3). Designed for students with no previous riding or horse-handling experience. Prepares student for recreational horsemanship activities and for potential enrollment in Basic Horsemanship. Includes instruction in catching, haltering, grooming, saddling, and riding at the walk and trot.

AGR 110 Livestock Event Production and Venue Management (3). An introductory class designed to help individuals develop an understanding of the procedures and requirements involved with the production of a livestock related event, both sporting and show. The course will include instruction in contracts, budgets, advertising, liability requirements, arena setup, labor requirements, equipment needs, event production, etc.

AGR 111 Basic Forward Seat Equitation (3). Designed for students with previous experience in the handling and riding of horses. Includes instruction in grooming, saddling, bridling, mounting, and the development of basic riding skills at the walk, trot, and canter. Must have previous horse handling and riding experience. Prerequisite: permission of instructor.

AGR 130 Agricultural Economics (3). A study of fundamental principles of economics as applied to agriculture. Attention is given to resource use, economic growth, production fundamentals, economic institutions and agriculture in relation to national and world economics.

AGR 133 Field Applications for Agriculture (2). Course will teach students methods of solving many application problems that will be encountered in the field of agriculture using applied mathematical and logic skills. The emphasis will be to use practical mathematical skills already acquired from secondary education to address agricultural situations involving computations

that are necessary for upper level courses in agriculture. Some knowledge of agricultural situations may be required. Possible field trips to the university farms during class time. Prerequisite: Declared area or major in agriculture or permission of instructor.

AGR 160 Horticultural Science (3). A study of the practical principles and practices used in horticulture.

AGR 170 Introduction to Agricultural Systems Technology (3). An introduction to agricultural systems including: power and machinery, electricity, precision agriculture, soil and water engineering, metallurgy and fabrication, and safety. Emphasis is placed on understanding the technology involved in operating, maintaining, and managing these systems.

AGR 180 Skill Development in Horticulture (3). Course will document that students can demonstrate the competencies and skill necessary for occupations in the landscaping industry, turf and lawn management, nursery management, and/or vegetable and flower production areas. Credit will be by challenge exam only according to university policy and will be granted upon successful completion of the state horticulture skills standards test and completion of a career major in horticulture at the secondary school level.

AGR 181 Skill Development in Agriculture Production and Agribusiness (3). Course will document that students can demonstrate the competencies and skill necessary for occupations in production agriculture and agribusiness. Emphasis will be placed on the development of scientific knowledge and skills pertaining to management of agribusinesses, farms, and cooperatives, and/or of the land and its effect on food and fiber production. Credit will be by challenge examination only according to university policy and will be granted upon successful completion of the State Agriculture Production Skills standards test and completion of a career major in horticulture, and/or successful completion of the State Agriculture Production Skills standards test and completion of a Career Pathway in that area at the secondary school level. May be repeated for a maximum of six credit hours.

AGR 182 Introduction to Veterinary Science (3). Course examines basic principles of veterinary science, including breeds, biology, veterinary tools parasitology, office management, animal control, and basic clinical exam techniques for large and small animals. The purpose of this course is to provide upper classmen agricultural education students, at the high school level, with an introduction to the basic principles of veterinary science. This requires students to understand the biology of both large and small breeds of animals, as well as specifics related to the area of veterinary medicine. This class will build a foundation for those high school students interested in the area of veterinary science while serving as a dual credit course to gain elective credit through Murray State University.

AGR 190 Basic Spanish and Culture for Agriculture (3). Introductory Spanish course with an emphasis on agricultural terminology designed for basic communication in Spanish between agricultural employers and their Spanish-speaking employees. It includes a study of Hispanic culture and the contribution of migrant workers to the U.S. agricultural industry. Students may not receive credit for both this course and SPA 105 or 106. (Same as SPA 106.)

AGR 199 Contemporary Issues in Agriculture (3). A course designed to increase the understanding, awareness, and critical analysis of contemporary agricultural issues and their effect upon the social, political, economic and cultural aspects of society. Topics will include environmental, bio-technology, animal, crop, career, economy and trade, agricultural policy, food quality/safety and international agriculture issues.

AGR 200 International Agriculture Experience (3). A course designed to enhance students' understanding of international agriculture and how it relates to the overall impact on world food processing and production through travel/study abroad. An emphasis is placed on experiences which have the potential to impact and add value to American/Kentucky agriculture, as well as those which hold key relationships to U.S. based agricultural trade and food development. Prerequisites: AGR 130 and at least one subject specific agriculture technical course.

AGR 201 Intermediate Horsemanship (3). Designed for students with previous experience in the handling of horses. Deals with instruction in hunt seat and stock seat with emphasis placed on bareback equitation skills. Prerequisites: AGR 101 or 111, and permission of instructor.

AGR 223 Introduction to Artificial Insemination for Cattle (3). The primary objective of this course is to instruct students in artificial insemination in cattle. Topics will include reproductive system, herd health and nutrition, semen handling, and estrus detection and synchronization.

AGR 240 Crop Science (3). A study of the fundamental principles underlying the production of agricultural crops. Lecture, two hours; laboratory, two hours per week.

AGR 247 Tobacco Production (3). An agriculture course designed for students who desire to expand their knowledge of tobacco production. Students will be introduced to the practical aspects of tobacco production in the Kentucky tobacco types.

AGR 261 General Pomology (3). General principles and practices involved in handling home and commercial planting of the major fruit crops.

AGR 262 Vegetable Crop Production (3). A study of the fundamental principles underlying commercial and home garden production of vegetables. (Spring, odd years)

AGR 263 Woody Plant Materials I (2). The identification and use of woody deciduous plant materials in the landscape.

AGR 269 Introduction to Forestry (3). A general introduction to the many aspects of forestry including dendrology, silvics, silviculture, and wood utilization. Some emphasis will be placed on the management of forest lands for recreation and wildlife purposes.

AGR 300 Principles of Animal Nutrition (3). A study of digestion, absorption and utilization of nutrients, characteristics of feedstuffs, nutritional disorders and nutrient requirements of animals. Prerequisite: AGR 100.

AGR 301 Livestock Judging and Evaluation (3). A study of types of purebred and commercial beef cattle, sheep and swine, both market and breeding classes. Special emphasis is placed on writing and giving oral reports. Prerequisite: AGR 100. (Fall)

AGR 302 Horse Science (3). Involves a study of the role of the light horse and the development of an equine vocabulary. Topics covered include the basic nutritional, housing and health requirements of the light horse. (Fall)

AGR 303 Advanced Horse Science (3). Deals with various topics of interest to the horseman including psychology, evaluation, anatomy and health care. Prerequisite: AGR 302. (Spring)

AGR 304 Advanced Stock Seat (3). This course is concerned with basic training techniques and the development of equitation skills using the western seat. Prerequisites: AGR 201 and permission of instructor. (Fall)

AGR 306 Advanced Forward Seat (3). This course presents equitation skills and techniques utilizing the forward seat. Included in the course are hunt seat, show seat, and other methods of English style equitation. Principles of schooling the jumping horses are emphasized. Prerequisites: AGR 201 and permission of instructor. (Spring)

AGR 308 Applied Equine Management (3). Practical application of management principles involving health, nutrition, grooming, and training of horses. Prerequisite: permission of instructor.

AGR 309 Equine Facility Management (3). A course designed for the equine student to study the economics and business related aspects of facility management. Students will be taught the value of short and long term planning and the decision making process that is involved in the operation of a commercial equine facility. Some weekend attendance will be required.

AGR 310 Applications in Animal Technology (3). The study of animal technology involving management, nutrition and health of small and large animal species. Lecture, two hours; laboratory, two hours. Pre- or corequisite: AGR 100.

AGR 311 Beef Science (3). A study of the history and importance of the beef cattle industry; phases of beef production, selection, breeding, feeding, and management of beef cattle. Lecture, two hours; laboratory, two hours. Prerequisites: AGR 100. (Spring)

AGR 312 Dairy Science (3). A study of dairy breeds, calf raising, herd replacements, milk production, nutrition and management of dairy herds. Prerequisite: AGR 100 and 300. (Spring)

AGR 313 Livestock Production Management Systems (3). Study of production management, nutrition, and breeding of farm animals. Will include on-the-farm training with livestock. Prerequisite: AGR 100.

AGR 314 Small Ruminant Science (3). A study of the history and importance of the goat and sheep industries, with emphasis on meat goat production; phases of production, selection, breeding, feeding, and management of goats and sheep will be covered. Prerequisite: AGR 100.

AGR 315 Equine Exercise Physiology (3). The study of conditioning of the equine athlete using the basic principles of exercise physiology, energetics, kinetics, and sports medicine. Emphasis on equine anatomical and physiological adaptions to exercise, assessment of physical fitness and conditioning in horses, nutrition and feeding requirements of working animals, moral and ethical considerations related to equine performance, and evaluation of common ailments and current therapies used in equine sports medicine. Prerequisite: AGR 303 and/or permission of instructor.

AGR 316 Dairy Cattle Selection and Evaluation (3). Origin, characteristics and developments of major breeds of dairy cattle. Improvement programs. Apply the principles involved in herd improvement to the selection of breeding animals for dairy herds. Fundamental aspects of evaluation of dairy cattle. Comparative terminology, decision-making and presentation of oral reasons. Lecture, two hours; laboratory, two hours. Prerequisite: AGR 100. (Fall)

AGR 317 Equine Health Care and Management (3). An in-depth study of the health and soundness of a horse and its relationship to growth, performance, and reproduction with emphasis on development of a horse health program. Emphasis on evaluation of health status for various ages and classes of horses, assessment of treatment options for common equine ailments, development of proficiency in practical techniques related to horse health care, and application of critical thinking to ethical issues related to equine care. Prerequisite: AGR 303 and/or instructor permission.

AGR 318 Equine Forage Management (3). A study of forage systems designed specifically for equine.

AGR 319 Equine Nutrition and Feeding (3). Course focuses on the study of anatomy and physiology of the gastro-intestinal system and its role in digestion and utilization of feeds, with particular emphasis on the horse. Students will develop rations to feed various classes of horses and address the relationship of nutrition and health. Prerequisite: AGR 303 or permission of instructor.

AGR 320 Livestock Behavioral Analysis (3). A study of species specific to livestock handling techniques based upon proven techniques, methods and livestock behavioral patterns. This class will include on the farm training with livestock. Prerequisite: AGR 100.

AGR 321 Poultry Science (3). An introductory study of the various phases of poultry production, diagnosis and treatment of diseases, nutrition, processing and management practices for commercial poultry operations. Prerequisite: AGR 100. (Spring)

AGR 322 Introductory Veterinary Laboratory I (4). An introductory course to the veterinary laboratory for the veterinary technologist. This course is designed to introduce the veterinary technology student to basic concepts, theories, and techniques of veterinary clinical pathology laboratory. Laboratory safety, microscopy, specimen collection, diagnostic analysis, laboratory instrumentation and techniques are taught for development of proficient laboratory skills. Three one-hour lectures; one two-hour laboratory. Prerequisite: AGR 310 with a minimum grade of *C*.

AGR 324 Veterinary Diagnostic Imaging (3). Students will be exposed to learning appropriate diagnostic imaging skills needed in the field of veterinary technology. Students will learn handling and restraint techniques of small and large animals, as it relates to diagnostic imaging in areas of radiology, ultrasonography, and endoscopy. Students will also learn utilization of radiographic equipment, safety measures, equipment maintenance, along with proper positioning and exposures with small and large animals. Each week there will be two 1-hour lectures and one 2-hour lab. Prerequisite: AGR 310 and 322 with a minimum grade of *C*.

AGR 325 Small Animal Science (3). A study of the history and importance of the small and exotic animal industry; breeds, selection and management are topics which will be covered; Prerequisite: AGR 310 and a minimum grade of *C*.

AGR 326 Swine Science (3). Basic principles and their application in pork production — breeding, selection, nutrition, housing, equipment and economic management. Lecture, two hours; laboratory, two hours. Prerequisite: AGR 100. (Fall)

AGR 328 Statistics for Food and Agriculture (3). A course designed to enhance the quantitative skills of agriculture students. Techniques include descriptive statistics, probability, analysis of variance, and regression analysis. Discussion, examination and use of these techniques will cover and be limited to agriculturally related topics.

AGR 329 Introductory Veterinary Laboratory II (3). A course designed to advance the knowledge of the veterinary technology student to laboratory diagnostic techniques and procedures. This course will provide an emphasis in common procedures conducted in both a veterinary practice, as well as in a veterinary diagnostic laboratory. This course will provide the student with both lecture and hands-on exposure to areas of veterinary microbiology, parasitology, and cytology. Prerequisites: AGR 310 with a minimum grade of *C*.

AGR 330 Principles of Agribusiness Management (3). The organization of agribusiness, its development in local communities, and the roles played by farmers, farm suppliers, processors, wholesalers, retailers, consumers and government. Analysis of the job opportunities in agribusiness. Prerequisite: AGR 130 or ECO 231. (Spring)

AGR 331 Small Animal Diseases (3). A study of the more common and important diseases of dogs and cats. The clinical signs, life cycles of pathogenic organisms, progression of symptoms and control of the diseases will be discussed. Prerequisite: AGR 310 with a minimum grade of *C*.

AGR 332 Veterinary Nursing (3). Course designed to teach veterinary technology students the essentials of clinical animal nursing as it relates to the appropriate theories, practices, procedures, and skill development utilized in veterinary medicine. Two one-hour lectures; one two-hour laboratory. Throughout the semester, mandatory outside skill building assignments/activities will also be required, resulting in additional time required outside of class/laboratory. Prerequisites: AGR 310 and 322 with a minimum grade of *C*.

AGR 333 Agribusiness Records and Analysis (3). Fundamental principles necessary to keep farm and agribusiness firm accounts and to analyze these accounts for profitability. Budgeting, amortization, depreciation and the application of microcomputer technology to the management and financial control of the agribusiness firm. (Fall)

AGR 334 Entrepreneurship in Agribusiness (3). A study of fundamental principles of entrepreneurship as applied to agribusinesses. Attention is given to entrepreneurial creativity, business plans, marketing, accounting and finance, and management practices and strategies in small businesses. Prerequisite: AGR 130.

AGR 335 Farm Systems Management (3). This course focuses on the business aspects of production agriculture. Emphasis is on balance sheet and income statement analysis, capital and credit use, enterprise, partial and whole farm budgeting, and investment analysis. Economic principles and cost concepts as they relate to agriculture are also discussed. The student will learn to apply these tools to develop a farm management plan.

AGR 336 Agricultural Commodity Marketing (3). A study of the nature of food and fiber consumption and demand, production and supply of farm products, marketing margins and price determination for specific agricultural commodities. Prerequisite: AGR 130 or ECO 231. (Fall, odd years)

AGR 337 Agricultural Sales and Merchandising (3). A course designed to enhance the students' abilities to sell agriculturally related products. An emphasis is placed on agricultural customer and market knowledge and the skills required satisfying customer needs. Students are required to contact and spend time with agricultural sales professionals.

AGR 338 Rural Economic Development (3). An examination of the basic principles underlying the economic development of rural areas. The impact and role of agricultural and community organizations and their influence on the rural economy will be studied. Each student will make a special socioeconomic study of his/her community including a resource inventory and plan for economic development. (Summer, with sufficient demand)

AGR 339 Computer Applications for Agriculture (3). A course designed to develop an understanding and practical knowledge of the use of computers with respect to their application to problem-solving within agriculture. Students will receive hands-on experience in applying a variety of agriculture specific software to problems in agriculture and agricultural business management.

AGR 340 Veterinary Laboratory Sciences (3). This course is divided into four sections: veterinary science, toxicology, necropsy and laboratory animal science. Course is designed to acquaint the student with basic pharmacology and toxicology, submission of tissue samples to diagnostic laboratories, necropsy techniques and common practices associated with laboratory animals. Prerequisites: AGR 310, 322, 332 and eight hours of chemistry with a minimum grade of *C* in all prerequisite courses.

AGR 341 Seed Production and Technology (3). Special emphasis is given to the production and processing of seed, evaluation and testing for quality, and the study of viability during storage. (Spring)

AGR 342 Seed, Crop and Grain Analysis (3). Skills related to the evaluation of crops for quality relative to certification, viability, and marketing will be taught. The subjects that will be taught include seed analysis, plant and seed identification and grain grading. Prerequisite: AGR 240.

AGR 345 Soil Science (3). A general study of soil properties including classification development, use of fertilizers, and conservation. Corequisite: AGR 346.

AGR 346 Soil Science Laboratory (1). Consists of a number of lab exercises that support the course material in AGR 345. Corequisite: AGR 345.

AGR 350 Soil Survey (3). Principles of soils origin and classification including field mapping. Lecture, two hours; laboratory, two hours. Prerequisite: AGR 345. (Spring)

AGR 353 World Food, Agriculture, and Society (3). Course will provide students with a basic understanding of various world agriculture systems that provide food. Analysis of the role of society, historical, environmental, technological, socio-economic, and political factors that affect world food will be addressed. The course will also include topics on the evolution of agriculture, technology and food trends over the world as it has been shaped by society, culture, and world population growth. Specific issues on food poverty and malnutrition in developing countries, culture and food habits, climate changes impacting agriculture productions, and other constrains to world food production will be covered.

AGR 355 Soil Judging (0-2). Emphasis on recognition, description and classification of soil horizons in a soil profile and then placing this soil in the U.S. Classification System. This course is designed for those interested in conservation and teaching careers. May be repeated for a maximum of six credits. (Fall)

AGR 360 Greenhouse Production and Management (3). A study of producing plants under transparency. Includes greenhouse management problems; heating, cooling, and humidity control; also cultural practices of several different crops. Lecture, two hours; laboratory, two hours. Pre- or corequisite: AGR 160.

AGR 361 Horticulture and Greenhouse Management Practicum (3). A hands-on work study course that allows for the management and maintenance of all university greenhouse and horticultural components. Prerequisites: AGR 360 and permission of instructor.

AGR 362 Floral Design (3). Operation and management of a retail florist establishment with emphasis on floral design.

AGR 363 Woody Plant Materials II (2). The identification and use of woody evergreen plant materials in the landscape.

AGR 364 Nursery Management (3). A study of establishing and managing a nursery practice including field grown container stock, wholesale and retail nursery business practices, and employee management practices. Prerequisite: AGR 160.

AGR 365 Herbaceous Plant Materials (2). A study of characteristics, requirements, and potential uses of herbaceous ornamental plants in the landscape.

AGR 366 Horticultural Judging (1). An emphasis on woody and herbaceous plant morphology, fruit, vegetable, floral and production landscape plant judging. Course geared toward horticultural competitions and training agricultural education majors for FFA competitions. May be repeated for a maximum of two credits. Field trips will be required. Prerequisite: AGR 160 or concurrent enrollment or permission of instructor.

AGR 367 Residential Landscape Design (3). The application of principles of design to landscaping the home grounds. The identification, use and maintenance of ornamental plants and lawn grasses. Special attention will be given to the use of native plants for home beautification. Lecture, two hours; laboratory, two hours; field trips. Prerequisites: AGR 263 and 363. (Spring)

AGR 368 Landscape Construction (3). Understanding the process of landscape construction from initial planning stages to the actual installation of structures utilized within a landscape design.

AGR 371 Agricultural Buildings and Construction (3). Introduction to technical design, selection of materials, and modern construction techniques used in the agriculture industry. Emphasis on concrete and erection of pole frame and steel buildings.

AGR 372 Agricultural Metal Processes (3). Basic theories involving metallurgy and the metal working processes. Includes SMAW, GMAW, brazing, OA welding and cutting, and plasma arc process. Skill development emphasized. (Spring)

AGR 373 Animals in Disaster (2). This course is two fold. Module A is intended to increase awareness and preparedness among animal owners and care providers. Module B is intended to guide emergency management officials and animal owners, care providers, and industries in preparing community disaster plans. (Fall and Spring)

AGR 374 Livestock in Disaster (2). Course is designed to increase your awareness of what livestock producers, emergency managers, veterinarians, extension agents, and others can do to prevent and reduce the consequences of disasters. (Fall and Spring)

AGR 375 Animal Emergency Preparedness (3). Course focuses on educating animal owners, care providers, and participants in the companion and large animal industry on emergency and disaster planning, the incident management system utilized during emergency situations, and to assist those same groups in working with emergency management officials to develop community disaster plans.

AGR 376 Agricultural Chemicals (3). This course deals with the major weeds and insects, which attack field crops and stored grain and the associated herbicides and insecticides. An understanding is developed of how and why herbicides function.

AGR 377 Agriculture Safety (3). Study of the hazards, methods of injury prevention, safety education, regulations and advancing safety and health in the agriculture industry.

AGR 378 Agricultural Environmental Management Systems (3). Study of animal waste, pesticide, and nutrient management practices in agriculture to reduce and control soil and water pollution and comply with Federal and state regulations.

AGR 379 Field Equipment Technology Management (3). Course designed to develop a solid foundation of knowledge that can be used to make efficient field equipment technology management decisions and to help keep a farm enterprise competitive.

AGR 399 Professional Development Seminar I (1). Seminar for agriculture students focusing on the job search process, employment opportunities, and related problems. Recommended for students in the junior or senior year. Graded course.

AGR 400 Veterinary Microbiology (5). Orientation to the veterinary diagnostic laboratory environment, including familiarization with basic techniques in veterinary bacteriology and mycology, veterinary virology, and clinical serology and immunology. Lecture two hours; laboratory, six hours. Prerequisites: AGR 310, 322, 332, and eight hours of chemistry with a minimum grade of *C* in all prerequisite courses.

AGR 401 Equine Breeding and Management (3). A comprehensive study of the reproductive anatomy and physiology of the stallion and brood mare, as well as the care of the foal from birth to weaning. Special attention is given to current management concepts prevalent in the equine industry today. Prerequisite: AGR 302. (Spring)

AGR 402 Advanced Livestock Judging (3). Provides the student with guidelines for evaluation and selection procedures as applied to breeding and market swine, beef cattle and sheep. Special emphasis is placed on training students for livestock judging team. May be repeated for a maximum of six credits.

AGR 403 Equine Reproduction (3). A comprehensive study of the reproductive anatomy and physiology of the stallion and brood mare, as well as the care of the foal from birth to weaning. Special attention is given to current management concepts prevalent in the equine industry today. Prerequisite: AGR 302.

AGR 404 Selective Equine Breeding (3). Study of the hereditary traits in horses, breeding design, performance and progeny testing, marketing, and herd analysis.

AGR 405 Equine Behavior Modification (3). Fundamental methods of breaking and training the young horse. All students are assigned a horse for application of techniques. Prerequisites: permission of instructor. (Spring)

AGR 407 Equine Selection and Evaluation (3). Basic study of selection and evaluation of horses for various uses, including halter and performance. Prerequisite: AGR 302. (Fall)

AGR 408 Equine Wilderness Studies (3). Students will given a broader awareness of the opportunities offered in parks and wilderness areas throughout the United States. Students must be experienced in riding and handling of horses. Students will receive basic instruction concerning the Federal Wilderness Act, its origin and purpose, and various wilderness areas in the United States, their rules and regulations. Students will also study a specific wildness area, its history, flora and fauna, and related items of interest for that particular area. Students will receive instruction in knot tying, packing, and handling a pack string, Dutch oven cooking, and other necessary skills required while working for an outfitter. Classroom instruction will be followed by a working pack trip immediately after finals week in a wilderness area such as the Gila Wilderness Area. While on the pack trip students will be required to keep a journal as part of their grade. Prerequisite: permission of instructor.

AGR 410 Advanced Veterinary Hematology (4). Concepts of hematopoiesis and the effect of disease on blood cells will be covered. Cell counting, identifications of normal and abnormal blood cells, bone marrow examination, cytology, coagulation, and special hematology skills will be taught. Lecture, two hours; laboratory, four hours. Prerequisites: AGR 310, 322, 332, and eight hours of chemistry with a minimum grade of *C* in all prerequisite courses.

AGR 420 Veterinary Clinical Chemistry (2). Basic concept of clinical chemistry in animals as it relates to organ systems and specific diseases will be covered in lecture. The laboratory will emphasize clinical chemistry assays utilizing automated and manual techniques as well as urinalysis and use of laboratory equipment. Prerequisites: AGR 310, 322, 332, and eight hours of chemistry with a minimum grade of *C* in all prerequisite courses.

AGR 423 (523) Artificial Insemination Techniques for Cattle (3). Designed to train students to become competent A.I. technicians. Topics discussed will include reproductive processes, health, nutrition, facilities and management of breeding herd. Techniques concerning semen handling, heat synchronization and heat detection will be taught. Laboratories will be designed to give students actual experience in inseminating cattle. (Summer, with sufficient demand.)

AGR 426 Experience in Swine Production (3). As an experientially-based course, students will be immersed in the decision-making process of managing a modern swine production facility. Students will have the opportunity to apply principles of facilities management, swine nutrition, swine genetics, swine reproduction, enterprise finance, and product merchandising within the context of operating a production facility. Stages of production will include breeding, gestation, farrowing, lactation, nursery/growing, and finishing. Prerequisite: AGR 100.

AGR 430 Veterinary Parasitology (2). Basic concepts of parasitology including life cycles and mechanisms of pathogenicity will be covered during lecture. The laboratory portion will emphasize methods of identification of parasites in fecal, blood, and skin specimens. Lecture, two hours; laboratory, four hours for half a semester. Prerequisites: AGR 310, 322, 332, and eight hours of chemistry with a minimum grade of *C* in all prerequisite courses..

AGR 433 Farm Management (3). A study is made of the management functions and economics of farm organization and operation, including input-output relationships, enterprise combination, and budget analysis. Assignments are given which assist the student in applying economics and management principles to an individual case farm operation.

AGR 434 Food and Agriculture Marketing (3). An experiential learning course to develop skills in marketing agriculture, food and beverage products. Students will explore the marketing system for value-added agricultural products from household consumption back to production and agricultural inputs. Topics will include market analysis and selection, marketing research, sales forecasting, product policies, distribution channels, pricing, advertising and market control. Students will have an opportunity to apply principals within the development of a complete marketing plan for a new agriculture or food product. Students may be required to travel to area agribusinesses as part of the course requirements.

AGR 435 Interpretation of Agricultural Research (2). Students will access, analyze, evaluate and interpret agricultural research for occupational work. The course is oriented towards all fields within the agricultural sector.

AGR 436 Undergraduate Research in Agriculture (3-6). Agricultural research projects arranged individually with faculty members who agree to direct the research. A written plan of research must be filed with the school within two weeks of the beginning of the semester. May be repeated once for a maximum of six hours.

AGR 438 Seminar in Agricultural Systems (2). A course designed to enhance students' understanding of and experiences in, agricultural systems. The two emphases that will be available in this seminar are managing a successful agribusiness and production operation. This class is intended for students transferring to MSU through the Transfer Bridge program from the Agricultural Technology Program at KCTCS schools. Seminars and field experience outside of class required. The course may be taken for two credit hours as the agribusiness emphasis or for two credit hours as the production agriculture emphasis. The course can be repeated for a maximum of four hours credit by taking each emphasis.

AGR 439 Software Applications for Agriculture (3). A course designed to develop an enhanced understanding of software programs and techniques in a hands-on environment. Software studied will enhance student skills in farm, nutrient and livestock management as well as customer profiling, billing for custom application and technical communication. Prerequisite: AGR 339.

AGR 440 Behavior Modification Techniques for Domestic Animals (3). Course is designed to introduce students to techniques of behavior modification and the importance of behavior problem prevention in domestic animals. Basic understanding of normal behavior, principles of learning, and application of various behavior modification techniques will be explored. Prerequisite: AGR 310.

AGR 441 Principles of Animal Learning (3). Course designed to introduce students to the fundamentals of how animals learn. Emphasis will be placed on the importance of understanding learning theories. Observing animal behavior will also be a necessary part of this course.

AGR 444 Purebred Livestock Management and Marketing (3). A study of the management techniques unique to the purebred livestock industry including, but not limited to, animal selection and development, records, measures of performance and preparation for marketing. In addition, the course will include an in-depth look at advertising and marketing techniques common to the livestock industry. Field hours required. Field trips outside of class time required. Prerequisite: AGR 100.

AGR 455 Soil Management (3). The control of erosion, organic matter maintenance, effects of fertilizer on the environment, evaluating fertility and fertilization of major crops are emphasized. (Spring)

AGR 460 Professional Experience in Horticulture (3). Designed to provide on-the-job training in various horticultural enterprises such as golf courses, florist shops, greenhouse operations and garden centers under supervision of a horticulture professor. May be repeated once if approved by faculty advisor. (Fall, Spring or Summer)

AGR 461 Plant Propagation (3). A study of the methods of propagating horticultural plants. Includes cutting, grafting, budding, layerage and seed propagation. Lecture, two hours; laboratory, two hours. Prerequisites: AGR 160 and 360.

AGR 462 Fine Turf Management (3). A detailed study of varieties of fine turf grasses and establishment and maintenance of fine turf, including soil and turf relationship, fertilizing and liming, and drainage and irrigation. Lecture two hours; laboratory, two hours. Prerequisite: AGR 160.

AGR 463 Horticultural Therapy (3). Exploring the therapeutic modality that focuses on improving human health and functioning though the use of horticultural programs. The profession of horticultural therapy is based on medical model and is used both nationally and internationally. This course studies the different client populations that benefit from the therapy and how to set treatment goals based on a client's need.

AGR 470 Soil and Water Engineering (3). Surveying, mapping, and determining areas of farm land; designing farm drainage systems; farm ponds; controlling water erosion with terraces and other mechanical structures. Lecture, one hour; laboratory, four hours. (Fall)

AGR 471 Applications in Precision Agriculture (3). Designed to understand the acquisition and analysis of geographically referenced data for the management of crop production systems, data formats, geographic information systems, grid sampling, soil fertility and physical properties, herbicide management, combine yield monitoring, variable-rate application, crop modeling and economics. Prerequisite: AGR 339. (Fall)

AGR 477 Agricultural Power Units (3). A study of small power units relative to agriculture. Includes servicing, maintenance, repair, use, types and applications of electrical motors, pumps, and small internal combustion engines. (Fall, even years)

AGR 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of co-op instructor.

AGR 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisites: AGR 100, 300, 310, 322, 324, 331, 332, 540, and 550.

AGR 497 Advanced Practicum in Equine Management (1-12). This course will allow the student to obtain experience in a pre-approved animal or equine company or organization during the junior or senior year as an undergraduate student. Students will be supervised by a professional at the company or organization, as well as a university coordinator. For each credit taken, a minimum of one week and 40 clocked hours are required. Graded pass/fail. May be repeated for a total of up to 12 hours. Prerequisites: junior or senior status and permission by instructor.

AGR 498 Agronomy Practicum (12). Course will allow the student to obtain experience in a pre-approved agronomic company or organization during the senior year as an undergraduate student. Students will be supervised by an agronomist at the company or organization, as well as a university coordinator. Student access to internet and computer equipment capable of online video conferencing is required. This will be a 15-week placement with 525 clock hours required. Graded pass/fail. Students with AGR 488 or 489 credits are not eligible to enroll in this course.

AGR 499 Leadership/Professional Development Seminar II (1). Seminar for agriculture students focusing on the leadership development and the transition to the world of work and related problems. Recommended for students in the junior or senior year. Graded course. May be repeated up to three hours.

AGR 502 Advanced Nutrition (3). A study of physical and chemical properties of feeds. Digestion, absorption and metabolism of nutrients and factors affecting these functions are emphasized. The nutrient requirements of farm animals and effects of nutrient deficiencies are also studied. (Fall)

AGR 503 Genetics and Animal Breeding (3). Study of hereditary traits in livestock, breeding designs, progeny testing and herd analysis. (Spring)

AGR 504 Diseases of Livestock (3). Distribution, general nature, methods of dissemination, sanitation, prevention and eradication of common infectious and parasitic diseases of domestic animals; hygiene and preventive medicine, with emphasis on the transmissible diseases. Prerequisites: AGR 100, 300, and 310 with a minimum grade of *C* in all prerequisite courses. (Fall)

AGR 505 Domestic Livestock Reproduction (3). Course provides basic information concerning reproductive anatomy, hormonal control of reproduction, gamete formation, embryonic and fetal growth and development, pregnancy maintenance, parturition, and reproductive management techniques relevant to domestic livestock species including bovine (cattle), porcine (swine), ovine (sheep), and caprine (goats). Field trips or laboratory experiences may be available. Prerequisite: AGR 100.

AGR 506 Reproductive Physiology (3). A study of the reproductive processes in mammals with primary emphasis on domestic farm animals. Will include the anatomy, endocrinology, behavior and general physiology of the reproductive processes. Artificial insemination, estrous control, ova transplants and other practical production practices will be covered. Lecture, two hours; laboratory, two hours. Prerequisites: AGR 100, 300, and 310 with a minimum grade of *C* in all prerequisite courses.

AGR 510 Animal Anatomy and Physiology (3). Deals with the anatomy of body systems, how these systems interrelate, and the physiology of body organs. Species covered include porcine, bovine, equine, canine and feline. Prerequisite: AGR 310 with a minimum grade of *C*.

AGR 511 Animal Anatomy and Physiology Laboratory (2). Deals with the anatomy of body systems, how these systems interrelate, and the physiology of body organs. Species covered include porcine, bovine, equine, canine and feline. Two hour laboratories twice per week. Prerequisites: AGR 310, 324, and 332 with a minimum grade of *C* in all prerequisite courses. (Spring)

AGR 512 Beef Cattle Management Systems (3). A study of beef production, forage management and marketing systems. Lecture, one hour; laboratory, four hours. Prerequisites: AGR 100 and 311. (Fall)

AGR 514 Teaching Methods in Equine Science (3). Philosophy and objectives of teaching in the areas of equine management, equine science, or horsemanship. Concepts include preparing and delivering lesson plans appropriate to the audience, testing methods, and course evaluation techniques. Students will serve as a teaching assistant in an approved course and will be required to develop and conduct at least one lesson during the semester. Prerequisite: permission of instructor.

AGR 528 Agriculture, Food, and Rural Law (3). A course designed to introduce students to law and legal issues related to agriculture, agribusiness, and property as related to rural living and the food production system. It is not a course designed to give students legal advice and the materials taught should not be interpreted as such. Topics to be covered include judicial process and types of law, tort law and product liability related to agricultural enterprises

and the food system, inheritance law, and other legal issues facing owners or operators of our nation's natural resources.

AGR 529 International Trade and Agriculture (3). Changing role of U.S. agriculture in a dynamic world economy; national and international policies and institutions affecting agriculture; exchange rates, tariffs, and non-tariff barriers. Prerequisites: junior or senior; AGR 130 or equivalent.

AGR 530 Advanced Agricultural Commodity Marketing (3). An advanced course designed to provide an in-depth treatment of how the futures markets can be used to improve the agricultural commodity marketing timing decisions. The purpose of the course is to familiarize the students with the history and characteristics of the commodity future markets and understand the importance of marketing as a farm management tool. Both fundamental and technical aspects of charting and how to use these techniques as price forecasting tools. Prerequisite: AGR 336.

AGR 531 Agricultural Finance (3). A study of the needs and problems of financing farm and farm service businesses, including a study of credit institutions serving American agriculture. (Fall)

AGR 532 Farm and Land Appraisal (3). A study of the methods and procedures of land and farm property valuation with attention to appraisal programs of the credit and farm service institutions. Prerequisite: AGR 130. (Fall)

AGR 533 Seminar in International Agriculture Systems (3). A course designed to enhance student's understanding of international agriculture systems and how they relate to the overall impact on world food processing and production. An emphasis is placed on systems which have the potential to impact and add-value to American agriculture, as well as those which hold key relationships to U.S. based agricultural trade and food development.

AGR 534 Types and Systems of Farming and Agribusiness (3). Includes a general statistical analysis of U.S. agriculture with attention to major agricultural regions of the nation and types of farming areas of Kentucky. Special emphasis is given to the organization of West Kentucky and regional farms and agribusinesses. Field trips, interviews and financial analysis of successful firms. (Summer, with sufficient demand.)

AGR 536 Quantitative Methods for Agribusiness (3). A study of the use and theory of mathematics as it applies to the fields of agriculture, finance and economics. Attention is given to the elementary uses of algebra, matrix algebra and the calculus as they apply to optimization problems in resource use efficiency. The same mathematics will be applied to time value of money topics. Prerequisites: ECO 230, 231 and MAT 140. (Spring, odd years)

AGR 537 Seminar in Agricultural Business Systems (2). Course designed to enhance student's understanding of, and experience in, agricultural business systems. Emphasis will be placed on strategies of managing a successful agribusiness operation and /or farmer-owned cooperatives. Prerequisite: AGR 130.

AGR 538 Seminar in Production Agricultural Systems (2). Designed to enhance student's understanding of, and experience in, production agriculture systems and how they relate to a successful farming operation. An emphasis is placed on systems, which have the potential to impact and add-value to the local, regional and national agriculture economy, through classroom as well as laboratory experiences.

AGR 539 Advanced Computer Applications for Agriculture (3). An intensive course designed to enhance the computer skills of agriculture students and to give them the skills necessary to generate useful information and solve a variety of agriculturally specific problems. Students receive instruction on advanced word processing concepts, budget generation, statistical analysis, agribusiness related software and global positioning systems in agriculture. Prerequisite: AGR 339.

AGR 540 Veterinary Surgery and Anesthesia (3). Clinical principles, practices and procedures involved in the field of veterinary medicine. For animal health technology students with senior standing. Prerequisites: AGR 310, 322, 324, 332, and MAT 140 or higher, with a minimum grade of *C* in all prerequisite courses.

AGR 541 Crop Physiology (3). Basic principles of crop physiology; the effect of environment and management practice on physiological processes, growth and development of crops. (Spring, odd years)

AGR 542 Plant Breeding I (3). Basic principles and methods used in the improvement of important agronomic and horticultural crops. (Fall, even years)

AGR 546 Integrated Pest Management (3). Principles of plant pest control as related to developmental stages of crop plants. Evaluation of pest problems, alternative control methods and effects on the ecosystem. Emphasis on economic control of insect and disease vectors that affect agricultural crops. (Spring, even years)

AGR 547 Crop Management (3). Study of the distribution, economic importance and management of forage, grain crops and tobacco. (Fall)

AGR 549 Weeds and Their Control (3). A study of the introduction, methods of dissemination, reproduction and control of weeds by the most reliable methods and techniques. Prerequisite: AGR 160 or 240. (Fall)

AGR 550 Applied Pharmacology (3). Advanced clinical principles, practices and procedures in the field of veterinary medicine. Prerequisites: AGR 310, 332, eight hours of chemistry, and MAT 140 or higher, with a minimum grade of *C* in all prerequisite courses.

AGR 551 Selected Studies in Agriculture (1-3). An intensive study of an agriculture topic that will vary from semester to semester. May be repeated to a maximum of six hours. (As demanded)

AGR 552 Agricultural Policy (3). The history, principles, setting objectives and means of policy as applied to agriculture in our society. Prerequisite: AGR 130. (Spring)

AGR 554 Soil and Plant Analysis (3). A study of the chemical and analytical procedures used on soils and plants along with instruction and theory of the use of common analytical equipment. Lecture, one hour; laboratory, four hours. Prerequisite: AGR 345. (Fall)

AGR 555 Advanced Soil Fertility (3). The chemistry of the essential elements in soils and the use and the manufacturing processes of various fertilizer materials are considered. Prerequisite: AGR 345. (Spring)

AGR 560 Advanced Veterinary Surgery and Anesthesia (3). Clinical principles, practices, and procedures involved in Veterinary Surgery and Anesthesia. There are two three hour labs per week. Because of the intensity and types of laboratories offered, there will be additional time required outside of the scheduled class time, for preparation, development of skills, and complete recovery of patients. Outside time will vary depending on particular laboratory.

AGR 561 Sustainable Agriculture (3). Course provides an overview of natural resource sustainability in agriculture. It is designed to view the sustainability of food production at farms, community, regional, national and global levels. The topics will cover a variety of biological, ecological, social, cultural and economic topics within the framework of sustainability. Travel to local farms required.

AGR 562 Principles of Agroecology (3). This course is designed to cover the basic ecological concepts and the application to agricultural practices and food production systems in the search for the sustainability or human and biological communities within dynamic and varied landscapes.

AGR 563 Arboriculture (3). Classification, identification and care of ornamental trees, shrubs and vines, including pruning, bracing, surgery, transplanting, insect and disease control, and fertilization, as related to large areas of organized plantings. Lecture, two hours; laboratory, two hours. Prerequisites: AGR 160, 263, and 363.

AGR 564 Public Garden Management (3). An overview of the principles involved with public garden management, plant curatorship, collection care, public education, facility design and long-range planning. Prerequisites: AGR 263, 363, or permission from instructor.

AGR 565 Public Garden Management Practicum (3). A hands-on work study course that allows for the management and maintenance of The Arboretum at Murray State and other horticulture components. Prerequisites: AGR 160 and 564 or permission of instructor.

AGR 566 Advanced Greenhouse Practicum (3). A study of the principles and practices used in the production of specific important greenhouse crops. Considerable emphasis will be placed on the manipulation of environmental conditions during production. Prerequisite: AGR 360.

AGR 567 Advanced Landscape Design (3). The application of design theories, principles and elements to solve landscape design objectives and concerns for residential properties. Attention will be given to site analyses, client concerns, client relationships and contractual agreements while completing the design process. Prerequisites: Grade of *C* or better in AGR 263, 363, 365, 367 or permission of instructor.

AGR 569 Interior Plantscaping (2). A study of the basic plants used for interior design and decoration. This study includes identification, nomenclature, growing requirements, insect and disease problems and proper use of these plants in interiors.

AGR 570 AG Systems Technology Lab Management (3). This course is a study of theories involving agricultural mechanization and systems technology. Emphasis is placed on understanding the technology involved in operating, maintaining and managing power and machinery, electricity, precision agriculture, soil and water engineering, metallurgy and fabrication, and safety systems. Skill development emphasized. Prerequisite: AGR 170. (Fall)

AGR 571 Advanced Precision Agriculture (3). Designed for students who desire to apply and expand knowledge of the acquisition and analysis of geographically referenced data for the management of crop production systems, data formats, geographic information systems, grid sampling, soil fertility and physical properties, herbicide management, yield monitoring, variable-rate application, crop modeling and economics. (Spring)

AGR 572 Advanced Metal Work (3). Application of the principles of arc, MIG, TIG and oxyacetylene welding in design. Primarily for vocational agricultural teachers. Application of the principles of electric and oxyacetylene welding in design and construction of agricultural projects. (Spring, odd years)

AGR 573 Agricultural Processing Systems (3). An analysis of systems and methods for harvesting, processing and storing agricultural products. Includes drying and curing principles, grinding, mixing, cleaning, sorting, material handling and structural environmental design. (Fall)

AGR 574 Agricultural Irrigation and Water Systems (3). Includes determining water needs, water sources, pumps, fundamental pipeline hydraulics and designing a complete irrigation and/or water system for the farm. (Spring, even years)

AGR 575 Combine and Grain Handling Systems (3). Developing a complete grain harvesting, handling, drying and storage operation. A study of combine operation and the materials flow concept, closed loop handling, psychrometrics, grain drying, drying methods, facility layout and facility management. Combine comparison, selection and utilization. (Fall)

AGR 576 Agricultural Electrification Systems (3). Study of the basic principles of electricity, the fundamentals of wiring and selection, the operation and economics of agricultural electricity equipment. (Spring)

AGR 577 Tractor Power Principles (3). Study of the principles governing the selection and application of tractors and power driven machines. Emphasis is placed on operating systems of engines, including compression, ignition and carburetion. Mechanical principles of tractors and preventive maintenance included. (Fall, odd years)

AGR 578 Research and Development of Agriculture Tractors and Equipment (3). Tours of the major agriculture tractor and equipment industries. The tours include: research and development, engineering, foundries, and the assembly of engines, transmissions, final drives, combines, cotton pickers, and planting equipment. (Summer)

AGR 580 Veterinary Products (3). This course deals with old and new products currently available in the veterinary market. Market will include the ordering and purchasing of wholesale products, selling, inventory control, computer programming, marketing, and pricing of products utilized in a veterinary practice.

AGR 582 Veterinary Practice and Operations (3). Course will deal with the day to day events centered around the operation of a veterinary practice. Supervisory skills, communication skills, inventory, bookkeeping, planning, and advertising are the main areas stressed in this course.

AGR 583 Veterinary Law and Ethics (3). Course deals with law and ethics in the veterinary profession. The course will include a basic understanding of law, professional liability, legality of veterinary drugs, ethics and how they pertain to the treatment of animals, and medical records.

AGR 585 Specialized Journalism/RTV (1-3). Directed individual study. Can be a journalistic effort in areas such as science, sports, government, religion, graphics, etc., or a project in radio or television such as a major production or series, an extensive research project and paper, or other approved project. Prerequisites: permission of instructor and written approved proposal required prior to registration.

AGR 586 Training and Presentation Development Strategies for Agricultural Audiences (3). Students enrolled in this course will plan presentations intended for agricultural audiences and situations. Students will also develop skills in organizing and offering agricultural employee training and professional development for others. Emphasis will be placed on training, teaching, and demonstrating technical agricultural content.

AGR 590 Internship in Animal Technology (3-6). Practical full-time work experience to be arranged through an animal-related facility during the fall, spring or summer session. Site to be arranged by the student and approved by the course coordinator. May be repeated for a total of six credit hours. Prerequisites: AGR 100, 300, 310, 322, 324, 331, 332, 540, and 550 all with a minimum grade of *C*. Enrollment only by permission of instructor. (Fall, Spring or Summer)

AGR 599 Agriculture Senior Capstone (1). This is a senior capstone course culminating in students demonstrating general knowledge in the agriculture core curricula, demonstrating completed knowledge in the student's chosen option within agriculture science, and a lecture series from influential agriculture leaders. Students will also have an opportunity to share insight into the direction and future of the Hutson School of Agriculture by sharing comments on educational effectiveness. Prerequisites: All agriculture science core classes and option classes must be completed with passing grades in the Hutson School of Agriculture. Refer to the Department of Agriculture Science for a complete list of core and respective options courses.

AGR 602 Advanced Nutrition (3). A study of physical and chemical properties of feeds. Digestion, absorption and metabolism of nutrients and factors affecting these functions are emphasized. The nutrient requirements of farm animals and effects of nutrient deficiencies are also studied. (Fall)

AGR 603 Genetics and Animal Breeding (3). Study of hereditary traits in livestock, breeding designs, progeny testing and herd analysis. (Spring)

AGR 604 Diseases of Livestock (3). Distribution, general nature, methods of dissemination, sanitation, prevention and eradication of common infectious and parasitic diseases of domestic animals; hygiene and preventive medicine, with emphasis on the transmissible diseases. (Fall)

AGR 606 Reproductive Physiology (3). A study of the reproductive processes in mammals with primary emphasis on domestic farm animals. Will include the anatomy, endocrinology, behavior and general physiology of the reproductive processes. Artificial insemination, estrous control, ova transplants and other practical production practices will be covered. Lecture, two hours; laboratory, two hours. (Fall)

AGR 610 Animal Anatomy and Physiology (3). Deals with the anatomy of body systems, how these systems interrelate, and the physiology of body organs. Species covered include porcine, bovine, equine, canine and feline. Prerequisite: AGR 310. (Spring)

AGR 611 Animal Anatomy and Physiology Laboratory (2). Deals with the anatomy of body systems, how these systems interrelate, and the physiology of body organs. Species covered include porcine, bovine, equine, canine and feline. Two hour laboratories twice per week. Prerequisite: AGR 310. (Spring)

AGR 612 Beef Cattle Management Systems (3). A study of beef production, forage management and marketing systems. Lecture, one hour; laboratory, four hours. Prerequisites: AGR 100 and 311. (Fall)

AGR 614 Equestrian Instructional Methods (3). Designed for students interested in teaching techniques of teaching horsemanship. Course includes preparation and application of lesson plans. Prerequisite: permission of instructor. (Fall)

AGR 615 Equine Exercise Physiology (3). Course focuses on the study of conditioning the equine athlete using the basic principles of exercise physiology, energetics, kinetics, and sports medicine. Emphasis will be placed on equine anatomical and physiological adaptations to exercise, assessment of physical fitness and conditioning in horses, nutrition and feeding requirements of working animals, moral and ethical considerations related to equine performance, evaluation of common ailments, and current therapies used in equine sports medicine. Prerequisite: AGR 303 or permission of instructor.

AGR 619 Equine Nutrition and Feeding (3). Course focuses on the study of anatomy and physiology of the gastro-intestinal system and its role in digestion and utilization of feeds with particular emphasis on the horse. Students will develop rations to feed various classes of horses and address the relationship of nutrition and health. Prerequisite: AGR 303 or permission of instructor.

AGR 623 Artificial Insemination Techniques for Cattle (3). Designed to train students to become competent A.I. technicians. Topics discussed will include reproductive processes, health, nutrition, facilities and management of breeding herd. Techniques concerning semen handling, heat synchronization and heat detection will be taught. Laboratories will be designed to give students actual experience in inseminating cattle. Prerequisites: AGR 100 and AGR 311 or permission of instructor. (Summer, with sufficient demand)

AGR 628 Agriculture, Food and Rural Law (3). Course designed to introduce students to laws and legal issues related to agriculture, agribusiness, and property as related to rural living and the food production system. It is not a course designed to give students legal advice and the material taught should not be interpreted as such. Topics to be covered include judicial process and types of law, tort law, and product liability related to agricultural enterprises and the food system, inheritance law, and other legal issues facing owners or operators of our nation's natural resources.

AGR 629 International Trade and Agriculture (3). Changing role of U.S. agriculture in a dynamic world economy; national and international policies and institutions affecting agriculture; exchange rates, tariffs, and non-tariff barriers. Prerequisite: AGR 130 or equivalent.

AGR 630 Advanced Agricultural Prices (3). Methods of price analysis and forecasting. Index numbers, time series data commodity flows and statistical techniques as applied to price analysis. Special emphasis will be placed upon the use of commodity futures markets in estimating cash prices and in protecting producers from cash price fluctuations. (Fall, even years)

AGR 631 Agricultural Finance (3). A study of the needs and problems of financing farm and farm service businesses, including a study of credit institutions serving American agriculture. (Fall)

AGR 632 Farm and Land Appraisal (3). A study of the methods and procedures of land and farm property valuation with attention to appraisal programs of the credit and farm service institutions. Prerequisite: AGR 130. (Fall)

AGR 633 Production Economics for Agriculture (3). The techniques and principles of production theory as applied to the organization and allocation of resources in agricultural production. (Spring)

AGR 634 Types and Systems of Farming and Agribusiness (3). Includes a general statistical analysis of U.S. agriculture with attention to major agricultural regions of the nation and types of farming areas of Kentucky. Special emphasis is given to the organization of West Kentucky and regional farms and agribusinesses. Field trips, interviews and financial analysis of successful firms. (Summer, with sufficient demand)

AGR 636 Seminar in International Agriculture Systems (3). A course designed to enhance student's understanding of international agriculture systems and how they relate to the overall impact on world food processing and production. An emphasis is placed on systems which have the potential to impact and add-value to American agriculture, as well as those which hold key relationships to U.S. based agricultural trade and food development.

AGR 637 Seminar in Agricultural Business Systems (2). Course designed to enhance student's understanding of, and experience in, agricultural business systems. Emphasis will be placed on strategies of managing a successful agribusiness operation and/or farmer-owned cooperatives. Prerequisite: AGR 130.

AGR 638 Seminar in Production Agricultural Systems (2). Designed to enhance student's understanding of, and experience in, production agriculture systems and how they relate to a successful farming operation. An emphasis is placed on systems, which have the potential to impact and add-value to the local, regional and national agriculture economy, through classroom as well as laboratory experiences.

AGR 640 Veterinary Surgery and Anesthesia (3). Clinical principles, practices and procedures involved in the field of veterinary medicine. For animal health technology students. Prerequisites: AGR 310, 322, 324, and 332. . (Fall and Spring)

AGR 641 Crop Physiology (3). Basic principles of crop physiology; the effect of environment and management practice on physiological processes, growth and development of crops. (Spring, odd years)

AGR 642 Plant Breeding I (3). Basic principles and methods used in the improvement of important agronomic and horticultural crops. (Fall, even years)

AGR 646 Integrated Pest Management (3). Principles of plant pest control as related to developmental stages of crop plants. Evaluation of pest problems, alternative control methods and effects on the ecosystem. Emphasis on economic control of insect and disease vectors that affect agricultural crops. (Spring, even years)

AGR 647 Crop Management (3). Study of the distribution, economic importance and management of forage, grain crops and tobacco. (Fall)

AGR 649 Weeds and Their Control (3). A study of the introduction, methods of dissemination, reproduction and control of weeds by the most reliable methods and techniques. Prerequisite: AGR 160 or 240. (Fall)

AGR 650 Applied Pharmacology (3). Advanced clinical principles, practices and procedures in the field of veterinary medicine. Prerequisites: AGR 310, 332, and five hours of chemistry. (Fall and Spring)

AGR 651 Selected Studies in Agriculture (1-3). An intensive study of an agriculture topic that will vary from semester to semester. May be repeated to a maximum of six hours. (With sufficient demand.)

AGR 652 Agricultural Policy (3). The history, principles, setting objectives and means of policy as applied to agriculture in our society. Prerequisite: AGR 336. (Spring)

AGR 655 Advanced Soil Fertility (3). The chemistry of the essential elements in soils and the use and the manufacturing processes of various fertilizer materials are considered. Prerequisite: AGR 250. (Spring)

AGR 660 Advanced Veterinary Surgery & Anesthesia (3). Clinical principles, practices, and procedures involved in Veterinary Surgery and Anesthesia. There are two three hour labs per week. Because of the intensity and types of laboratories offered, there will be additional time required outside of the scheduled class time, for preparation, development of skills, and complete recovery of patients. Outside time will vary depending on particular laboratory.

AGR 661 Sustainable Agriculture (3). Course provides an overview of natural resource sustainability in agriculture. It is designed to view the sustainability of food production at farms, community, regional, national and global levels.

The topics will cover a variety of biological, ecological, social, cultural and economic topics within the framework of sustainability. Travel to local farms required.

AGR 662 Principles of Agroecology (3). Course is designed to cover the basic ecological concepts and the application to agricultural practices and food production systems in the search for the sustainability or human and biological communities within dynamic and varied landscapes.

AGR 663 Advanced Arboriculture (3). Classification, identification and care of ornamental trees, shrubs and vines, including pruning, bracing, surgery, transplanting, insect and disease control, and fertilization, as related to large areas of organized plantings. Lecture, two hours; laboratory, two hours. (Spring, odd years)

AGR 664 Advanced Public Garden Management (3). An overview of the principles involved with public garden management, plant curatorship, collection care, public education, facility design and long-range planning. Prerequisite: AGR 263, AGR 363, or permission from instructor.

AGR 666 Advanced Greenhouse Practicum (3). A study of the principles and practices used in the production of specific important greenhouse crops. Considerable emphasis will be placed on the manipulation of environmental conditions during production.

AGR 667 Advanced Landscape Design (3). The application of design theories, principles and elements to solve landscape design objectives and concerns for residential properties. Attention will be given to site analyses, client concerns, client relationships and contractual agreements while completing the design process. Prerequisite: AGR 367.

AGR 669 Advanced Interior Plantscaping (2). A study of the basic plants used for interior design and decoration. This study includes identification, nomenclature, growing requirements, insect and disease problems and proper use of these plants in interiors.

AGR 670 AG Systems Technology Lab Management (3). Course is a study of theories involving agricultural mechanization and systems technology. Emphasis is placed on understanding the technology involved in operating, maintaining and managing power and machinery, electricity, precision agriculture, soil and water engineering, metallurgy and fabrication, and safety systems. Skill development emphasized. Prerequisite: AGR 170. (Fall)

AGR 671 Advanced Precision Agriculture (3). Designed for students who desire to apply and expand knowledge of the acquisition and analysis of geographically referenced data for the management of crop production systems, data formats, geographic information systems, grid sampling, soil fertility and physical properties, herbicide management, yield monitoring, variable-rate application, crop modeling and economics.

AGR 672 Advanced Metal Work (3). Application of the principles of arc, MIG, TIG, and oxyacetylene welding in design. Primarily for vocational agricultural teachers. Application of the principles of electric and oxyacetylene welding in design and construction of agricultural projects. (Spring, odd years)

AGR 673 Agricultural Processing Systems (3). An analysis of systems and methods for harvesting, processing and storing agricultural products. Includes drying and curing principles, grinding, mixing, cleaning, sorting, material handling and structural environmental design. (Fall, even years)

AGR 674 Agricultural Irrigation and Water Systems (3). Includes determining water needs, water sources, pumps, fundamental pipeline hydraulics and designing a complete irrigation and/or water system for the farm. (Spring, even years)

AGR 675 Combine and Grain Handling Systems (3). Developing a complete grain harvesting, handling, drying and storage operation. A study of combine operation and the materials flow concept, closed loop handling, psychrometrics, grain drying, drying methods, facility layout and facility management. Combine comparison, selection and utilization.

AGR 678 Research and Development of Agriculture Tractors and Equipment (3). Tours of the major agriculture tractor and equipment industries. The tours include: research and development, engineering, foundries, and the assembly of engines, transmissions, final drives, combines, cotton pickers, and planting equipment. (Summer)

AGR 680 Veterinary Products (3). This course deals with old and new products currently available in the veterinary market. Market will include the ordering and purchasing of wholesale products, selling, inventory control, computer programming, marketing, and pricing of products utilized in a veterinary practice. (Fall)

AGR 682 Veterinary Practice and Operations (3). Course will deal with the day to day events centered around the operation of a veterinary practice. Supervisory skills, communication skills, inventory, bookkeeping, planning, and advertising are the main areas stressed in this course.

AGR 683 Veterinary Law and Ethics (3). Course deals with law and ethics in the veterinary profession. The course will include a basic understanding of law, professional liability, legality of veterinary drugs, ethics and how they pertain to the treatment of animals, and medical records.

AGR 686 Training and Presentation Development Strategies for Agricultural Audiences (3). Students enrolled in this course will plan presentations, apply appropriate presentation methods and techniques, and constructively critique presentations intended for agricultural audiences and situations. Students will also develop skills in organizing and offering agricultural employee training and professional development for others. Emphasis will be placed on training, teaching, and demonstrating technical agricultural content.

AGR 690 Internship in Animal Technology (3-6). Practical full-time work experience to be arranged through an animal-related facility during the fall, spring or summer session. Site to be arranged by the student and approved by the course coordinator. May be repeated for a total of six credit hours. Prerequisites: AGR 100, 300, 331, 332, 340, 351 and 400. Enrollment only by permission of instructor. May be repeated for a maximum of six hours of credit. (Fall, Spring or Summer)

AGR 700 Research in Agriculture (1-3). May be repeated for a total of six hours credit with approval of the department advisor. An approved proposal signed by the faculty member supervising the project must be submitted prior to registration. Requires a minimum GPA of 3.0. (Fall, Spring, or Summer)

AGR 701 Forage Management System (3). An intensive study of forage production and management systems for livestock. (Fall)

AGR 705 Advanced Ration Formulation (3). An advanced study in formulating balanced diets to meet the requirements for lactation, growth and reproduction in livestock. Practice in formulating least-cost rations and designing feeding programs. Prerequisite: AGR 300. (Spring)

AGR 713 Graduate Computer Applications (3). An intensive course designed to enhance the computer skills of agriculture students and to give them the skills necessary to generate useful information and solve a variety of agriculturally specific problems. Students receive instruction on advanced word processing concepts, budget generation, statistical analysis, agribusiness related software and global positioning systems in agriculture. Prerequisite: AGR 339.

AGR 720 Experimental Design and Statistical Analysis (3). An introduction to planning and designing agricultural experiments, stating the objectives, describing the experiment, outlining the statistical analysis, and interpreting quantitative results. Topics include random sampling, normal distribution, student's test, analysis of variance, mean separation, chi-square and simple regression analysis. (Fall)

AGR 722 Graduate Capstone Seminar (1). Reports concerning research projects, creative components, thesis defense, and/or work experience including student and/or faculty discussions. Graduate students must enroll in this course during the last semester of graduate enrollment. Prerequisite: admission to the agriculture graduate program.

AGR 735 Research Methodology (3). Selection, planning and conduct of investigation with reference to alternative scientific methods. Oriented toward all the disciplines of agriculture. Students present research problems coordinated with their advisor. (Fall)

AGR 739 Agribusiness Management (3). A study of the problems confronting agricultural marketing agencies and an application of alternative techniques of analyzing these problems; integration, new technology, selling, purchasing, warehousing, etc. (Summer, with sufficient demand)

AGR 744 Graduate Cooperative Education (3). May be repeated to a maximum of six credits. Graded pass/fail. Prerequisite: permission of chair.

AGR 745 Biotechnology and Agriculture (3). With the use of biotechnology, many new agricultural products are entering the market. This course is a descriptive study of biotechnology and its use in the production of these new products. The class would include basic information about this technology, current capabilities, current limitations, and future prospects.

AGR 748 Weed Science (3). A study of specific problem weeds of the region, their growth habits, life cycles, competitive effects, and the mode of action of herbicides used in their control.

AGR 776 Advanced Agricultural Electrification (3). Troubleshooting and repair of electric motors and controls. Their utilization in handling and processing of agricultural products. Lecture, one hour; laboratory, four hours. (Fall, odd years)

AGR 777 Advanced Tractor Power Principles (3). Analysis of agricultural machines, power units and equipment. Securing, adjusting and preventive maintenance in order to obtain maximum efficiency. Lecture, one hour; laboratory, four hours. (Fall, odd years)

AGR 798 Thesis (3).

AGR 799 Thesis (3).

ANTHROPOLOGY (ANT)

ANT 140 Introduction to Cultural Anthropology (3). A survey of the diverse ways human societies are organized with an analysis of how their cultures meet the common and distinctive needs of these societies, with emphasis placed upon non-literate peoples.

ANT 145 Introduction to Museum Work (3). Course designed to be an introduction to various facets of museum work, including museum administration, public relations work, fund raising, collection registration, exhibit production, deed of gifts, security, curation, and cataloguing and accessioning systems.

ANT 311 Anthropology of Complex Societies (3). An analysis of a range of societal types from sedentary tribes to chiefdoms to states. Primary emphasis will be placed on the processes that lead to the emergence of complex societies, the development of urbanism, and the comparative and cross-cultural perspective. Prerequisite: ANT 140 or permission of instructor.

ANT 315 Special Topics in Anthropology (3). This seminar will cover an important topic or related topics. Both student and faculty interest will determine the topic. Students will both contribute and lead discussions of the readings. Research paper is required. May be repeated for a maximum of nine credit hours.

ANT 320 Human Ecology (3). A cross-cultural examination of the influences that different environments have on biological and cultural adaptation. Focus will be given to environmental reconstruction, settlement patterns, land use, and the effects of migration and mobility on ancient and modern human populations. Current ecological and anthropological theories will be utilized to examine social evolution from hunting/gathering, pastoral, horticultural, agricultural, and industrial societies throughout human history. Prerequisite: ANT 140 or permission of the instructor. (Same as ARC 320.)

ANT 325 Biological Anthropology (3). The biological nature of man. A survey of man's physical origin, his primate background, and his evolution. Cultural association with fossil evidence and concepts of race. (Same as BIO 325.)

ANT 329 North American Indians (3). Introduction to Native American cultures north of Mexico. This course entails a survey of the cultural traditions of the indigenous populations of North America. Emphasis will be placed on traditional lifeways and the consequences of interactions between Native Americans and Euro-American populations.

ANT 343 Race and Ethnicity (3). Identity, goals, and organization of racial and ethnic groups; dynamics of racism and ethnocentrism; and processes of communication, conflict, and accommodation. (Same as SOC 343.)

ANT 344 The Black Experience (3). An analysis of the African American way of life utilizing anthropological and historical approaches. Major themes in black culture will include religion, family relations and political empowerment. Biographical, autobiographical and ethnographic materials will be utilized. (Same as SOC 344.)

ANT 355 Pottery and People (3). Course will explore the diverse ways that people have and continue to incorporate ceramics into their daily lives. Topics that will be examined include resource acquisition strategies, craft production, distribution, and use of pottery. Examples will draw on modern ethnographic and archaeological case studies involving potters. Analysis of pottery will focus on the approaches to the classification of ceramics, inferences about their production and social contexts from archaeological specimens, ethnographic analogy, and experimental studies. Prerequisite: ARC 150 or permission of instructor. (Same as ARC 355.)

ANT 356 The Art of Non-Western Cultures (3). Study of the arts of Asia, Oceania, Africa and the Pre-Western Americas. (Same as GDS, RGS 356.)

ANT 390 Applied Anthropology (3). A study of how anthropologists use their knowledge to solve special social and technical problems. Topics to be covered include the history of applied anthropology, the ethics of significantly altering the culture of the group, and the explanation of how and why behavioral systems change. Prerequisite: six hours of anthropology or permission of instructor.

ANT 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

ANT 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

ANT 500 Directed Studies (1-3). Selected topics in anthropology as arranged by the student and a professor. May be repeated up to nine hours credit. Prerequisites: at least 12 hours of anthropology and permission of department chair.

ANT 596 The Minority Elderly (3). This course focuses on the minority elderly including racial, ethnic and lower income groups. Applicable concepts and theories in social gerontology will also be covered. Prerequisite: nine hours of anthropology, gerontology or sociology or permission of instructor. (Same as GTY 596.)

ARCHAEOLOGY (ARC)

ARC 150 Introduction to Archaeology (3). Survey of archaeology's contribution to humankind's knowledge of prehistoric and historic development on a worldwide basis with emphasis placed upon discoveries rather than methods of archaeology. ARC 150 will not fulfill the requirements of HON 150.

ARC 300 Archaeological Method and Theory (3). History theory, and methods of archaeology; introduction to problems and techniques of field and laboratory research (mapping, recording, artifact classification, reporting). Lectures and laboratory sessions. Prerequisite: ARC 150 or permission of instructor.

ARC 302 Archaeological Field Work I (1-6). Field training in the strategy and tactics of archaeological survey and excavation; intensive instruction in the recovery and documentation of cultural remains and data from archaeological sites. Six weeks continuous field work. Usually offered only during summer session. May not be repeated. Prerequisites: ARC 150 and 300, or permission of instructor.

ARC 304 Archaeological Laboratory Methods (1). Practical training in the organization and methods of archaeological laboratory procedures. Instruction in processing, cataloguing, preliminary analysis, and preparation for curation/

archival storage of cultural remains and records resulting from archaeological field work. Repeatable for a maximum of three credits. Prerequisites: ARC 150 and 302 or permission of the instructor.

ARC 306 Landscapes of the National Parks (3). This course explores the most distinctive and intriguing features of America's national parks. Emphasis is placed on the geology, ecology, and archaeology of each park, with emphasis placed on how each of these components influences the other in a dynamic feedback system. One Saturday field trip will be required. Prerequisite: GSC 102 or permission of instructor. (Same as GSC 306.)

ARC 314 Sediments and Soils (4). An in depth study of sediments and soils. Emphasis will be on the geologic formation, interpretation, and significance of sediments and soils in a variety of geologic, environmental, and archaeological contexts. Three hours lecture and two hours laboratory per week plus one required Saturday field trip. Prerequisite: GSC 102 or permission of the instructor. (Same as GSC 314.)

ARC 315 Special Topics in Archaeology (1-3). Seminar will cover an important topic or related topics. Both student and faculty interest will determine the topic. Students will contribute to class through discussions of assigned readings and research. The course has variable credit and may be repeated three times for a total of nine credit hours. Prerequisite: ANT 140 or ARC 150, or permission of instructor.

ARC 320 Human Ecology (3). A cross-cultural examination of the influences that different environments have on biological and cultural adaptation. Focus will be given to environmental reconstruction, settlement patterns, land use, and the effects of migration and mobility on ancient and modern human populations. Current ecological and anthropological theories will be utilized to examine social evolution from hunting/gathering, pastoral, horticultural, agricultural, and industrial societies throughout human history. Prerequisite: ANT 140 or permission of the instructor. (Same as ANT 320.)

ARC 321 Ancient Civilizations (3). An in-depth anthropological, archeological and historical examination of the origins of seven of the world's earliest civilizations (Southwest Asia, Egypt, India, China, Mesoamerica, Andean and North American).

ARC 325 Hunter-Gatherer Ethnoarchaeology (3). Hunting and gathering constituted the way of life for all humans during the majority of human evolution. This course is an examination of variability in adaptations of modern hunter-gatherer societies on a global scale, emphasizing subsistence, mobility, and social organization. The study of modern societies serves as the basis for understanding the adaptations of prehistoric hunter-gatherers. Prerequisites: ANT 140 and ARC 150 or permission of instructor.

ARC 330 North American Archaeology (3). A survey of prehistoric North American Indian cultures from 15,000 B.C. through historic contact. Emphasis placed on archaeological cultural histories of North America. Prerequisite: ARC 150.

ARC 335 Forensic Archaeology (3). An examination of the methods used by forensic anthropologists to determine the identity, age, sex and race of an individual from skeletal remains using archaeological and anthropological field and laboratory methods.

ARC 340 Archaeology of Africa (3). A survey of the archaeology of Africa, from human origins to the historic period. Emphasis placed on the archaeological evidence of African culture history before the advent of European colonization.

ARC 345 Archaeology of Ancient Mexico, Central America, and the Caribbean (3). Course will introduce students to the cultures of Ancient Mesoamerica and the Caribbean using data primary recovered from archeological sites. The focus will be on the prehispanic and contact-era societies of the two regions.

ARC 350 Public Archaeology (3). Introduction to the philosophy and mechanics of modern Cultural Resource Management (CRM), primarily from an archaeological perspective. Emphasis will be placed on gaining a practical working knowledge of CRM legislation, regulation, and process, as well as balancing business, research, ethics, and public interest issues. Two Saturday field trips will be required. Prerequisite: ARC 150 or permission of instructor.

ARC 355 Pottery and People (3). Course will explore the diverse ways that people have and continue to incorporate ceramics into their daily lives. Topics that will be examined include resource acquisition strategies, craft production, distribution, and use of pottery. Examples will draw on modern ethnographic and archaeological case studies involving potters. Analysis of pottery will focus on the approaches to the classification of ceramics, inferences about their production and social contexts from archaeological specimens, ethnographic analogy, and experimental studies. (Same as ANT 355.)

ARC 357 Lithic Analysis (4). This course will introduce students to the technology and principles of stone tool manufacture, the identification and classification of stone tools and debitage, and the primary methods of lithic analysis employed in archaeological research. The course will consist of three hours of lecture and two hours of laboratory per week. Prerequisite: ARC 150 or permission of instructor.

ARC 360 Historical Archaeology (3). A methodological survey of the archaeology of historical societies, with geographic concentration on North America. Emphasis on research strategies and special problems in the archaeological study of literate societies. Prerequisite: ARC 150 or permission of instructor.

ARC 370 Archaeology of the Eastern Woodlands (3). An intensive examination of eastern U.S. prehistory from 12,000 B.C. through A.D. 1700, covering major cultural traditions, e.g. Paleo, Archaic, Woodland (Adena and Hopewell), and post-Woodland Indian groups (Ft. Ancient and Mississippian). Course includes the study of general Midwestern U.S. and southeastern prehistory. Prerequisite: ARC 150.

ARC 380 Gender Archaeology (3). A survey of the history and theory of gender archaeology, including what men, women, and children were doing in the past. Attention to gender promotes a more detailed study of the complexity and diversity of past cultures and the interaction of all gender and age groups. Prerequisite: ARC 150 or permission of instructor.

ARC 385 Archaeology of Eastern Asia (3). A survey of the archaeology of Eastern Asia, from human origins to the historic period. Emphasis is placed on the archaeological evidence from the emergence of East Asian complex societies and culture history before the advent of European contact. Prerequisite: ARC 150 or permission of instructor.

ARC 389 Archaeology and Political Ecology of Empires (3). This course will explore empires from an archaeological and political ecological perspective. Will examine cross-cultural examples from the ancient, historic, and modern Old and New Worlds, and consider the dynamic culture contacts that occurred as those worlds collided during the era of global exploration and subsequent periods. We will pay particular attention to the historical, ecological, and cultural contexts important to imperial formation, the reasons for expansion, the strategies used during expansion, as well as the variable outcomes of expansion and subsequent colonial and post-colonial administration. Prerequisites: ARC 150 or ANT 140 or HIS 202 or POL 252 or consent of the instructor.

ARC 390 Geoarchaeology (3). Survey of geological methods and techniques used to answer archaeological research questions. Topics covered include sedimentary and geomorphic processes, depositional environments, site formation processes, environmental reconstruction, and radiometric dating techniques. One Saturday field trip will be required. Prerequisites: ARC 150 and GSC 101. (Same as GSC 390.)

ARC 395 Archaeology of Religion (3). A survey of the archaeological evidence for religions throughout the world, from the earliest expressions of spirituality to the modern world religions. Emphasis is placed on the archaeological evidence for recognizing religious expressions in general, and for the emergence of modern world religions. Archaeological interpretations of New World, African, and Australian religions will be considered in comparative perspective. Fieldwork to a house of worship or cemetery will be required. Prerequisite: ARC 150 or permission of instructor. (Same as RGS 395.)

ARC 402 Archeological Field Work II (1-5). Advanced field training in the methods of archeological survey and excavation; intensive instruction in the recovery and documentation of cultural remains and data from archeological sites, emphasizing individual initiative. One or more weeks of continuous field work (generally equivalent to one credit hour per every 37.5 hour week in the field.) Usually offered during summer session or during breaks. May not be repeated. Prerequisite: ARC 302, or permission of instructor.

ARC 425 Advanced Archaeological Laboratory Methods (3). Advanced training in the analysis of archaeological materials and writing of an archaeological study for professional presentation and publication. Prerequisites: ARC 300 and 304.

ARC 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of each student, for which he/she may receive both academic credit and financial remuneration. May be repeated for a maximum of six hours for any 488/489 course. Graded pass/fail. Prerequisite: permission of instructor.

ARC 489 Cooperative Education/Internship (1-3). Continuation of ARC 488. A meaningful, planned, and evaluated work experience related to the career and educational objectives of each student, for which he/she may receive both academic credit and financial remuneration. May be repeated for a maximum of six hours for any 488/489 course. Prerequisites: At least three hours of ARC 488 and permission of instructor.

ARC 498 Museum Studies (3). Course will provide a broad introduction to the field of museum work. Topics included will be the history and philosophy of museums; the social, economic and political trends that shape museums; the staffing, management and financing of museums; and the multiple functions of museums—collection and care of objects, exhibition design and interpretation, educational programs, research activities and public relations. (Same as HIS 498.)

ARC 500 Directed Studies (1-3). Selected topics in archaeology as arranged by the student and a professor. May be repeated for up to nine hours. Prerequisites: At least 12 hours of archaeology and permission of department chair.

ARC 501 History of Archaeological Thought (3). A historical overview of the history and development of archeological thought from ancient times to the modern world. Prerequisite: ARC 300 or permission of the instructor.

ARC 510 Advanced Archaeological Field Work (1-5). Advanced field training in the strategy and tactics of archaeological survey and excavation. Intensive instruction in recovery and documentation of cultural remains and data from archaeological sites, the organization and logistics of archaeological field projects, and supervision of field crews. One or more weeks of continuous field work (generally equivalent to one credit hour per every 37.5 hour week in the field). Usually offered only during the summer session. May be repeated for up to five hours of credit. Prerequisite: ARC 402 or permission of instructor.

ARC 555 Archaeology of the Mid-South Region (3). An in depth study of prehistoric cultures of the Mid-South Region. Prerequisites: ARC 300, 330, 370, or permission of the instructor.

ARC 556 Geophysical Surveying (3). An overview of the application of terrestrial geophysical survey techniques and aerial remote sensing techniques in archaeological research. Emphasis will be placed on terrestrial geophysical survey methods with hands on training in the use of instruments such as ground penetrating radar and magnetic gradiometer. Weekend field trip to local archaeological sites are required. Prerequisite: ARC 300 or permission of instructor. (Same as GSC 556.)

ARC 600 Graduate Seminar in Archaeology (3). An examination of the development and current state of archaeological method and theory as well as consideration of current archaeological paradigms in the broader context of anthropology. Development of the practical archaeological research project.

ARC 602 Graduate Archaeological Field Work (1-5). Advanced field training for graduate students in the methods of archaeological survey, excavation, sampling, and data collection and recording. Intensive instruction in recovery and documentation of cultural remains and data from archaeological sites, the organization and logistics of archaeological field work, and supervision of archaeological field crews. One or more weeks of continuous field work (generally equivalent to one credit hour per every 37.5 hour week in the field.) Usually offered only during the summer session. May be repeated for up to five hours of credit.

ARC 604 Archaeological Laboratory Systems (1). Practical training in the organization and methods of archaeological laboratory procedures. Instruction in processing, cataloguing, preliminary analysis, preparation for curation/archival storage, and design of digital archives of cultural remains and records resulting from archaeological field work. Prerequisite: permission of the instructor.

ARC 605 Archaeological Information Systems (3). An exploration of the use of computer applications in archaeology, including data base design and management, electronic publication and digital archiving, use of internet resources, virtual archaeology, and predictive modeling with GIS and CAD mapping techniques.

ARC 610 Landscape Archaeology (3). A survey of the concepts and methods of landscape archaeology, and its relationship with historical geography and historical ecology. The class will emphasize the investigation of cultural values embedded in landscapes and the ecological interactions of human societies and their environments as evident in the archaeological record.

ARC 615 Environmental Archaeology (3). The study of past human interactions with the natural world, including plants, animals, climate, and landscapes. Three hours lecture and two hours laboratory per week.

ARC 620 Human Ecology (3). A cross-cultural examination of the influences that different environments have on biological and cultural adaptation. Focus will be given to environmental reconstruction, settlement patterns, land use, and the effects of migration and mobility on ancient and modern human populations. Current ecological and anthropological theories will be utilized to examine social evolution from hunting/gathering, pastoral, horticultural, agricultural, and industrial societies throughout human history.

ARC 656 Geophysical Surveying (3). Course provides an overview of aerial and terrestrial remote sensing techniques including applications of these methods to archaeological research. Emphasis will be placed on terrestrial geophysical survey methods with hands on training in the use of instruments such as ground penetrating radar and magnetic gradiometer. Weekend field trip to local archaeological sites are required. (Same as GSC 656.)

ART AND DESIGN (ART)

Note: All prerequisite courses apply to students in art programs. Students not majoring or minoring in art may take any of the art courses listed if approved by the instructor and the Department of Art and Design.

ART 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Introductory seminar for all first-semester art majors, including transfer students. Graded pass/fail.

ART 101 Drawing I: Introduction to Drawing (3). Drawing with an emphasis on the development of visual perception. Six hours per week.

ART 105 Studio Art for Non-Majors (3). Course is designed to introduce students to a variety of studio practices. Students will learn artistic techniques as well as visual literacy. The specifics of techniques and themes taught each semester varies based on the instructor, each of whom has an expertise in one of our studio areas: woodworking, painting, sculpture, ceramics, metalsmithing, printmaking, graphic design, photography, and drawing.

ART 111 Studio Practice (3). Studio Practice introduces students to a broad variety of basic materials, methods and concepts used in contemporary art practice, including modes of working which focus on surface (two-dimensional), space (three-dimensional) and time (four-dimensional). Ideation, design and critique are emphasized, along with the development of basic skill with hand and digital tools, and the development of an interdisciplinary workflow. Six hours per week.

ART 112 Studio Research (3). Studio Research introduces students to research and theme-based approaches to art making, including modes of working that focus on surface (two-dimensional), space (three-dimensional) and time (four-dimensional). Research of contemporary artists, topics, and themes will be emphasized, as well as collaborative approaches to art making, the public engagement of art and artists, and the development of a creatively self-sustaining art practice. Six hours per week.

ART 121 Art and Visual Culture (3). Surveys the various aspects of the visual and functional arts and their relationship to human life and society. A variety of art forms from different cultures and historical periods will be studied. Does not count toward art history minor. A student cannot have credit for both ART 121 and HON 161.

ART 201 Drawing II: Life Drawing (3). Figure drawing in varied media. Six hours per week. Prerequisite: ART 101 or permission of instructor.

ART 211 A Survey of Art from Antiquity to the Baroque (3). A survey of the history of art from Prehistory through the Baroque (17th century).

ART 212 A Survey of Art from the Enlightenment to the Present (3). A survey of the history of art from the Enlightenment (18th century) to the present.

ART 213 Art of Global Cultures (3). A survey of the history of art of non-western cultures. (Fall)

ART 290 Special Problems in Studio Art (1-3). An independent problems course in studio art for undergraduates majoring in art under the direction of a faculty member. The student must submit and receive approval of a detailed study plan prior to registration. Prerequisites: consent of supervising faculty member and permission of department chair. May be repeated three times for credit.

ART 298 Mid-Degree Review Seminar (1). Assessment and enhancement of students' progress through weekly readings and discussions of issues in art and design, student writings about their own work, and a critique of their art by a jury of Art and Design faculty. Undergraduate and transfer students pursuing a baccalaureate degree in art must register for ART 298 immediately following the completion of 30 credit hours in art. This is a graded course.

ART 300 Drawing III (3). A conceptual study of both figurative and abstract approaches to drawing. Six hours per week. Prerequisites: ART 101 and 201 or permission of instructor.

ART 303 Drawing IV (3). Exploration of drawing ideas with emphasis on the development of personal expression. Six hours per week. Prerequisite: ART 300 or permission of instructor.

ART 304 Drawing V (3). Continuation of ART 303. Six hours per week. Prerequisite: ART 303 or permission of instructor.

ART 309 Introduction to Metalsmithing I (3). Metals in jewelry-making, holloware, small sculpture, and object-making with an emphasis on design and craftsmanship. Six hours per week. Prerequisites: ART 101 and 112 or permission of instructor.

ART 313 Woodworking II (3). Methods of construction and technique will be taught with an emphasis on proficiency in machine use. Six hours per week. Prerequisite: ART 310 or permission of instructor.

ART 311 Metalsmithing II (3). Introduction to several casting techniques as well as a continuation of skills learned in ART 309. Six hours per week. Prerequisite: ART 309 or permission of instructor.

ART 312 Metalsmithing III (3). Advanced problems in metalsmithing with an emphasis in ideation and conceptualization of content. Six hours per week. Prerequisite: ART 311 or permission of instructor.

ART 313 Woodworking II (3). Methods of construction and technique will be taught with an emphasis on proficiency in machine use. Six hours per week. Prerequisite: ART 310 or permission of instructor.

ART 314 Woodworking III (3). Advanced problems in woodworking. Introduction to increasingly complex joinery methods with an emphasis on development of personal voice. Six hours per week. Prerequisite: ART 313 or permission of instructor.

ART 315 Greek and Roman Art (3). Topics in the history of the art and architecture of ancient Greece and Rome through the late Antique.

ART 316 Medieval Art (3). Topics in the history of art from the Early Christian through the Gothic period.

ART 318 Renaissance Art (3). Topics in the history of the Renaissance.

ART 319 Baroque Art (3). Topics in the history of the art of the Baroque period, mainly in Europe.

ART 328 Nineteenth-Century Art (3). History of 19th Century Western art.

ART 329 Art from 1900 to 1960 (3). History of Western art from 1900 to 1960.

ART 330 Introduction to Painting I (3). This course covers basics of color theory and materials and techniques of painting in oil. Problems stress the mastery of the medium first, and then using it to render from observation. Six hours per week. Required course for teacher certification. Prerequisites: ART 101 and 111 or permission of instructor.

ART 333 Painting II (3). Continuation of ART 330. Six hours per week. Prerequisite: ART 330 or permission of instructor.

ART 334 Painting III (3). Continuation of ART 333. Six hours per week. Prerequisite: ART 333 or permission of instructor.

ART 341 Inclusive Art Education for Diverse Learners (3). Course will examine the design, implementation, and assessment of visual arts instruction with the diverse learner in mind. Teacher candidates will synthesize knowledge of learning theories, technology, and evidence-based practices, including classroom management, to develop units of study and lesson plans for K-12 art instructions. The course will introduce candidates to federal laws and guidelines addressing diverse students (e.g. Special Education, ELL, Gifted and Talented) and how these apply to K-12 art classrooms. Clinical experiences required. Six hours per week. Prerequisites: EDU 280 and HUM 180 and ART 343 or equivalent course all with a *B* or higher or permission of instructor.

ART 342 Effective Pedagogy of Art Education (3). Teacher candidates will design and implement culturally relevant, developmentally-appropriate visual arts instruction for all students. Candidates will apply content knowledge, educational philosophies, learning theories, differentiated instruction, classroom management strategies, effective assessment practices, instructional technology, co-teaching strategies, student advocacy, and content-area literacy. Emphasis will be placed on roles of teachers, students, parents, school, and community as educational partners. Clinical experiences required. Six hours per week. Prerequisite: ART 341 or equivalent course with a *B* or higher or permission of instructor.

ART 343 Art Materials and Techniques for the Classroom (3). A studio art education course emphasizing visual learning in all curricular areas of the elementary classroom. This course provides prospective elementary art teachers, classroom teachers, early childhood educators, and special education teachers with the necessary art making skills in a variety of media and techniques. Class sessions include demonstration, experimentation, and manipulation of materials and techniques leading to reflective decision-making as well as critical assessment of finished work. Six hours per week. Prerequisite: EDU 180 or HUM 180 or equivalent course or permission of instructor.

ART 344 Community-Based Art Education (3). Through this course, students will develop an understanding of the capacities and practical applications of teaching the visual arts in community settings such as museums, community centers, after school programs, and informal spaces. Students will identify the social significance of art education, analyze current community-based art education programs, and develop skills to contribute to the field through their own creative work. Students will also participate in a service-learning teaching practicum experience in which they plan, implement, and evaluate an innovative arts program in the community. Six hours per week. Prerequisite: ART 101 or ART 105 or ART 111 or ART 112 or HON 161 or permission of instructor.

ART 350 Introduction to Graphic Design I: Digital Art (3). Introduction to the computer as a tool for fine art and illustration. Students are taught computer techniques and approaches to creating art. Six hours per week. Prerequisites: ART 101 and 111.

ART 351 Graphic Design II: Type and Image (3). Introduction to type and image production for graphic design. Students learn traditional and computer based problem-solving techniques. Six hours per week. Prerequisite: ART 350 or permission of instructor.

ART 352 Graphic Design III: Layout and Introduction to Design Systems (3). Intermediate level study in graphic design focusing on layout for publication. Six hours per week. Prerequisite: ART 350 (ART 351 is also recommended) or permission of instructor.

ART 353 Web Design (3). Course is intended to continue and emphasize the concepts and skills of graphic communication. Emphasis will be placed on learning professional design methods and applying them to designs for the web. Projects will stress considerations in design theory and the principles of typography, particularly as they apply to user interface design, site design, and navigation. Students will work in both an individual and a collaborative manner involving writing, electronic design, advertising, and photography. Prerequisite: ART 350.

ART 354 Illustration (3). An examination of the combination of both digital and conventional skills in illustration. Instruction in the media, concepts, and contemporary context of illustration. Six hours per week.

ART 357 Motion Graphics (3). Course introduces students to the principles and elements of motion design through studio practices at beginning levels. This course is intended to continue skills acquired in ART 350 and will emphasize the concepts and skills of graphic communication through motion. Emphasis will be placed on learning professional design methods and applying them to animation and moving graphics. Prerequisite: ART 350 or permission of instructor.

ART 360 Introduction to Sculpture (3). Course introduces basic working methods with metal, wood, mold making, casting, and found objects. Traditional and non-traditional fabrication methods are explored with consideration to materials and techniques that inform making sculptural concepts into tangible artworks. Six hours per week.

ART 361 Sound Art (3). Course investigates the practice and creation of sound art, while surveying the use of sound, voice, noise, silence and modes of listening in the modernist, avant-garde and contemporary visual arts, from the late-19th Century to the present. The varied and rich history, theory and practice of sound art, and its relationship to aural culture, will be explored through contemporary art, music, and philosophy. Students will learn history and theory, while making their own sculptural and installation-based sound works through methods of recording, broadcasting, podcasting, performance, composition, soldiering, and wiring audio systems and speakers. May be repeated one time for credit, up to six (6) credits. Prerequisites: sophomore standing or permission of instructor.

ART 362 Digital Sculpture: 3D Modeling and Printing (3). This course is an introduction to the study of concepts and aesthetics that expand on the practice of sculpture as it relates to digital 3D modelling and printing. Sculptural works will be produced through learning the basics of 3D modeling using various CAD programs such as TinkerCad, Sketchup, Fusion 360, Cura, Meshmixer and Makerware to design objects that will be outputted using rapid prototyping methods including: 3D printing, CNC, and laser cutting. Six hours per week. May be repeated one time for credit, up to six (6) credits.

ART 370 Introduction to Ceramics I (3). Beginning ceramics introduces students to a broad spectrum of clay working including the making of functional pottery, the vessel as metaphor, and clay as a medium for sculpture. Students learn hand building, wheel throwing, and glazing among other basic ceramic techniques. Design, craftsmanship, and critical thinking are emphasized. Six hour per week. Pre- or Corequisite: ART 101 or 111 or 112 or permission of instructor.

ART 371 Ceramics II (3). Continued development of skills and concepts learned in ART 370 along with the introduction of advanced techniques including casting and kiln firing. Ideation, criticism and discussion are emphasized. Six hours per week. Prerequisite: ART 370 or permission of instructor.

ART 372 Ceramics III (3). Continued development of skills and concepts learned in ART 371 with an emphasis on individual investigation, technical finesse, concept, content, criticism and discussion. Six hours per week. Prerequisite: ART 371 or permission of instructor.

ART 379 Introduction to Printmaking I (3). Introduction to the techniques and materials of intaglio and relief printing, including collograph, drypoint, etching and linoleum cuts. Composition, craftsmanship, and technique are emphasized. Six hours per week. Prerequisites: ART 101, 111, or permission of instructor.

ART 380 Printmaking II (3). Introduction to the techniques and materials of lithography including stone, plate and photo lithography. Composition, craftsmanship, technique and individual investigation are emphasized. Criticism and discussion. Six hours per week. Prerequisite: ART 379 or permission of instructor.

ART 381 Printmaking III (3). Introduction to the techniques and material of silkscreen, including photo silkscreen. Composition, craftsmanship, technique and individual investigation are emphasized. Criticism and discussion. Six hours per week. Prerequisite: ART 380 or permission of instructor.

ART 382 Introduction to Photography (3). Students will be introduced to the fundamentals of fine art photography through the use of single-lens-reflex-cameras, DSLR (digital) & SLR (film) while exploring creative image making as a means of personal expression with emphasis on digital process. By examining the basic formal/concepts foundation of photography through readings and lab based projects, as well as participating in discussion and critiques, students will build a visual literacy for application in daily life, developing a deeper understanding of the medium and its history. DSLR cameras are not supplied SLR cameras are supplied. Six hours per week.

ART 383 Advanced Digital Photography (3). Continuation and refinement of technical and conceptual aspects of photography presented in ART 382 with expanded emphasis on digital processes through shooting, editing, and printing. Hands on instruction includes strobe lighting, large format color printing, editing, digital compositing and mixed media, use of a computer lab as an art studio. Students will discuss and investigate historical and current photographic concerns and trends and work toward developing unique photographic works. Six hours per week. Can be repeated one time for credit, up to six (6) credits. Prerequisite: ART 382 or permission of instructor.

ART 384 Film/Darkroom Photography (3). Continuation and refinement of technical and conceptual aspects of photography presented in ART 382 with expanded emphasis on film processes through shooting, editing, and printing. Hands on instruction includes 35mm, medium format, and large format film cameras, film processing, darkroom printing, use of some digital technology as a tool with analog media. Students will discuss and investigate historical and current photographic concerns and trends toward developing unique photographic works. Six hours per week. May be repeated one time for credit, up to six (6) credits. Prerequisite: ART 382 or permission of instructor.

ART 385 Moving Image: Screen (3). An introduction to the fundamentals of time-based media art with an emphasis on moving image and sound as a means of creative expression for a screening environment such as a theater. Students gain basic familiarity with planning, shooting, recording, and editing processes necessary to execute short individual projects. Student will use professional editing software and participate in discussions after screenings of historical and contemporary artists' films and videos. Cameras are provided. Six hours per week. May be repeated up to one time for credit, up to six (6) credits.

ART 390 Seminar (3). Special projects and activities course involving problems utilizing special talents of Department of Art and Design faculty and guest artists. Six hours per week. May be repeated up to three times for credit.

ART 393 Special Topics in 2D (3). Changing topics in two-dimensional studio art to be determined by the instructor and student interest. May be repeated up to 12 credit hours but only three credits may be counted toward the art area core. Six hours per week. Prerequisite: permission of instructor.

ART 394 Special Topics in 3D (3). Changing topics in three-dimensional studio art to be determined by the instructor and student interest. May be repeated up to 12 credit hours but only three credits may be counted toward the art area core. Six hours per week. Prerequisite: permission of instructor.

ART 397 Introduction to Bookbinding and Artist Books (3). Introduction to the techniques and basic principles of bookbinding, while expanding on the content of ones work through artist books. This class will use traditional, sculptural, and experimental structures. Formal elements, technique, craftsmanship, and content are emphasized. Six hours per week. Prerequisites: ART 101 and 111, or permission of instructor.

ART 399 Professional Practices (1). A survey of the resources, methods and skills employed by artists in a range of professions.

ART 403 Drawing VI (3). Six hours per week. Prerequisite: ART 303 or permission of instructor.

ART 404 Drawing VII (3). Six hours per week. Prerequisite: ART 403 or permission of instructor.

ART 411 Metalsmithing IV (3). Advanced problems in metalsmithing. Six hours per week. Prerequisite: ART 312 or permission of instructor.

ART 412 Metalsmithing V (3). Use of metals in jewelry-making, holloware, small sculpture, and/or object-making. Six hours per week. Prerequisite: ART 411 or permission of instructor.

ART 413 Woodworking IV (3). Advanced construction methods will be covered with an emphasis on understanding contemporary context. Six hours per week. Prerequisite: ART 314 or permission of instructor.

ART 414 Woodworking V (3). Advanced problems in woodworking. Advanced construction methods will be covered with an emphasis on understanding contemporary context. Six hours per week. Prerequisite: ART 413 or permission of instructor.

ART 420 Special Topics in Art History (3). Changing seminar topics to be determined by the instructor and student interest. May be repeated up to nine credit hours. Prerequisites: ART 121, 211, 212 or HON 161; or permission of instructor.

ART 425 Art of Asia (3). A history of the art of India, Central and Southeast Asia, China, Korea, and Japan. Prerequisites: ART 121, 211, 212, 213 or HON 161; or permission of instructor. (Same as RGS 425.)

ART 430 Contemporary Art, 1960 to the Present (3). History of contemporary art from 1960 to the present. Prerequisite: ART 121 or 212 or 329; or permission of instructor.

ART 433 Painting IV (3). Advanced problems. Six hours per week. Prerequisite: ART 334 or permission of instructor.

ART 434 Painting V (3). Exploration of painting and ideas with emphasis on personal expression. Criticism and discussion. Six hours per week. Prerequisite: ART 433 or permission of instructor.

ART 451 Graphic Design IV: System Design (3). Advanced level design for multimedia and the Internet. Web page design and exploration of multimedia. Six hours per week. Prerequisite: ART 351, 352, or permission of instructor.

ART 452 Graphic Design V: Senior Portfolio (3). Terminal level study in graphic design involving directed research, portfolio preparation and group evaluation. Six hours per week. Prerequisite: ART 351, 352, or permission of instructor.

ART 461 Interactivity and Participation (3). As new technology continues to develop, visual art is looking towards the lo-tech/hi-tech approaches found within the Makerspace DIY (do-it-yourself) culture to explore new avenues of dialogue. Using elemental electronics prototyping platforms such as Arduino, Raspberry Pi, and Adafruit Flora, students learn how to hack and program objects to create digital/analogue interactive based sculptures, installations, and wearables that combine the everyday things with robotics technology of physical computing. May be repeated one time for credit, up to six (6) credits. Prerequisites: ART 111 or ART 112 or permission of instructor.

ART 462 Object Studies and Mold Making (3). Course focuses on creating object based works through casting and mold making and examines the role of casting bronze and aluminum in a foundry as it pertains to the contemporary practice of sculpture. An introduction to new methods such as 3D printing, laser cutting, and CNC may also be used in support to creating sculptural objects. Six hours per week. Prerequisites: ART 111 or ART 112, and ART 360, or permission of instructor.

ART 471 Ceramics IV (3). Continued development of the skills learned in ART 372, largely through individually tailored and self-directed assignments. Students will be responsible for all aspects of the production of their work, from mixing their clay and glaze to loading and firing kilns. Technical proficiency, criticism, discussion, and investigation of historical and contemporary ceramics will be emphasized. Six hours per week. Prerequisite: ART 372 or permission of instructor.

ART 472 Ceramics V (3). Continuation of ART 471. Six hours per week. Prerequisite: ART 471 or permission of instructor.

ART 480 Printmaking IV (3). Advanced problems and further exploration of the techniques, processes, tool and equipment related to intaglio, lithography, relief and silkscreen. Individual direction, technical proficiency and personal expression are emphasized. Criticism and discussion. Six hours per week. Prerequisite: ART 381 or permission of instructor.

ART 481 Printmaking V (3). Continuation of ART 480. Six hours per week. Prerequisite: ART 480 or permission of instructor.

ART 483 Moving Image: Gallery/Intermedia (3). An introduction to the fundamentals of time-based media art with an emphasis on moving image and sound as a means of creative expression for a gallery, performance, and interactive art distribution. Students gain basic familiarity with planning, shooting, recording, and editing processes necessary to execute intermedia projects using 4D/moving image processes. Student will use professional editing software and participate in discussions after viewing historical and contemporary artists' works ranging from web, gallery, installation, and performance works. Cameras are provided. Six hours per week. May be replaced up to one time for credit, up to six (6) credits.

ART 484 Directions in Moving Image (3). Concentrated study of moving image art for a screening environment as related to student's professional goals. Individual explorations are to culminate in a unified body of work such as short film or video to help prepare the student for their senior show and/or entry into graduate school or the workplace. Prerequisite: ART 385 or ART 483 or permission of instructor.

ART 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

ART 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

ART 490 Special Problems in Studio Art (1-3). An independent problems course in studio art for advanced undergraduates majoring in art under the direction of a faculty member. The student must submit and receive approval of a detailed study plan prior to registration. May be repeated for a maximum of nine credit hours. Prerequisites: consent of supervising faculty member and permission of department chair.

ART 491 Special Problems in Art History (3). An independent problems course in art history for advanced undergraduates majoring in art under the direction of the art history faculty. The student must submit and receive approval of a detailed study plan prior to registration. May be repeated once for credit. Prerequisites: consent of supervising faculty member and permission of department chair.

ART 492 Special Problems in Art Education (3). An independent problems course in art education for advanced undergraduates majoring in art under the direction of the art education faculty member. The student must submit and receive approval of a detailed study plan prior to registration. Does not count as

a studio elective. May be repeated up to three times for credit. Prerequisites: consent of supervising faculty member and permission of department chair.

ART 498 B.F.A. Practicum Exhibition (3). Final project for the B.F.A. candidate taking an area in art. Documentation (slides/video) and written statement, which includes a description of the direction and influences upon the student's work, must accompany the practicum exhibition. Prerequisite: ART 298 or permission of instructor.

ART 499 B.A./B.S. Practicum Group Exhibition (1). Final project for the B.A./B.S. candidate taking an area in art. Written statement, including description of the direction and influences upon the student's work, must accompany the work exhibited in the practicum exhibition. Prerequisite: ART 298 or permission of instructor.

ART 503 Drawing VIII (3). Concentrated exploration of drawing with emphasis on personal expression. Criticism and discussion. Six hours per week. Prerequisite: two drawing courses or permission of instructor.

ART 504 Drawing IX (3). Continuation of ART 503. Six hours per week. Prerequisite: ART 503 or permission of instructor.

ART 511 Metalsmithing VI (3). A concentrated exploration of the use of metals in jewelry-making and holloware. Six hours per week. Prerequisites: two courses in metalsmithing or permission of instructor.

ART 512 Metalsmithing VII (3). Continuation of ART 511. Six hours per week. Prerequisite: ART 511 or permission of instructor.

ART 513 Woodworking VI (3). Advanced problems in woodworking. Advanced construction methods will be covered with an emphasis on understanding contemporary context. Six hours per week. Prerequisite: ART 414 or permission of instructor.

ART 514 Woodworking VII (3). Advanced problems in woodworking. Advanced construction methods will be covered with an emphasis on understanding contemporary context. Six hours per week. Prerequisite: ART 513 or permission of instructor.

ART 533 Painting VI (3). Concentrated exploration of painting with emphasis on personal expression. Criticism and discussion. Six hours per week. Prerequisites: two painting courses or permission of instructor.

ART 534 Painting VII (3). Continuation of ART 533. Six hours per week. Prerequisite: ART 533.

ART 551 Graphic Design VI (3). Additional refinement of graphic techniques, discussion and criticism. An emphasis on individual investigation concentrating on producing a unified body of work suitable for a portfolio or professional show. The student and the instructor will design a program of study directed toward this goal. Six hours per week. Prerequisite: ART 452.

ART 552 Graphic Design VII (3). Advanced specialization; continuation of ART 551.

ART 561 Site, Space, and Installation (3). Course investigates the principles of sculpture in relationship to how installation art can demonstrate a concept/idea by implicating the viewer through using site (either specificity or non-specificity) and shift an audience's perception of time and/or space of an experience. This course will introduce students to concepts in the history of installation and current shifts in the definition of installation art as it pertains to sculpture, new media and performance. Six hours per week. May be repeated once time for credit, up to six (6) credits. Prerequisites: ART 111 or ART 112, and ART 360, or permission of instructor.

ART 562 Advanced Sculpture (3). Course focuses on the artistic and studio practice developed in context of contemporary sculpture. Students work more independently on developing a body of work unique to personal studio practices with attention and focus paid to a high form of crafts-person-ship and scholarly research. Students are expected to keep regular studio/research hours on a weekly basis outside of class. Advanced Sculpture is considered the capstone course in the sculpture sequence. May be repeated one time for credit, up to six (6) credits. Prerequisites: ART 111 or ART 112; and ART 360; and one of the following: ART 361, ART 362, ART 461, ART 462, or ART 561; or permission of instructor.

ART 571 Ceramics VI (3). Concentrated exploration of selected ceramic processes with emphasis on personal expression. Six hours per week. Prerequisites: two courses in ceramics or permission of instructor.

ART 572 Ceramics VII (3). Continuation of ART 571. Six hours per week. Prerequisite: ART 571 or permission of instructor.

ART 580 Printmaking VI (3). Advanced problems. Concentrated study of selected printmaking processes with emphasis on personal expression. Individual direction and technical proficiency are emphasized. Criticism and discussion. Six hours per week. Prerequisites: two advanced courses in printmaking or permission of instructor.

ART 581 Printmaking VII (3). Advanced problems. Continuation of ART 580. Six hours per week. Prerequisite: ART 580 or permission of instructor.

ART 583 Directions in Photography (3). Concentrated study of print based photographic art as related to student's professional goals. Individual explorations are to culminate in a unified body of work such as a book or portfolio to help prepare the student for their senior show and/or entry into graduate school or the workplace. Prerequisite: ART 382 or ART 383 or ART 384 or permission of instructor.

ART 584 Directions in Intermedia (3). Concentrated study of moving image and or sound art for a gallery, performance, and/or web environment as related to student's professional goals. Individual explorations are to culminate in a unified body of work such as an art installation, performance, and/or intermedia project to help prepare the student for their senior show and/or entry into graduate school or the workplace. Prerequisite: ART 384 or ART 483 or permission of instructor.

ART 690 Special Problems in Studio Art (3). An independent problems course in studio art for graduate students under the direction of a faculty member. The student must submit and receive approval of a detailed study plan prior to registration. May be repeated up to three times for credit. Prerequisites: permission of instructor and permission of department chair.

ART 691 Special Problems in Art History (3). An independent problems course in art history for graduate students under the direction of the art history faculty. The student must submit and receive approval of a detailed study plan prior to registration. May be repeated up to three times for credit. Prerequisites: consent of supervising faculty member and permission of department chair.

ART 692 Special Problems in Art Education (3). An independent problems course in art education for graduate students under the direction of the art education faculty. The student must submit and receive approval of a detailed study plan prior to registration. Does not count as a studio elective. May be repeated up to three times for credit. Prerequisites: permission of instructor and permission of department chair.

AMERICAN SIGN LANGUAGE (ASL)

ASL 101 American Sign Language Level I (3). American Sign Language (ASL) Level I is designed for the student who wants to acquire ASL skills to communicate with persons who are deaf. The course will focus on basic communication functions such as introducing oneself, exchanging personal information, making requests, talking about family and occupations, giving directions, attributing qualities to others and talking about routines. The course will also introduce students to deaf culture. The course will be taught without the use of voice.

ASL 102 American Sign Language Level II (3). American Sign Language (ASL) Level II is designed for the student who wants to acquire basic ASL skills to communicate with persons who are deaf. The course will build upon ASL I and focus on different types of numbering systems, cross-cultural communication, identifying and describing others, how to talk about routines, family, and occupations and how to make requests. The course will further introduce students to the Deaf culture and a brief history of Deaf America. The course will be taught without the use of voice. Prerequisite: ASL 101.

ASL 103 American Sign Language III (3). Course is designed to teach intermediate expressive and receptive ASL skills and the cultural features of the language and community. The course will focus on awareness of and respect for the Deaf Culture. The course will be taught without the use of voice. Prerequisite: ASL 102 with a *C* or better or permission of instructor.

ASL 104 American Sign Language Level IV (3). Course is designed to further develop intermediate expressive and receptive ASL skills and cultural features of language and community. The course will focus on the understanding of signing with meaning to move students toward intermediate plus level. Students will increase their awareness of and expand their respect for the Deaf Culture. The course will be taught without the use of voice. Students will attend three Deaf events. Prerequisite: ASL 103 with a minimum grade of *C* or instructor permission.

ASTRONOMY (AST)

AST 115 Introductory Astronomy (3). Descriptive examination of the objects of the solar system and the stellar universe. A brief historical presentation of the fundamental astronomical theories provides a basis for the examination. Multimedia presentations are used. Corequisite: AST 116.

AST 116 Introductory Astronomy Laboratory (1). Laboratory to accompany AST 115. Two hours laboratory per week. Corequisite: AST 115.

AST 215 General Astronomy (3). A mathematical study of the relative positions, motions, and physical characteristics of celestial objects. Lectures supplemented by occasional visits to the observatory. Not open to students with credit in AST 115. Prerequisite: MAT 130 or approved equivalent.

AST 216 Stars and Galaxies (3). Brief survey of radiation and spectra, geometric and radioactive properties of stars, multiple stars, variables, star clusters and associations. Prerequisites: AST 215, MAT 250.

AST 220 Astrophotography (2). Involves technique of photographing the lunar surface, the planets, interstellar media, and constellations as well as studies of photographic materials.

AST 306 Astrometry (3). Survey of the basic measurements related to astronomical observing. Plane and spherical coordinates celestial sphere, stellar positions, proper motion and time effects. Prerequisites: AST 215, MAT 250.

AST 316 Introductory Astrophysics and Space Physics (3). Introduction to astrophysics and space physics. Space physics is concerned with understanding the environment between the sun and the earth's upper atmosphere. Topics include coronal mass ejections, the solar wind, magnetospheric storms, and auroral precipitation. Astrophysics is the study of planetary system formation and evolution, stellar structure and evolution, galactic structure, and cosmology. Phenomena of interest include quasars, black holes, supernovas, and the cosmic microwave background radiation. Prerequisites: PHY 132 and 255. (Same as PHY 316.)

AST 515 Special Topics (1-3). This course is designed to fulfill special needs not met by other courses. It may be a lecture or seminar course. Prerequisite: permission of instructor.

ATHLETIC TRAINING (ATR)

ATR 500 Research and Evidence-Based Practice (3). Course designed to introduce the topics of evidence-based practice and outcome measures as it relates to patient care. Topics of discussion are designed to enhance students' understanding of the research process and include clinical research questions, design, implementation, and application. Prerequisite: STA 135.

ATR 501 Professional Aspects of Athletic Training (1). Course designed to introduce students to the profession of athletic training. Topics of discussion include a history of the profession and professional organizations, injury surveillance and epidemiology, and roles and responsibilities of the health care team.

ATR 503 Functional Anatomy in Athletic Training (3). Course designed to expand upon basic terminology by connecting anatomical concepts with the principles of movement and injury. Topics of discussion include appendicular and axial skeleton, muscle location and function, and physiological principles on contraction. Prerequisites: BIO 227, 228, 229, and 230 or equivalent.

ATR 504 Musculoskeletal Evaluation (3). Course designed to present orthopedic evaluation skills, documentation techniques, and cultural competence issues. Topics of discussion include injury evaluation software and documentation, clinical skills of palpation, goniometry, and neurological screening. Prerequisite: ATR 503.

ATR 505 Bracing, Splinting, and Taping (1). Course designed to discuss theories and apply clinical skills of bracing, splinting, and taping of musculoskeletal injuries. Topics include indications and contra-indications for various protective equipment, and clinical skill development in the application of braces, splints, and tape for the prevention and/or treatment of injuries.

ATR 506 Diagnostic Testing and Measurements (2). Course designed to introduce the use of imaging and modeling to enhance the accuracy of the evaluation and diagnosis. Topics of discussion will elaborate on the concepts of diagnostic accuracy and assessment, and include theories of diagnostic ultrasound, nerve conduction velocity, electromyography, and kinematic analysis. Prerequisite: ATR 503.

ATR 507 Emergency Care in Athletic Training (2). Course designed to introduce students to procedures and policies of responding to a medical emergency as an athletic trainer. Topics of discussion include emergency action plans, wound care, spine boarding and equipment removal, and responding to medical emergencies in nontraditional settings. Prerequisites: Certified in First Aid and CPR/AED for the Health Care Provider (verified by the instructor.)

ATR 508 Emergency Care in Athletic Training Laboratory (1). Course designed to introduce and develop competent clinical skills in responding to a medical emergency as an athletic trainer. Activities include executing emergency action plans, wound care, spine boarding, removing equipment, and responding to medical emergencies in non-traditional settings. Co- or Prerequisite: ATR 507.

ATR 520 Therapeutic Interventions (2). Course designed to provide a comprehensive overview of the healing process, pharmacological interventions, and therapeutic interventions using evidence-based practice. Prerequisite: ATR 501. Corequisite: ATR 521.

ATR 521 Therapeutic Interventions Laboratory (2). Course designed to provide opportunity for students to develop clinical decision-making skills and practical skills addressing the phases of healing using therapeutic and pharmacological intervention. Prerequisite: ATR 501. Corequisite: ATR 520.

ATR 535 Prevention and Health Promotion (3). Course designed to familiarize students with healthy behaviors, risk factors for unhealthy behaviors, common performance enhancing supplements, and ergogenic aids. The discussion topics will include recognition, referral, and management of chronic disease concepts. Prerequisite: permission of instructor.

ATR 541 Clinical Experience in Athletic Training I (2). Course designed to allow the athletic training student to integrate and apply content knowledge gained in the didactic setting and develop proficiency in the educational competencies required for athletic training certification. This course will focus on immediate care of the ill and injured, therapeutic interventions, and biomechanical evaluations. The athletic training student will be required to attend clinical experience as assigned. Prerequisites: ATR 507, 508, and admission to the Athletic Training Program.

ATR 542 Clinical Experience in Athletic Training II (3). Course designed to allow the athletic training student to integrate and apply content knowledge gained in the didactic setting and develop proficiency in the educational competencies required for athletic training certification. This course will focus on lower extremities therapeutic interventions and psychosocial interventions. The athletic training student will be required to attend clinical experience as assigned. Prerequisites: ATR 520, 521, 541, and admission to the Athletic Training Program.

ATR 551 Evaluation and Care: Foot, Ankle and Lower Leg (2). Course designed to prepare the student to prevent, evaluate, treat, and rehabilitate orthopedic injuries of the lower extremity. Specific areas of focus include the foot, ankle, and lower leg. Prerequisites: ATR 504, 505, 506, 520, and 521.

ATR 552 Evaluation and Care: Knee and Patellofemoral (2). Course designed to prepare the student to prevent, evaluate, treat, and rehabilitate orthopedic injuries of the lower extremity. Specific areas of focus include the knee and patellofemoral conditions. Prerequisite: ATR 504, 505, 506, 520, and 521.

ATR 585 Psychosocial Interventions (2). Course designed to provide an analysis of mental health recognition, management, and referral strategies associated with patients under the care of an athletic trainer. Topics addressed include motivation, goal setting, and sociocultural factors associated with injury or illness. Prerequisite: permission of instructor.

ATR 600 Research and Evidence-Based Practice (3). Course designed to introduce the topics of evidence-based practice and outcome measures as it relates to patient care. Topics of discussion are designed to enhance students' understanding of the research process and include clinical research questions, design, implementation, and application. Prerequisite: MAT 135 or equivalent.

ATR 601 Professional Aspects of Athletic Training (1). Course designed to introduce students to the profession of athletic training. Topics of discussion include a history of the profession and professional organizations, injury surveillance and epidemiology, and roles and responsibilities of the health care team.

ATR 603 Functional Anatomy in Athletic Training (3). Course designed to expand upon basic terminology by connecting anatomical concepts with the principles of movement and injury. Topics of discussion include appendicular and axial skeleton, muscle location and function, and physiological principles of contraction. Prerequisites: BIO 227, 228, 229, and 230 or equivalent.

ATR 604 Musculoskeletal Evaluation (3). Course designed to present orthopedic evaluation skills, documentation techniques. And cultural competence issues. Topics of discussion include injury evaluation software and documentation, clinical skills of palpation, goniometry, and neurological screening. Prerequisite: ATR 603.

ATR 605 Bracing, Splinting, and Taping (1). Course designed to discuss theories and apply clinical skills of bracing, splinting, and taping of musculoskeletal injuries. Topics include indications and contraindications for various protective equipment, and clinical skill development in the application of braces, splints, and tape for the prevention and/or treatment of injuries.

ATR 606 Diagnostic Testing and Measurement (2). Course designed to introduce the use of imaging and modeling to enhance the accuracy of the evaluation and diagnosis. Topics of discussion will elaborate on the concepts of diagnostic accuracy and assessment, and include theories of diagnostic ultrasound, nerve conduction and velocity, electromyography, and kinematic analysis. Prerequisite: ATR 603.

ATR 607 Emergency Care in Athletic Training (2). Course designed to introduce students to procedures and policies of responding to a medical emergency as an athletic trainer. Topics of discussion include emergency action plans, wound care, spine boarding and equipment removal, and responding to medical emergencies in non-traditional settings. Prerequisite: Certified in First Aid and CPR/AED for the Health Care Provider (verified by the instructor).

ATR 608 Emergency Care in Athletic Training Laboratory (1). Course designed to introduce and develop competent clinical skills in responding to a medical emergency as an athletic trainer. Activities include executing emergency action plans, wound care, spine boarding, equipment removal, and responding to medical emergencies in non-traditional settings. Pre- or corequisite: ATR 607.

ATR 620 Therapeutic Interventions (2). Course designed to provide a comprehensive overview of the healing process, pharmacological interventions, and therapeutic interventions using evidence-based practice. Prerequisite: ATR 601. Corequisite: ATR 621.

ATR 621 Therapeutic Interventions Laboratory (2). Course designed to provide opportunities for students to develop clinical decision-making skills and practice skills addressing the phases of healing using therapeutic and pharmacological interventions. Prerequisite: ATR 601. Corequisite: ATR 620.

ATR 635 Prevention and Health Promotion (3). Course designed to familiarize students with healthy behaviors, risk factors for unhealthy behaviors, common performance enhancing supplements, and ergogenic aids. The discussion topics will include recognition, referral, and management of chronic disease concepts. Prerequisite: permission of instructor.

ATR 641 Clinical Experience in Athletic Training I (2). Course designed to allow the athletic training student to integrate and apply content knowledge gained in the didactic setting and develop proficiency in the educational competencies required for athletic training certification. This course will focus on immediate care of the ill and injured, therapeutic interventions, and biomechanical evaluations. The athletic training student will be required to attend clinical experience as assigned. Prerequisites: ATR 507 and 508.

ATR 642 Clinical Experience in Athletic Training II (3). Course designed to allow the athletic training student to integrate and apply content knowledge gained in the didactic setting and develop proficiency in the educational competencies required for athletic training certification. This course will focus on lower extremity therapeutic interventions and psychosocial interventions. The athletic training student will be required to attend clinical experience as assigned. Prerequisites: ATR 620, 621, and 641.

ATR 645 Clinical Experience in Athletic Training III (2). Course designed to allow the athletic training student to integrate and apply content knowledge gained in the didactic setting and develop proficiency in the educational competencies required for athletic training certification. The athletic training student will be required to attend clinical experience as assigned. Prerequisite: ATR 551 and 552.

ATR 646 Clinical Experience in Athletic Training IV (3-4). Course designed to allow the athletic training student to integrate and apply content knowledge gained in the didactic setting and develop proficiency in the educational competencies required for athletic training certification. The athletic training student will be required to attend clinical experience as assigned. Credit hours for this course are dependent upon clinical experience assignment; however, a total of nine credit hours must be accumulated between 646 and 647. Prerequisite: ATR 653 and 654.

ATR 647 Clinical Experience in Athletic Training V (5-6). Course designed to allow the athletic training student to integrate and apply content knowledge gained in the didactic setting and develop proficiency in the educational competencies required for athletic training certification. The athletic training student will be required to attend clinical experience as assigned. Credit hours for this course are dependent upon clinical experience assignment; however, a total of nine credit hours must be accumulated between 646 and 647. Prerequisite: ATR 655, 656, and 657.

ATR 648 Seminar in Athletic Training I (2). Course designed to address current topics in athletic training, advanced principles of professional development, and state regulatory and legislative efforts. Prerequisite: ATR 671.

ATR 649 Seminar in Athletic Training II (1). Course designed to serve as a preparatory course for students planning to sit for the Board of Certification (BOC) for the Athletic Trainer Exam and enter into the profession of athletic training. Prerequisite: ATR 648.

ATR 651 Evaluation and Care: Foot, Ankle, and Lower Leg (2). Course designed to prepare the student to prevent, evaluate, treat, and rehabilitate orthopedic injuries of the lower extremities. Specific areas of focus include the foot, ankle, and lower leg. Prerequisites: ATR 604, 605, 606, 620, and 621.

ATR 652 Evaluation and Care: Knee and Patellofemoral (2). Course designed to prepare the student to prevent, evaluate, treat, and rehabilitate orthopedic injuries of the lower extremities. Specific areas of focus include the knee and patellofemoral conditions. Prerequisites: ATR 604, 605, 606, 620, and 621.

ATR 653 Evaluation and Care: Thigh, Pelvis, and Lumbosacral Spine (2). Course designed to prepare the student to prevent, evaluate, treat, and rehabilitate orthopedic injuries of the lower extremity. Specific areas of focus include the thigh, pelvis, and lumbosacral spine. Prerequisite: ATR 504, 505, 506, 520, and 521.

ATR 654 Evaluation and Care: Shoulder and Upper Arm (2). Course designed to prepare the student to prevent, evaluate, treat, and rehabilitate orthopedic injuries of the upper extremity. Specific areas of focus include the shoulder and upper arm. Prerequisite: ATR 504, 505, 506, 520, and 521.

ATR 655 Evaluation and Care: Elbow, Wrist, Hand, Fingers (2). Course designed to prepare the student to prevent, evaluate, treat, and rehabilitate orthopedic injuries of the upper extremity. Specific areas of focus include the elbow, wrist, hand, and fingers. Prerequisites: ATR 504, 505, 506, 520, and 521.

ATR 656 Evaluation and Care: Head and Cervical Spine (2). Course designed to prepare the student to prevent, evaluate, treat, and rehabilitate orthopedic injuries and general medical conditions of the head and cervical spine. Prerequisites: ATR 504, 505, 506, 520, and 521.

ATR 657 Evaluation and Care: Thorax and Abdomen (2). Course designed to prepare students to prevent, evaluate, treat, and rehabilitate orthopedic injuries and general medical conditions of the thorax and abdomen. Prerequisites: ATR 504, 505, 506, 520, and 521.

ATR 671 Administration and Professional Development (2). Course designed to introduce administrative, legal, and leadership concepts in health care. The discussion topics will include professional development, risk management, regulatory organizations, facility design, and documentation requirements included in medical records. Prerequisite: ATR 501.

ATR 672 Graduate Project in Athletic Training I (1). Course designed to provide a comprehensive understanding to the development and regulations of conducting student research proposals. The discussion topics will include human subject rights and protection, reviews of the literature, and design of data collection methodology. Prerequisites: ATR 500.

ATR 673 Graduate Project in Athletic Training II (3). Course designed to focus on the completion of a graduate research project. The discussion topics will include strategies to recruit participants, data collection procedures, statistical analysis, and paper guidelines for publication. Prerequisites: ATR 672.

ATR 685 Psychosocial Intervention (2). Course designed to provide an analysis of mental health recognition, management, and referral strategies associated with patients under the care of an athletic trainer. Topics addressed include motivation, goal setting, and sociocultural factors associated with injury and illness. Prerequisite: instructor permission.

BUSINESS AND MARKETING EDUCATION (BED)

BED 510 Methods and Materials-Teaching Business/Marketing Education Subjects (3). A required course for business/marketing students emphasizing the latest methods and materials for teaching business and marketing subjects. Must be completed before doing student teaching. Field experience required. Field trips may be required. Prerequisite: CTE 503 or EDU 303.

BIOLOGY (BIO)

BIO 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Required of all entering freshmen. Graded pass/fail. (Fall only)

BIO 100 Introductory Biology Laboratory (1). Laboratory work for a non-majors general biology course. Open to transfer students with three hours of non-majors general biology without a laboratory or students who have taken BIO 102.

BIO 101 Biological Concepts (4). Biological principles are examined in an active learning mode. This course relates the significance of biology to individuals and society and establishes that this body of knowledge underpins agriculture, medicine, and environmental management. Laboratory required.

BIO 102 Introductory Biology (3). Biological principles are examined in an active learning mode. This on-line course relates the significance of biology to students and society, and establishes that this body of knowledge underpins agriculture, medicine, and environmental management. This course in combination with BIO 100, an on-campus lab, will meet the University Studies science course with lab requirement. Students may not receive credit for BIO 101 and 102.

BIO 103 Saving Planet Earth (3). A study of the problems faced by humans on the Earth, including human population growth, over-exploitation of natural resources, habitat destruction and extinction. The philosophical, ethical, and scientific basis of these problems and their solutions will be discussed. The course will also explore the potential for humans to live in a sustainable fashion on the planet, and emphasize the social responsibility and civic engagement required to do so.

BIO 109 Biology of Cancer (3). The exploration into the myths and facts of the biology of cancer and how various physical, genetic, environmental, and lifestyle factor influence one's chances of developing cancer. Topics will include basic cell, tumor, and human biology, the different strategies the health care system employs to detect, attack, and defeat cancer, and risk factor assessment.

BIO 115 The Cellular Basis of Life (3). An introduction to the concepts and foundations of modern biology. Intended to familiarize students with the mechanisms and terminology of biology at the cellular level, the topics presented and discussed act as a framework for successful succession into higher level biology courses. Emphasis is placed on the investigative methods used by biologists leading to our current understanding of biological chemistry, cellular processes, cell interactions, genes and DNA technology. Prerequisite: Math ACT score of 21 or higher or MAT 097 with a minimum grade of *C*.

BIO 120 Scientific Etymology (1). A systematic study of the Latin and Greek origins of selected words. One lecture per week. (Fall)

BIO 149 Introduction to Wildlife and Conservation Biology (1). An initial survey of the fields of wildlife and conservation biology including topics for various careers, introduction to professional methods, methods for learning in lab-based natural history classes, and a brief introduction to the scientific process and an understanding of the importance of rigorous science to these fields. One class per week and approximately two required Saturday field trips. Prerequisite: open only to students pursuing an area in wildlife and conservation biology or a major in biology. (Fall)

BIO 154 Dendrology (3). Principles and art of identification of trees and shrubs in both summer and winter conditions. (Fall)

BIO 160 Plants and People (3). This interdisciplinary course draws from the biological and social sciences to investigate plant-human interactions, from both historical and modern points of view. Topics begin with an understanding of basic plant anatomy, physiology, and reproductive strategies. Using this foundation, modern and historical uses of plants in a variety of cultures will explored, including plants as food, in medicine, as causes (in part) of territorial disputes, and in ritual and everyday life. Other topics include plant allergies, conservation, genetically modified plants, and predicted impacts of global climate change on plants, with human implications.

BIO 216 Biological Inquiry and Analysis (4). An inquiry-based introduction to concepts in biology. Research-oriented activities will emphasize the skills and attitudes necessary for understanding and conducting scientific inquiry. Three hours of lecture and two hours of laboratory per week. Prerequisites: ENG 105 either BIO 101 or 115, and Math ACT score of 21 or higher or MAT 097 with a minimum grade of *C*.

BIO 220 Clinical Terminology (2). A study of the terms, symbols, and abbreviations common to the clinically-oriented health professions. Prerequisites: BIO 120 and eight hours of biology. (Spring)

BIO 221 Zoology: Animal Form and Function (4). A study of the animal kingdom with emphasis on evolutionary and ecological relationships of animal groups, vertebrate anatomy and physiology, and evolutionary concepts. Three hours of lecture and three hours of laboratory per week. Prerequisite: Math ACT score of 21 or higher or MAT 097 with a minimum grade of *C*.

BIO 222 Botany: Plant Form and Function (4). A study of the evolution, anatomy, morphology, physiology, classification, and life cycles of major divisions of the plant kingdom. Three hours of lecture and three hours of laboratory per week. Prerequisite: Math ACT score of 21 or higher or MAT 097 with a minimum grade of *C*.

BIO 227 Human Anatomy Lecture (2). Basic morphology of the human body. Cannot be applied toward a biology major. Prerequisites: BIO 101 or BIO 115 and 216 or BIO 221. Corequisite: BIO 228.

BIO 228 Human Anatomy Laboratory (2). The basic morphology of the human body. Four hours laboratory per week. Cannot be applied toward a biology major. Prerequisites: BIO 101 or BIO 115 and 216 or BIO 221. Corequisite: BIO 227.

BIO 229 Human Physiology (3). A study of mammalian physiology with emphasis on humans. Three hours lecture per week. Concurrent enrollment in BIO 230 is suggested but not required. Course may not be counted toward the biology major. Prerequisites: BIO 227 and BIO 228 or EXS 250.

BIO 230 Human Physiology Laboratory (1). Experimental approach to the study of human systems physiology. Course may not be counted toward the biology major. Prerequisite: Concurrent enrollment or previous completion of BIO 229 with a passing grade.

BIO 240 Biological Applications of GIS (4). Course will provide an introduction into Geographic Information Systems (GIS), concentrating on the use of GIS in biology. Basic GIS theory will be offered, but the class will consist mostly of hands-on use of the GIS software in real-world situations. Students will also be introduced to the many ways that GIS can be used in ecological research.

BIO 290 Biomedical Research I (2). The student will be involved in biomedical research with a faculty member who agrees to direct them. The student will support the research of advanced students and their mentor and assist with experiments. In the process the student will be introduced to research and learn basic techniques. A minimum of 4 hours per week of research is expected. Prerequisites: admission into the biomedical sciences program and permission from a research mentor.

BIO 300 Introductory Microbiology (4). An introductory survey in general microbiology. Special emphasis is given to the study of the prokaryote microorganisms both in laboratory and lecture. Three hours of lecture and three hours of laboratory per week. Prerequisites: Eight hours of chemistry and eight hours of biology.

BIO 305 Introduction to Evolutionary Principles (3). Study of the theory of organic evolution including history, evidence, patterns, mechanisms and implications for humans. Prerequisites: BIO 101 or 115 and math ACT score of 21 or higher; or MAT 097 with a minimum grade of *C*.

BIO 308 Ethics in Biology (3). A comprehensive study of current ethical issues in biology, including topics in genetics and biotechnology, reproductive technology, species conservation, use of natural resources, and medicine and human/nonhuman interests. Understanding and application of value-choices and ethics is emphasized. One three-hour lecture per week. Prerequisites: BIO 115 and 216.

BIO 310 Vertebrate Natural History (4). An examination of the natural history of vertebrates, including identification, taxonomy, ecology, evolution, behavior, conservation, and management with an emphasis on species found in the eastern U.S. Four hours lecture/laboratory per week plus required field trips. Prerequisite: BIO 221 or permission of the instructor.

BIO 320 Comparative Vertebrate Anatomy (5). Dissection and study of representative chordate systems with emphasis on the anatomy and evolution of fishes, amphibians, reptiles, birds, and mammals. May require additional laboratory supplies fee. Eight hours of class per week. Prerequisites: BIO 115, 216, and 221 or permission of instructor. (Spring)

BIO 321 Cell Biology: Mechanisms (3). A detailed consideration of biological systems, their properties and interrelationships. Cellular and molecular biology are emphasized. Three lectures per week. Prerequisites: BIO 115, 216, 221, and 222 and two semesters of chemistry or permission of instructor.

BIO 322 Animal Physiology (4). Introductory study of animal physiology. The organ and systems approach is used to compare animals. Emphasis on vertebrates and certain invertebrates. Three lectures and three hours laboratory per week. Prerequisites: BIO 115, 216, either BIO 221 or 222, two semesters of chemistry, or permission of instructor; PHY 132 recommended.

BIO 323 Cell Biology: Systems (3). Discussion of the modern concepts of cell biology as applied to cell interactions in multi-cellular organisms. Prerequisites: BIO 115, 216, 222, and two semesters of chemistry or permission of instructor.

BIO 325 Biological Anthropology (3). The biological nature of man. A survey of man's physical origin, his primate background and his evolution. Cultural association with fossil evidence and concepts of race. (Same as ANT 325.)

BIO 330 Principles of Ecology (4). An introduction to the fundamental concepts of ecology as they pertain to plants and animals, including humans. Emphasis will be placed on the basic principles of evolutionary, population, community, and ecosystem ecology. Three lectures and two hours laboratory per week. Prerequisites: BIO 115, 216, either BIO 221 or 222, or permission of instructor.

BIO 333 Genetics (4). An introduction to molecular and classical genetics with laboratory experiments involving various organisms used extensively in genetic studies. Three hours of lecture and three hours of laboratory per week. Prerequisites: BIO 221 or 222 and either BIO 101 with a minimum grade of *B* or BIO 115 and 216.

BIO 350 Systematic Botany (4). Discussion of the vascular plants with emphasis on classification and phylogeny. Laboratory and field studies of the vascular plants of West Kentucky focusing on their identification, habitats, distribution and ecological role in this region. Prerequisite: BIO 222.

BIO 380 Wildlife Techniques (4). A survey and application of methods and techniques used in wildlife management; examples — biotelemetry, live trapping, etc. Three hours of lecture and three hours of laboratory per week. Prerequisites: BIO 149, 222, 320, and 330; or permission of instructor.

BIO 382 Scientific Communication for the Biologist (2). Course concentrates on the methods for preparation and presentation of specific papers, posters, and oral communication. Students will utilize a dataset relevant to wildlife and conservation biology to produce a publication quality manuscript, a poster suitable for a scientific meeting. Topics covered include abstracts, the nature of scientific writing, structure and organization of scientific publication, use of literature, graphic, and graphic design, and methods of polishing the oral presentation. Prerequisite: BIO 216; corequisite BIO 380.

BIO 387 International Experience in the Biological Sciences (3). A study abroad course that includes meetings during the regular session as well as a short-term (10-14 days of travel) study abroad experience highlighting selected areas in biological inquiry in another country and culture (e.g., ecosystems and conservation issues in another biome; visiting museums, universities and laboratories of foreign scientists). The course includes pre- and post-travel meetings, lectures, readings and discussions. This course can be taken more than once if travel is to different countries but can only be counted once toward the biology degree. BIO 115, 216, and 330 recommended. Prerequisite: permission of instructor.

BIO 388 Biomedical Research II (3). The student will be involved in biomedical research with faculty members who agree to direct them. The student will work on a project under the direction of the research mentor. The student will write a research proposal including background information, specific aims and methods to be turned in near the end of the semester. The project will be initiated and a progress report will be submitted at the conclusion of the semester. A minimum of six hours per week of research is expected. Prerequisites: admission into the biomedical sciences program, permission from a research mentor, and completion of BIO 290.

BIO 389 Biomedical Research III (3). The student will be involved in biomedical research with faculty members who agree to direct them. The student will work on a project under the direction of the research mentor. The student will continue the project initiated in Biomedical Research II. The student will submit a research paper with an introduction, results and discussion, and methods, and make an oral presentation to the biomedical research group. A minimum of six hours per week of research is expected. Prerequisites: admission into the biomedical sciences program, permission from a research mentor, and completion of BIO 290 and BIO 388.

BIO 391 Undergraduate Research I (1). Research projects arranged individually with faculty members who agree to direct the research. A written plan of research must be filed with the chair within two weeks of the beginning of the semester. (A maximum of three credit hours total from BIO 391, 392, 483, 484, 489, 493, 494 may be used toward the minimum requirements for the biology major or minor.) (Available year round)

BIO 392 Undergraduate Research II (2). Research projects arranged individually with faculty members who agree to direct the research. A written plan of research must be filed with the chair within two weeks of the beginning of the semester. (A maximum of three credit hours total from BIO 391, 392, 483, 484, 489, 493, 494 may be used toward the minimum requirements for the biology major or minor.)

BIO 420 Vertebrate Embryology (4). Comparative, developmental anatomy of the vertebrates with emphasis on the embryological development of humans. Two lectures and four hours laboratory per week. Prerequisite: BIO 320 and 333. BIO 321 recommended.

BIO 421 Vertebrate Histology (4). A course designed for the identification and comparative study of cells, tissues, and organs of representative mammals. Two lectures and four hours laboratory per week. Prerequisites: BIO 115, 216 and 221.

BIO 438 Biomedical Research IV (4). The student will be involved in biomedical research with faculty members who agree to direct them. The student will work on a project under the direction of the research mentor. The student will write a research proposal including background information, specific aims and methods to be turned in near the end of the semester. The project will be initiated and a progress report will be submitted at the conclusion of the semester. A minimum of 8 hours per week of research is expected. Research with a mentor other than the mentor used in BIO 388 is encouraged. Credit for this course will be offered in the summer to biomedical science students who are conducting off-campus research at an affiliated research site. Prerequisites: admission into the biomedical sciences program, permission from a research mentor, and completion of BIO 290 and BIO 388.

BIO 439 Biomedical Research V (4). The student will be involved in biomedical research with faculty members who agree to direct them. The student will work on a project under the direction of the research mentor. The student will continue the project initiated in BIO 438. The student will submit a research paper with an introduction, results and discussion, and methods, and make an oral presentation to the biomedical research group. A minimum of eight hours per week of research is expected. Credit for this course will be offered in the summer to biomedical science students who are conducting off-campus research at an affiliated research site. Prerequisites: admission into the biomedical sciences program, permission from a research mentor, and completion of BIO 290 and BIO 438.

BIO 450 Exercise Physiology (3). Students will become acquainted with general concepts in exercise physiology. Some topics to be included are cardiovascular function, neural control, musculo-skeletal responses, and respiratory function. Lab activities will be integrated. Students will collect data, compile results and complete laboratory reports. Each student will review and summarize at least one research article from approved refereed journals in the field. Prerequisites: BIO 227 and 228 or EXS 250, BIO 229 and 230 or consent of the instructor.

BIO 460 Principles of Biomathematics (3). The study of biological and mathematical models is united in this research-based course. A variety of quantitative biological models and their underlying mathematics are studied, with an emphasis on population dynamics and evolutionary biology. Students engage in research and communicate their results. Laboratory experiences and short-distance field trips are required. Only one of BIO 460 and BIO 461 may count as an elective for the biology major or minor. Prerequisites: BIO 216 and MAT 250 or permission of instructor. (Same as MAT 460.)

BIO 461 Biomathematics in the Biomedical Sciences (3). A variety of quantitative biological models and their underlying mathematics are studied, with an emphasis on epidemiology, genetics, and physiology. Students engage in research and communicate their results. Laboratory experiences and short-distance field trips are required. Only one of BIO 460 or BIO 461 may count as an elective for the biology major or minor. Prerequisites: MAT 250 and BIO 216 or consent of instructor. (Same as MAT 461)

BIO 467 General Parasitology (4). A study of the principles of parasitology, including the morphology, taxonomy, life history and ecology of parasites. Laboratory will involve identification of important parasite groups, methods for host examination, diagnosis, and microtechniques. Two hours of lecture and four hours of laboratory per week. Prerequisite: BIO 221.

BIO 483 Undergraduate Teaching Methods I (3). Designed for students interested in teaching in the life sciences, especially students working towards teaching certification. The course provides students with the opportunity to learn and apply teaching techniques in the classroom under the direct supervision of a faculty member. Teaching experiences are arranged individually with a faculty member. (A maximum of three credit hours total from BIO 391, 392, 483, 484, 489, 493, 494 may be used toward the minimum requirements for the biology major or minor.) Prerequisite: junior or senior standing as a major within the College of Science and permission of the instructor and academic advisor.

BIO 484 Undergraduate Teaching in Biology (4). Designed for students interested in teaching in the life sciences, especially students working towards teaching certification. The course provides students with the opportunity to learn and apply teaching techniques in the classroom under the direct supervision of a faculty member. Teaching experiences are arranged individually with a faculty member. (A maximum of three credit hours total from BIO 391, 392, 483, 484, 489, 493, 494 may be used toward the minimum requirements for the biology major or minor.) Prerequisite: junior or senior standing as a major within the College of Science and permission of the instructor and academic advisor.

BIO 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

BIO 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. (A maximum of three credit hours total from BIO 391, 392, 483, 484, 489, 493, 494 may be used toward the minimum requirements for the biology major or minor.) Prerequisite: permission of chair.

BIO 493 Undergraduate Research III (3). Research projects arranged individually with faculty members who agree to direct the research. A written plan of research must be filed with the chair within two weeks of the beginning of the semester. (A maximum of three credit hours total from BIO 391, 392, 483, 484, 489, 493, 494 may be used toward the minimum requirements for the biology major or minor.)

BIO 494 Undergraduate Research IV (4). Research projects arranged individually with faculty members who agree to direct the research. A written plan of research must be filed with the chair within two weeks of the beginning of the semester. (A maximum of three credit hours total from BIO 391, 392, 483, 484, 489, 493, 494 may be used toward the minimum requirements for the biology major or minor.)

BIO 499 Senior Biology Seminar (1). The course exposes biology students to various career options through participation in the departmental seminar series, provides a review of biological concepts through directed study, and provides an assessment of the department's academic programs with a nationally standardized test. Weekly seminar and/or discussion. Prerequisites: BIO 222, 333, biology major, and senior standing.

BIO 501 Immunology (4). A discussion of immune response, formation of antibodies, structure of antibodies, antigen-antibody reactions, hypersensitivity, and allergic response. Laboratory includes techniques and methods for production and detection of antigen-antibody reactions. Two lectures and four hours of laboratory per week. Prerequisite: BIO 300. BIO 321 recommended.

BIO 504 Medical Cell Biology (3). A discussion of cell biology as related to the field of medicine and clinical knowledge. Emphasis is placed on the most recent applications of cellular and molecular techniques used in the research, diagnosis and treatment of clinical conditions. Considerations will be given to

a wide range of topics, including cancer, neural regeneration, wound healing, aging, gene therapy, congenital deformation, AIDS and other prevalent disease states. Three hours of lecture per week. Prerequisite: BIO 321.

BIO 506 Advanced Field Biology (4). For students who wish to learn the identification principles and actual identification of living organisms. Course work will include a study of the ecological aspects of the various organisms and their distribution. Techniques of teaching about nature will be emphasized. Prerequisite: junior or senior standing for science educations majors.

BIO 514 Scanning Electron Microscopy (4). This course is designed to teach students the theory, principles and applications of scanning electron microscopy (SEM). After a predetermined number of instructional hours, the student is expected to successfully complete a test which measures the competency of the individual in SEM operation. Subsequently, the student is required to complete a short research project utilizing SEM. Prerequisites: permission of instructor.

BIO 521 Cell Biology Laboratory (3). An experimental approach to modern laboratory techniques in Cell Biology. An emphasis will be placed on the mastery of common cellular and molecular techniques used in clinical, industrial and research settings. Six hours of laboratory per week. Prerequisite: BIO 321.

BIO 522 Pathophysiology (3). Introduction to physiological abnormalities in disease. For advanced students in, or headed for, careers in health related fields. Four hours of lecture per week. Prerequisites: BIO 228 and 229, or BIO 322, or equivalent.

BIO 525 Biogeography (3). The roles of geological, climatological, and biotic factors in explaining the past and current diversity and distribution of Earth's plants and animals will be studied. Underlying processes, current theory, and applications are stressed over actual diversity and distribution patterns themselves. Prerequisite: BIO 101 or 115, plus nine additional hours of biology and/or geosciences or consent of instructor.

BIO 528 Neurobiology (3). Examines vertebrate and invertebrate nervous systems at the cellular and systems levels. Topics include: (1) cellular processes of neurons and glial cells, (2) synapses and synapse formation, (3) sensory systems, (4) motor systems, and (5) learning and memory. Three hours of lecture per week. Prerequisites: BIO 321 or 322 recommended.

BIO 529 Teaching Science Through Inquiry (4). Students will learn and apply current inquiry based instructional methods and assessment strategies to teach science. Students will also gain the basic data management and analytical skills necessary to conduct action research. The course will follow a workshop style format modeling inquiry based methods. A significant amount of independent and group work is expected outside of class meetings. Prerequisite: admission to teacher education.

BIO 531 International Experience in the Biomedical Sciences (3). A half spring semester plus short-term (10-14 days of travel) study abroad program highlighting biomedical sciences by interacting with leading medical scientists and attending medical school classes in Japan or other selected countries. In the spring semester, students discuss current topics in biomedical science and develop in-depth projects. The students integrate their new knowledge from their study abroad activities and experience into their projects. Prerequisite: consent of the instructor.

BIO 532 Quantitative Ecology (4). An introduction to ecological data analysis and interpretation. Emphasis is placed on the understanding of ecological data structure and analytical methods. Major topics include sampling, diversity analysis, resemblance measurements, formal classification techniques, and pattern recognitions. Prerequisites: BIO 330 and STA 135 or consent of instructor.

BIO 533 Molecular Genetics (3). A lecture course which involves discussions of general concepts of DNA structure, replication and translation. Current concepts in bacterial and bacteriophage genetics, such as gene transfer, recombination, gene regulation, and recombinant DNA technology will be examined. Prerequisites: BIO 300 and 333, or permission of instructor.

BIO 534 Molecular Genetics Laboratory (3). The laboratory covers classical bacterial and viral genetics such as transduction, conjugation, mutagenesis, and mutant analysis by complementation, as well as recently developed recombinant DNA techniques. The student will get hands-on experience in DNA and RNA purification, restriction, endonuclease mapping, cloning, and expression of foreign DNA in E. coli and DNA sequencing. These techniques and a clear understanding of the processes involved in gene expression will equip the student well for either a position in industry or graduate study. Prerequisite: Previous or concurrent BIO 533.

BIO 536 Evolution (3). A study of evolutionary concepts. Prerequisite: BIO 333.

BIO 538 Animal Behavior (3). An introduction to the principles of animal behavior. Ecological and evolutionary implications of animal behavior are emphasized. Prerequisite: BIO 221 and 330, or permission of instructor.

BIO 539 Animal Behavior Laboratory (1). An introduction to testing hypotheses in animal behavior. Ecological and evolutionary implications of animal behavior are emphasized. Three hours of laboratory per week. Prerequisites: BIO 221 and 330, or permission of the instructor; BIO 538 or concurrent enrollment.

BIO 540 Field Biometry (4). Students will learn and practice descriptive statistics, experimental design, regression, ANOVA, ANCOVA, and data management. In contrast to other statistics courses, students will spend more of their time in the field than in the classroom. Prerequisites: any field biology course, BIO 330, or permission of instructor.

BIO 541 Winter Ecology: Life in the Colder Seasons (2). Course focus is on survival strategies for the colder months of the year (mid-fall through mid-spring) in various climates, including physiological, morphological, and behavioral adaptations. Adaptations for both animals and plants, as well as plant animal interactions, are considered in both terrestrial and aquatic (under ice) systems. Human adaptations to cold climates are also considered. Prerequisite: BIO 330 or permission of instructor.

BIO 542 Watershed Ecology (3). The study of the movement of water through the environment and its relationship to biotic systems. Areas emphasized include the hydrologic cycle and its influence on groundwater, lotic, and lentic systems; the effect of water on plant and animal communities; and the influence of human activity on watershed structure and function. Prerequisite: BIO 330 or permission of instructor. (Same as GSC 542.)

BIO 546 Stream Ecology (4). The interactions of stream organisms with each other and their abiotic environments will be examined. An area stream will be used as an example for physical and chemical characteristics of a stream and adaptations of organisms to their environments. One weekend field trip required. Prerequisite: BIO 330.

BIO 548 Principles of Managing Disease in Wildlife (3). An exploration of the principle of disease transmission, disease maintenance, and how biologists monitor for and manage for disease in free-living wild animals species. The effects on the individual animals, wildlife population, and human will be discussed. Current issues in wildlife diseases will highlight how these principles are applied in the field. Three hours of lecture per week. Prerequisite: one course from AGR 300, BIO 216, HEA 311, or NUR 301.

BIO 549 Fisheries Techniques (4). Course will provide instruction in many techniques used by fishery scientists. Students will learn about field sampling, laboratory analysis, computer modeling, and statistical analysis of fisheries data. The course will take advantage of the Hancock Biological Station to provide extensive hands-on practice in all techniques. Three lectures plus four hours lab per week. Prerequisite: BIO 330.

BIO 552 Native Plants for Wildlife (2). Course will study the relationships between animals and the native plant species or plant groups they utilize for food, protection, and shelter. Food availability by season will be considered for wildlife habitat management purposes. Students will learn to recognize various plants by species, genus, and/or family. Seed collection, storage, and germination techniques will be covered. Prerequisite: BIO 222 or permission of instructor.

BIO 553 Field Botany (4). A survey of the flora of West Kentucky and surrounding states. This course should be of interest to anyone interested in the plants of the region. Emphasis will be placed on field identification of common species,

identification using keys, collection, and preparation of herbarium specimens, and general plant ecology of the region. Prerequisite: BIO 222.

BIO 554 Dendrology and Forest Conservation (4). Course is designed to teach students two main bodies of knowledge. First is an ability to identify common tree species in the eastern US and to know their natural histories and their value as timber and habitat. Second is an understanding of how these various species interact with each other and their environment to compose functioning forests, along with forest management strategies for a wide range of natural resource goals. With this knowledge, students will "see both the forest and the trees." Class will comprise three hours of lecture and four hours of field-oriented lab per week. Prerequisites: BIO 216 and BIO 222; or permission from instructor. A course in ecology is recommended.

BIO 557 Systematics and Bioinformatics (4). This course will focus particularly on systematics and phylogenetic analyses, although other bioinformatics-related topics such as genomics and geographic information systems will be included. Students will search bioinformatic data sources, retrieve and edit data, and perform computer analysis on protein, DNA, and morphological data. Underlying biological processes will also be discussed. Three hours lecture and two hours computer lab per week. Prerequisite: BIO 333 .

BIO 561 Freshwater Invertebrates (4). Functional anatomy, ecology and taxonomy of the freshwater invertebrates. Emphasis will be placed on collection, preserving and identifying invertebrates of this region. Two lectures and four hours of laboratory per week. Prerequisite: BIO 221.

BIO 563 Aquatic Entomology (4). The study of the ecology, natural history, life cycles, taxonomy and systematics of lotic and lentic insects. The class will include several field trips to aquatic habitats and the preparation of a working collection. Two hours lecture and four hours laboratory per week. Prerequisite: BIO 330 or permission of instructor.

BIO 564 Entomology (4). The introduction to the study of insects. Students become acquainted with about 200 Families of insects living in the terrestrial and aquatic habitats of the Midwest. Lectures include classification, identification, evolution, ecology, agriculture, epidemiology, and forensics. Laboratory activities include identification, field sampling, specimen preparation, and insect behavior. Each student conducts a small laboratory or field project on some aspect of insect ecology, behavior, or natural history. Prerequisite: BIO 330.

BIO 565 Biogeochemistry (3). Survey and discussion of the scientific literature on global cycles of carbon, nitrogen, phosphorus and man-made chemicals with special emphasis on the biogeochemical and ecological processes that affect terrestrial and aquatic ecosystems. The course will focus on interdisciplinary themes that incorporate new research results form the fields of biology, chemistry, and geosciences. Prerequisite: junior or higher standing in biology, chemistry or geosciences. (Same as CHE/GSC 565.)

BIO 568 Wetland Ecology (4). An introduction to the hydrology, geomorphology, and biogeochemical processes of wetlands, and to the population, community and ecosystem ecology relevant to wetland habitats. The course places a dual emphasis on understanding: 1) the processes underlying important wetland functions and 2) the evolutionary ecology organisms that inhabit these terrestrial/aquatic ecotones. Laboratory exercises will train students to identify, delineate and assess the health of wetlands and to perform original research in wetland environments. Prerequisite: one 4-credit ecology course and one botany course, or instructor permission.

BIO 570 Ichthyology (4). Natural history of fishes, their systematics, and some anatomical and physiological relationships with the environment. One weekend field trip required. Three lectures and one lab per week. Prerequisite: BIO 221.

BIO 572 Herpetology (4). A study of the taxonomy, morphology and natural history of reptiles and amphibians. Emphasis is placed on those species occurring in the central United States. Two lectures and four hours of laboratory per week. Prerequisite: BIO 221 and 330 or permission of instructor.

BIO 573 Ornithology (4). Study of avian biology with emphasis on anatomy, physiology and classification of birds. Three lectures and two laboratory hours per week. Requires weekend field trip. Prerequisite: BIO 221 and 330.

BIO 574 Mammalogy (4). A study of the classification and biology of mammals. Identification and collection of mammals, particularly those of the central United States, will be emphasized in laboratory. Two lectures and four hours of laboratory per week. Some weekend and Saturday field trips required. Prerequisite: BIO 221 and 330.

BIO 577 Population and Conservation Genetics (3). An advanced study of the theories of genetic change in populations. Emphasis will be placed on theoretical aspects of change in gene frequencies as well as practical applications in the field of conservation biology. Prerequisites: BIO 330 and 333.

BIO 578 Conservation Biology (4). An advanced study of the conservation of life at numerous levels of organization. Emphasis will be placed on modern empirical and theoretical studies of the maintenance, loss, and restoration of biological diversity, endangered species, and habitats. Three one-hour lectures and three hours of laboratory per week. Prerequisite: BIO 330.

BIO 580 Principles of Wildlife Management (4). Application of ecological principles of management of wild animals, wildlife agencies and their function in wildlife management; economic, social, biological and other values of wildlife. Three lectures and two hours of laboratory per week. Requires Saturday field trips. Prerequisite: BIO 380.

BIO 581 Applied Natural Resources Economics, Policy, and Administration (3). Course concentrates on the application of microeconomic theory to natural resources policy, administration, and decision making in areas such as endangered species management, wildlife damage management, non-game management, and game management. This course will also discuss how the public uses economics to make personal decisions about natural resources. Prerequisite: ECO 231.

BIO 582 Fisheries Management (4). Ecology and management of freshwater fishes. Methods of fishery investigation will be emphasized. Three lectures and four hours of laboratory per week. Prerequisites: BIO 330.

BIO 584 Wildlife Policy and Administration (3). Emphasis is placed on the management of natural resources with particular focus on fish and wildlife. Topics will include an overview of natural resources agency structures and functions, the planning and management cycles, and ethical public relations techniques for multiple-use management in the public domain. Prerequisite: BIO 330 or permission of instructor. (Spring, odd years)

BIO 586 Limnology (4). A study of the interrelationships of the physical, chemical and biological features of lakes and streams. Prerequisite: BIO 330.

BIO 587 Freshwater Biology (4). Study of the aquatic organisms, their biology, distributions, and ecology in natural aquatic communities and habitats in Kentucky Lake, streams, springs, and wetlands near the Hancock Biological Station. Aquatic organisms to be surveyed include bacteria, algae, aquatic plants, invertebrates, and vertebrate animals. Includes two lectures and four hours of laboratory per week. Prerequisite: BIO 330.

BIO 588 Reservoir Ecology (4). An examination of the variation in chemical and biological phenomena that characterize river impoundments. Literature reading and discussion is followed by 1) learning techniques of observation to identify pattern and process in nature, and 2) designing and conducting field experiments to assess cause and effect relationships.

BIO 590 Disturbance Ecology (3). Relationships among organisms and with their environment are often heavily influenced by ecological disturbances that damage and kill individuals and thereby alter dynamics of entire ecosystems. This class will examine a wide range of ecological disturbances in terms of 1) the physical phenomena, 2) the effects of those phenomena on organisms, and 3) the response of organisms in terms of population-, community-, watershed- and ecosystem-dynamics. The course will examine the following disturbances in ecological terms within the context of global environmental change: fires, hurricanes, tornados, ice storms, floods, droughts, habitat fragmentation, invasive species, and others of the students' own choosing. Prerequisite: BIO 330 or equivalent, or permission of instructor.

BIO 595 Wildlife/Fisheries Internship (1-4). A practical experience/study situation where the student works a 40-hour week in the field under the supervision of a wildlife biologist. Bimonthly progress reports are required to

be submitted to both the university staff and the wildlife biologist. Students must have junior standing to be considered. (Summer)

BIO 596 Field Studies in Ecology (4). Two weeks or more will be spent living at a field site(s) studying the ecology of a selected ecosystem(s) (e.g., tropical rainforest, coral reef, mangrove swamp, pine forest). Students will gain an understanding of the selected ecosystem's structure and function, including the roles of human cultural and economic influences. Studies are expected to occur in geographic areas other than western Kentucky.

BIO 597 Topics in Advanced Molecular Biology (3). Taught from the current literature, this course focuses on new topics in cell and molecular biology. A combination of lecture and student seminars. Prerequisites: BIO 533 and CHE 310, or permission of instructor.

BIO 598 Topics in Advanced Evolutionary and Organismal Biology (1-4). Students explore topics in biology in the fields of evolutionary and organismal biology. Learning experiences will include a combination of lecture, laboratory work, library assignments, and discussions of literature. Course may be repeated once for credit, for a maximum of eight (8) hours among BIO 597, 598, and 599. Prerequisites: BIO 305 or 310.

BIO 599 Topics in Advanced Ecological Sciences (1-4). Students explore topics in biology in the fields of population, community, or landscape ecology under direction of an individual faculty member. Learning experiences will include a combination of lecture, laboratory work, library assignments, and discussions of literature. Course may be repeated once for credit, with a maximum of eight credit hours in combination with other topics courses. Prerequisite: BIO 330.

BIO 604 Medical Cell Biology (3). A discussion of cell biology as related to the field of medicine and clinical knowledge. Emphasis is placed on the most recent applications of cellular and molecular techniques used in the research, diagnosis and treatment of clinical conditions. Considerations will be given to a wide range of topics, including cancer, neural regeneration, wound healing, aging, gene therapy, congenital deformation, AIDS and other prevalent disease states. Prerequisite: BIO 321.

BIO 606 Advanced Field Biology (4). For students who wish to learn the identification principles and actual identification of living organisms. Course work will include a study of the ecological aspects of the various organisms and their distribution. Techniques of teaching about nature will be emphasized.

BIO 614 Scanning Electron Microscopy (4). Course designed to teach students the theory, principles and applications of scanning electron microscopy (SEM). After a predetermined number of instructional hours, the student is expected to successfully complete a test which measures the competency of the individual in SEM operation, specimen preparation, and remote operations. Subsequently, the student is required to complete a short research project utilizing SEM that includes applications to remote operations. Prerequisite: Permission of instructor.

BIO 620 Advanced Physiology (3). A detailed discussion of physiology from the cellular and molecular level to the systems level. Prerequisite: Previous course in physiology recommended.

BIO 621 Cell Biology Laboratory (3). An experimental approach to modern laboratory techniques in Cell Biology. An emphasis will be placed on the mastery of common cellular and molecular techniques used in clinical, industrial and research settings. Six hours of laboratory per week. Prerequisite: BIO 321.

BIO 622 Pathophysiology (3). Introduction to physiological abnormalities in disease. For advanced students in, or headed for, careers in health related fields. Four hours of lecture per week. Prerequisites: BIO 229 and 230, or BIO 322, or equivalent.

BIO 623 Physiological Ecology (3). An examination of physiological diversity in relation to the environments in which organisms live or have lived. This encompasses aspects of behavior, morphology, biochemistry and evolutionary biology among other fields. Problem-solving approaches involving problem posing, problem probing, and peer persuasion will be stressed to promote the learning of strategies of scientific research. Students will design and conduct research projects. Prerequisite: BIO 330; BIO 322 is recommended.

BIO 625 Biogeography (3). The role of geological, climatological, and biotic factors in explaining the past and current diversity and distribution of Earth's plants and animals. Underlying processes, current theory, and applications are stressed over actual diversity and distribution patterns themselves. Three hours lecture per week. Prerequisite: three hours of biology and 12 of biology and/or geosciences, or consent of instructor.

BIO 629 Teaching Science Through Inquiry (4). Students will learn and apply current inquiry based instructional methods and assessment strategies to teach science. Students will also gain the basic data management and analytical skills necessary to conduct action research. The course will follow a workshop style format modeling inquiry based methods. A significant amount of independent and group work is expected outside of class meetings. Students will develop, implement and assess an inquiry based module outside of class.

BIO 630 Animal Ecology (4). Ecological principles in relation to animal populations, including human populations. Emphasis is placed on recent literature and the approach involves lecture, seminar and field activities. Prerequisite: BIO 330.

BIO 631 Plant Ecology (4). A general study of the interactions of individual plants and plant communities with their environment, emphasizing the nature and energetics of environment-organism interrelationships and species-community dynamics. Methods of analysis and interpretation of field data are stressed. Field work comprises an integral part of the course. Two lectures and four hours of laboratory per week. Prerequisites: BIO 330 and either BIO 154, 350, or 553.

BIO 632 Quantitative Ecology (4). An introduction to ecological data analysis and interpretation. Emphasis is placed on the understanding of ecological data structure and analytical methods. Major topics include sampling, diversity analysis, resemblance measurements, formal classification techniques, and pattern recognitions. Two lectures and four hours of computer lab per week. Prerequisites: BIO 330 and STA 135.

BIO 633 Molecular Genetics (3). A lecture course which involves discussions of general concepts of DNA structure, replication and translation. Current concepts in bacterial and bacteriophage genetics, such as gene transfer, recombination, gene regulation, and recombinant DNA technology will be examined. Prerequisites: BIO 300 and 333, or permission of instructor.

BIO 634 Molecular Genetics Laboratory (3). The laboratory covers classical bacterial and viral genetics such as transduction, conjugation, mutagenesis and mutant analysis by complementation, as well as recently developed recombinant DNA techniques. The student will get hands-on experience in DNA and RNA purification, restriction, endonuclease mapping, cloning and expression of foreign DNA in *E. coli* and DNA sequencing. These techniques and a clear understanding of the processes involved in gene expression will equip the student well for either a position in industry or graduate study. Prerequisite: Previous or concurrent BIO 633.

BIO 636 Evolution (3). A study of evolutionary concepts. Prerequisite: BIO 333.

BIO 638 Animal Behavior (3). An introduction to the principles of animal behavior. Ecological and evolutionary implications of animal behavior are emphasized. Two lectures and four hours of laboratory per week. Prerequisite: BIO 221 and 330 or permission of instructor.

BIO 639 Animal Behavior Laboratory (1). An introduction to testing hypotheses in animal behavior. Ecological and evolutionary implications of animal behavior are emphasized. Three hours of laboratory per week. Prerequisites: BIO 221 and 330 or consent of the instructor; BIO 638 or concurrent enrollment.

BIO 640 Field Biometry (4). Students will learn and practice descriptive statistics, experimental design, regression, ANOVA, ANCOVA, and data management. In contrast to other statistics courses, students will spend more of their time in the field than in the classroom. Prerequisites: any field biology course; BIO 330, or permission of instructor.

BIO 641 Winter Ecology: Life in the Colder Seasons (2). Course focus is on survival strategies for the colder months of the year (mid-fall through mid-spring) in various climates, including physiological, morphological, and behavioral

adaptations. Adaptations for both animals and plants, as well as plant-animal interactions, are considered in both terrestrial and aquatic (under ice) systems. Human adaptations to cold climates are also considered. Prerequisite: one introductory course in ecology or permission of instructor.

BIO 642 Watershed Ecology (3). The study of the movement of water through the environment and its relationship to biotic systems. Areas emphasized include the hydrologic cycle and its influence on groundwater, lotic, and lentic systems; the effect of water on plant and animal communities; and the influence of human activity on watershed structure and function. Prerequisite: BIO 330 or permission of instructor. (Same as GSC 642.)

BIO 644 Graduate Cooperative Education (3). A meaningful, planned and evaluated work experience related to the career and educational objectives of the student for which both pay and graduate credit may be received. Graded pass/fail. Prerequisite: permission of chair.

BIO 645 Microbial Ecology (4). A study of the basic principles, concepts and function of microbes (eubacteria, archebacteria and cyanobacteria) in the environment. Emphasis will be placed on energy relationships and the role of microbes in mineral cycling in soils, sediments, and fresh water. Two 75-minute lectures and one 2-hour lab per week. Prerequisite: BIO 300 or permission of instructor.

BIO 646 Stream Ecology (4). The interactions of stream organisms with each other and their abiotic environments will be examined. An area stream will be used as an example for physical and chemical characteristics of a stream and adaptations of organisms to their environments. One weekend field trip required. Prerequisite: BIO 330.

BIO 648 Principles of Managing Disease in Wildlife (3). An exploration of the principles of disease transmission, disease maintenance, and how biologists monitor for and manage for disease in free living wild animal species. The effect on the individual animal, wildlife population, and human will be discussed. Current issues in wildlife diseases will highlight how these principles are applied in the field. 3 hours of lecture per week. Prerequisite: one course from AGR 300, BIO 216, HEA 311, or NUR 301; or permission of instructor.

BIO 649 Fisheries Techniques (4). Course will provide instruction in many techniques used by fishery scientists. Students will learn about field sampling, laboratory analysis, computer modeling, and statistical analysis of fisheries data. The course will take advantage of the Hancock Biological Station to provide extensive hands-on practice in all techniques. Three lectures plus four hours lab per week. Prerequisite: BIO 330.

BIO 650 Advanced Cell and Molecular Biology (3). Course intended to give students an in-depth understanding of a variety of regulative strategies cells use to maintain existence. Topics included will be selected from modern interpretations of cell systems; including metabolic strategies, differentiation, cell energetics, and gene control systems. The course will be taught from a perspective of applied bioinformatics as related to genome diversity. A specific emphasis will be placed on the most recent advances in the field of cell and molecular biology, as revealed by current primary literature sources.

BIO 651 Molecular Mechanisms in Biosystems (3). This course will highlight the most current understanding of the molecular mechanisms that govern life of multicellular organisms. The role and function of biologically important molecules in cell specification and development of complex organisms will be discussed. The course will present concepts and data from different disciplines and provide a comprehensive mechanistic view of biological systems from the perspective of developmental genetics, cellular biology, biochemistry and structural biology. Library work will be required.

BIO 652 Native Plants for Wildlife (2). Course will study the relationships between animals and the native plant species or plant groups they utilize for food, protection, and shelter. Food availability by season will be considered for wildlife habitat management purposes. Students will learn to recognize various plants by species, genus, and/or family. Seed collection, storage, and germination techniques will be covered. Prerequisite: one course in introductory botany or permission of instructor.

BIO 653 Field Botany (4). A survey of the flora of West Kentucky and surrounding states. This course should be of interest to anyone interested in the plants of the region. Emphasis will be placed on field identification of common species, identification using keys, collection, and preparation of herbarium specimens, and general plant ecology of the region. Prerequisite: BIO 222.

BIO 654 Dendrology and Forest Conservation (4). Course is designed to teach students two main bodies of knowledge. First is an ability to identify common tree species in the eastern U.S. and to know their natural histories and their value as timber habitat. Second is an understanding of how these species interact with each other and their environment to compose functioning forests, along with forest management strategies for a wide range of natural resource goals. With this knowledge, students will "see both the forest and the trees." Class will comprise of three hours of lecture and four hours of field-oriented lab per week. Prerequisite: a general undergraduate botany class; or permission of instructor. A course in ecology is recommended.

BIO 655 Molecular Evolution (3). Advanced study of the theories of genetic change on the molecular level. Emphasis will be placed on theoretical aspects of change in DNA sequence (change at the nucleotide level), the evolution of macromolecules and the reconstruction of evolutionary history of genes and organisms. Prerequisite: BIO 333.

BIO 657 Systematics and Bioinformatics (4). This course will focus particularly on systematics and phylogenetic analyses, although other bioinformatics-related topics such as genomics and geographic information systems will be included. Students will search bioinformatic data sources, retrieve and edit data, and perform computer analysis on protein, DNA, and morphological data. Underlying biological processes will also be discussed. Three hours lecture and two hours computer lab per week. Prerequisite: BIO 333.

BIO 661 Freshwater Invertebrates (4). Functional anatomy, ecology and taxonomy of the freshwater invertebrates. Emphasis will be placed on collection, preserving and identifying invertebrates of this region. Two lectures and four hours of laboratory per week. Prerequisite: BIO 221.

BIO 663 Aquatic Entomology (4). The study of the ecology, natural history, life cycles, taxonomy and systematics of lotic and lentic insects. The class will include several field trips to aquatic habitats and the preparation of a working collection. Two hours lecture and four hours laboratory per week. Prerequisite: BIO 330 or permission of instructor.

BIO 664 Entomology (4). The introduction to the study of insects. Students become acquainted with about 200 Families of insects living in the terrestrial and aquatic habitats of the Midwest. Lectures include classification, identification, evolution, ecology, agriculture, epidemiology, and forensics. Laboratory activities include identification, field sampling, specimen preparation, and insect behavior. Each student conducts a small laboratory or field project on some aspect of insect ecology, behavior, or natural history. Prerequisite: BIO 330.

BIO 665 Biogeochemistry (3). Survey and discussion of the scientific literature on global cycles of carbon, nitrogen, phosphorus and man-made chemicals with special emphasis on the biogeochemical and ecological processes that affect terrestrial and aquatic ecosystems. The course will focus on interdisciplinary themes that incorporate new research results from the fields of biology, chemistry, and geosciences. (Same as CHE 665.)

BIO 667 Advanced Parasitology (3). This course is designed to cover current topics in all aspects of parasitology. Emphasis is placed on each individual student reviewing selected topics in detail. Library work comprises an integral part of the course. Prerequisite: BIO 467.

BIO 668 Wetland Ecology (4). An introduction to the hydrology, geomorphology, and biogeochemical processes of wetlands, and to the population, community and ecosystem ecology relevant to wetland habitats. The course places a dual emphasis on understanding: 1) the processes underlying important wetland functions and 2) the evolutionary ecology organisms that inhabit these terrestrial/aquatic ecotones. Laboratory exercises will train students to identify, delineate and assess the health of wetlands and to perform original research in wetland environments. Prerequisite: one 4-credit ecology course and one botany course at the undergraduate or graduate level, or instructor permission.

BIO 669 Biological Limnology (3). A study of the structure and function of aquatic communities and the influence of physicochemical and biological factors

on the occurrence and distribution of aquatic organisms. Emphasis will be on lake and reservoir communities. Prerequisite: permission of instructor.

BIO 670 Limnological Analysis Laboratory (4). This course will provide a conceptual framework and techniques for measurement of physical, chemical and biological phenomena in lakes and reservoirs. Emphasis will be placed on experimental approaches to field and laboratory studies. Prerequisite: permission of instructor. Should follow BIO 586 or GSC 665 and BIO 669.

BIO 671 Ichthyology (4). Natural history of fishes, their systematics and some anatomical and physiological relationships with the environment. One weekend field trip required. Three lectures and one afternoon of lab per week. Prerequisite: BIO 221.

BIO 672 Herpetology (4). A study of the taxonomy, morphology and natural history of reptiles and amphibians. Emphasis is placed on those species occurring in the central United States. Two lectures and four hours of laboratory per week. Prerequisite: BIO 221 and 330 or permission of instructor.

BIO 673 Ornithology (4). Study of avian biology with emphasis on anatomy, physiology and classification of birds. Three lectures and two laboratory hours per week. Requires weekend field trip. Prerequisite: BIO 221 and 330.

BIO 674 Mammalogy (4). A study of the classification and biology of mammals. Identification and collection of mammals, particularly those of the central United States, will be emphasized in laboratory. Two lectures and four hours of laboratory per week. Some weekend and Saturday field trips required. Prerequisite: BIO 221 and 330.

BIO 678 Conservation Biology (4). An advanced study of the conservation of life at numerous levels of organization. Emphasis will be placed on modern empirical and theoretical studies of the maintenance, loss, and restoration of biological diversity, endangered species, and habitats. Three one-hour lectures and three hours of laboratory per week. Prerequisite: BIO 330.

BIO 680 Principles of Wildlife Management (4). Application of ecological principles of management of wild animals, wildlife agencies and their function in wildlife management; economic, social, biological and other values of wildlife. Three lectures and two hours of laboratory per week. Requires Saturday field trips. Prerequisite: BIO 380.

BIO 681 Applied Natural Resources Economics, Policy, and Administration (3). Course concentrates on the application of microeconomic theory to natural resources policy, administration, and decision making in areas such as endangered species management, wildlife damage management, non-game management, and game management. This course will also discuss how the public uses economics to make personal decisions about natural resources. Prerequisite: ECO 231 or permission of instruction.

BIO 682 Waterfowl Management (4). Ecological principles and techniques involved in management of waterfowl with emphasis on habitat and hunter manipulation. Readings in current research. Includes all-day Saturday field trips to refuges. Three lectures and two hours of laboratory per week. Prerequisite: BIO 580.

BIO 683 Fisheries Management (4). Ecology and management of freshwater fishes. Methods of fishery investigation will be emphasized. Three lectures and four hours of laboratory per week. Prerequisite: BIO 330.

BIO 684 Wildlife Policy and Administration (3). Emphasis is placed on the management of natural resources with particular focus on fish and wildlife. Topics will include an overview of natural resources agency structures and functions, the planning and management cycles, and ethical public relations techniques for multiple-use management in the public domain. Prerequisite: BIO 330 or permission of instructor.

BIO 686 Limnology (4). A study of the interrelationships of the physical, chemical and biological features of lakes and streams. Two lectures and four hours of laboratory per week. Prerequisite: BIO 330.

BIO 687 Freshwater Biology (4). Study of the aquatic organisms, their biology, distributions, and ecology in natural aquatic communities and habitats in Kentucky Lake, streams, springs, and wetlands near the Hancock Biological Station. Aquatic organisms to be surveyed include bacteria, algae, aquatic plants, invertebrates, and vertebrate animals. Includes two lectures and four hours of laboratory per week. Prerequisite: BIO 330.

BIO 688 Reservoir Ecology (4). An examination of the variation in chemical and biological phenomena that characterize river impoundments. Literature reading and discussion is followed by 1) learning techniques of observation to identify pattern and process in nature, and 2) designing and conducting field experiments to assess cause and effect relationships.

BIO 689 Introduction to Graduate Study (1). The objective of this course is to orient the new graduate student to graduate study. Topics include the library, literature search, the research plan, choosing a research topic, scientific graphics and photography, scientific writing, scientific presentation seminars. The course is usually team-taught and offered in the evening. Prerequisite: Admission to the graduate program.

BIO 690 Disturbance Ecology (3). Relationships among organisms and with their environment are often heavily influenced by ecological disturbances that damage and kill individuals and thereby alter dynamics of entire ecosystems. This class will examine a wide range of ecological disturbances in terms of 1) the physical phenomena, 2) the effects of those phenomena on organisms, and 3) the response of organisms in terms of population-, community-, watershed- and ecosystem-dynamics. The course will examine the following disturbances in ecological terms within the context of global environmental change: fires, hurricanes, tornados, ice storms, floods, droughts, habitat fragmentation, invasive species, and others of the students' own choosing. Note: Prior coursework in ecology is strongly recommended. Prerequisite: BIO 330 or equivalent, or permission of instructor.

BIO 691 Topics in Biology I (1). Students explore topics within the biological sciences under the direction of individual faculty. These individually arranged learning experiences may include various combinations of library assignments, conferences, laboratory and field investigation. Written descriptions of the course of study must be approved by the student's advisor and be filed with the chair within two weeks of the beginning of a term. This course sequence may contribute no more than eight credit hours toward the graduate degree requirements.

BIO 692 Topics in Biology II (2).

BIO 693 Topics in Biology III (3).

BIO 694 Topics in Biology IV (4).

BIO 695 Biological Research (4). This course provides research experiences for students pursuing the non-thesis option. The course entails selection of a research problem, collection and interpretation of data, and submission of results in a research paper. Prerequisite: approval of graduate committee.

BIO 696 Understanding Scientific Communication (2). The course concentrates on the methods for preparation and presentation of scientific papers and oral communications. Students will utilize a data set to produce 1) a publication-quality manuscript, and 2) a 15-minute presentation such as would be given at a scientific meeting. Topics covered include abstracts, nature of scientific writing, structure and organization of scientific publication, use of literature, graphics and graphic design, and methods of polishing the oral presentation. The course is required of all biological sciences graduate students in their first spring semester of residence and is open to all other graduate students with permission of instructor. One two-hour course meeting per week. (Same as GSC 696.)

BIO 697 Seminar (1). Graduate students anticipating completion of the thesis or BIO 695 must register for this course and defend their research before the department faculty and their fellow graduate students.

BIO 698 Thesis I (3).

BIO 699 Thesis II (3).

BACHELOR OF INTEGRATED STUDIES (BIS)

BIS 301 Integrated Studies Research I (3). Course will provide students with tools and skills required to understand research terminology and assess valid research. Emphasis will be placed on understanding various research methods, evaluating credible sources, and proper APA format.

BIS 302 Integrated Studies Research II (3). Course guides the student through the steps leading to a formal proposal for the B.I.S. field of study project, including annotated bibliography, internet research techniques, review of literature, and the formal written project proposal.

BIS 399 Seminar in Integrated Studies (3). Seminar for students in the Bachelor of Integrated Studies (BIS) program. Investigation and discussion of current issues in adult and distance learning. Topics include curriculum information in BIS program, distance learning technologies, problems experienced by and subjects of interest to adult students. A minimum grade of *C* is required in this course to continue in the BIS program. Prerequisites: junior standing, acceptance into BIS program, and consent of BIS advisor or instructor.

BIS 437 Senior Project (6). The course guides the student through the completion of the field of study senior project, which is a baccalaureate senior thesis required for completion of the Bachelor of Integrated Studies degree. A student must earn a minimum grade of C in this course to receive a Bachelor of Integrated Studies. Prerequisites: admission to B.I.S. program, senior standing, BIS 301 and 302 (or completion of two approved courses in the field of study research preparation), and a grade of C or better in ENG 105 (or equivalent), or by permission of instructor.

BUSINESS (BUS)

BUS 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

BUS 140 Foundations of Business (3). An introduction to the various functions of business such as finance, management, marketing, personnel, etc. Open only to students who have not completed a business course above the 200 level.

BUS 200 Collegiate Leadership and Service (1-2). Course introduces students to basic leadership concepts and practices in business and public affairs. Student skills in the area of leadership will be enhanced through the use of class presentations, discussion, freshman orientation responsibilities, and participation in collegiate and university activities. This course may be repeated for a total of three hours. A maximum of six hours credit may be earned or scheduled from any combination of GUI 251, 252, and 450 and BUS 200. Prerequisite: permission of instructor.

BUS 215 Business Communication (3). This course is designed to acquaint the student with the principles of business communication and give him/her practice in solving business problems through the use of written communications, research and report writing, and oral communications. Prerequisite: a minimum grade of *C* in ENG 105, or ENG 101 and 102, or ENG 150, or the equivalent.

BUS 296 Topics in International Business (3). Course is designed to give participants exposure to cultures and business practices outside the United States. The course is offered in conjunction with a study abroad program and includes travel, study, visits to corporate and governmental offices, and experiential assignments in various countries. At the instructor's discretion, the course may focus on a specific topic or theme.

BUS 355 Information Systems and Decision Making (3). This course is a brief overview of information systems and the roles they play in support of decision making. Specific topics include information technology hardware and software, business intelligence, database management and data warehouses, e-commerce, decision support systems, IT infrastructures and controls, and computer crime and forensics. A significant component of this course also includes skill development in spreadsheet and database software. A student may receive credit for only one of the following courses: ACC 308, BUS 355, or CIS 307. Prerequisites: junior standing; ACC 200 and 201; CSC 199 or equivalent.

BUS 396 International Business Seminar (3). Only those student who are enrolled in the International Business Seminar study abroad program are permitted to enroll in this course. Designed to give participants firsthand exposure to cultures and business practices outside the United States. The seminar includes travel, study, visits to corporate and governmental offices, and other experiential assignments in various countries. At the instructor's discretion, the seminar may focus on a specific topic or theme. May be repeated once with advisor's approval. Prerequisite: consent of instructor.

BUS 442 Business Ethics and Environments (3). This course involves a study of modern and classical approaches to both business and personal ethics as well as the other major components of the business environment: the political, international, legal, ecological, social and cultural environments. This course also studies the principles and practices of corporate governance. Prerequisites: LST 240, MGT 350, FIN 330, MKT 360, and senior standing. (Same as PHI 442.)

BUS 485 Geospatial Tools in Business (3). The continuing development of Geographic Information Systems (GIS) technologies and the rapid migration of these technologies to Web-based platforms across enterprises have created powerful geospatial tools for analysis, communication, and promotion. In this course, students expand their knowledge of these technologies and develop skills in applying them to these core business functions. Traditional learning activities are augmented with projects in which students learn how to use geospatial tools in analysis, communication, and promotion and how to share these tools and resources throughout organizations. Prerequisite: BUS 140 or MKT 360 or MGT 350 or consent of instructor.

BUS 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

BUS 499 Senior Seminar in Business (1). Seminar for students of business administration programs with a primary focus on preparation of seniors for a variety of employment environments and professional development. Recommended for students enrolled in their next to last undergraduate semester, but with approval could be taken in last undergraduate semester. Prerequisite: senior standing.

BUS 515 Communicating in an International Business Environment (3). This course is designed to acquaint students with the challenges of international business communication, provide guidelines for successful cross-cultural business communication, and give practice in solving international business problems through the use of the guidelines.

BUS 540 Legal Obligations of Business (3). Course will provide a basic understanding of the laws that relate to business with emphasis on the law of contracts, sales, negotiable instruments, and secured transactions. Prerequisite: LST 240.

BUS 595 Special Problems (3). Prerequisite: permission of instructor.

BUS 605 Research Methods in Business (3). Will introduce students to research methods used in business. The class will examine research projects which involve a variety of data collection and analysis methods. Topics include research proposals, research design, survey writing, sources and collection of data, data analysis, and presentation of research results. The class will develop students' oral and written communication skills.

BUS 615 Communicating in an International Business Environment (3). This course is designed to acquaint students with the challenges of international business communication, provide guidelines for successful cross-cultural business communication, and give practice in solving international business problems through the use of the guidelines.

BUS 640 Legal Obligations of Business (3). Course will provide a basic understanding of the laws that relate to business with emphasis on the law of contracts, sales, negotiable instruments, and secured transactions. Prerequisite: LST 240.

BUS 684 Seminar in Geospatial Tools in Business (3). The continuing development of Geographic Information System (GIS) technologies and the rapid migration of these technologies to Web-based platforms across enterprises have created powerful geospatial tools for analysis, communication, and promotion. In this course, students expand their knowledge of these technologies and develop skills in applying them to these core business functions. Traditional learning activities are augmented with projects in which students learn how to use geospatial tools in analysis, communication, and promotion and how to share these tools and resources throughout organizations. Students will also design, conduct, and manage a customized geospatial research project for an external organization. Prerequisite: MKT 360 or consent of instructor.

BUS 695 Special Problems (3). Prerequisite: permission of instructor.

BUS 696 International Business Seminar (3). Only those student who are enrolled in the International Business Seminar study abroad program are permitted to enroll in this course. Designed to give participants firsthand exposure to cultures and business practices outside the United States. The seminar includes travel, study, visits to corporate and governmental offices, and other experiential assignments in various countries. At the instructor's discretion, the seminar may focus on a specific topic or theme. This course includes an individual research project approved by the instructor.

COMMUNICATION DISORDERS (CDI)

CDI 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

CDI 205 Introduction to Communication Disorders (3). An introduction to the areas of speech-language pathology and audiology. An integral part of the course is observation of therapy with speech, language, and hearing disorders.

CDI 275 Foundations for Communication Disorders Professionals (3). A course focused on developing accurate clinical observation skills and professional written and oral communication suited to educational and healthcare settings. May include field experience or observations outside of class time. Prerequisite: *B* or better in ENG 105.

CDI 292 Communication Disorders for Special Educators (4). A survey course of speech and language acquisition, disorders and remediation. The course is specifically designed for the special educator and classroom teacher and will center on information and remedial procedures particularly applicable to a classroom situation.

CDI 301 Exploration of Culture and Communication Disorders through International Travel (1-3). An education abroad experience highlighting the culture and topics related to speech-language pathology in another country. Students must qualify for participation in a Murray State University approved international travel experience. The course may be taken more than once if travel is to different countries. Repeatable up to six hours. Prerequisite: Cumulative GPA of 3.0 and consent of instructor.

CDI 310 Anatomy and Physiology of the Speech Mechanism (3). The study of anatomy and physiology of the speech mechanisms; respiration, phonation, resonation, articulation, and basic neurological concepts underlying the communication process. Prerequisites: 3.0 overall GPA; BIO 101 with lab, and CDI 275 with a grade of *B* or better.

CDI 315 Speech and Acoustics of Speech (3). Course explores the acoustic characteristics of speech sounds, the processes involved in the production of those characteristics, the importance of those characteristics in the perception of verbal communication, and instrumentation used for measurement. Prerequisites: 3.0 overall GPA; a grade of *B* or better in CDI 275, 310, and 350.

CDI 325 Pediatric Speech Disorders I (3). Designed to provide fundamental knowledge of the nature of speech disorders in children, including etiologies and characteristics as well as anatomical/physiological, linguistic and developmental correlates. Prerequisites: CDI 215, 310, 340 and admission to CDI program.

CDI 340 Speech and Language Development (3). This study of language development includes the components of the language system (phonology, semantics, syntax, and pragmatics), fundamental stages of development, the biological bases of language, and compares theories that attempt to account for speech and language development.

CDI 345 Pediatric Language Disorders I (3). Designed to provide fundamental knowledge of the nature of language disorders in children, including etiologies and characteristics as well as psychological, linguistic, developmental and cultural correlates. Prerequisites: CDI 340 and admission to CDI program.

CDI 350 (215) Clinical Phonetics (3). The study of the speech sounds used in the production of American English. Students must master fluent sound-to-symbol decoding and transcribing using the International Phonetic Alphabet. Anatomy and physiology of the speech mechanism is introduced for the purpose of describing speech sound production. Transcription of disordered and dialectal differences in speech is introduced. Prerequisites: 3.0 overall GPA; CDI 275 (with a grade of *B* or better) and 310 (may be taken concurrently).

CDI 405 Hearing and Its Assessment (3). A study of the anatomy and physiology of the hearing mechanism, auditory pathologies, hearing loss, and its assessment. Clinical practice required. Prerequisites: CDI 275 with a grade of *B* or better, CDI 315, and a cumulative 3.0 GPA.

CDI 410 (465) Neuroscience for Communication Disorders (3). Addresses the basic structure and function of the brain with a special focus on the neuroscience of communication. Relationships between different lesion sites in the brain and the communication and swallowing disorders that they produce will be introduced. Prerequisites: CDI 310, cumulative GPA of 3.0, and admission to the Communication Disorders program.

CDI 425 Pediatric Speech Disorders (3). A study of pediatric speech disorders as they contrast with typical speech development. Observations outside of class time, as well as oral and written communication are emphasized as students learn characteristics and etiologies. Prerequisites: admission to the CDI undergraduate program; CDI 340 and 350; and a minimum of 3.0 cumulative GPA.

CDI 440 Adult Neurological Disorders (3). A study of adult neurological speech, language, cognition, and swallowing disorders and their characteristics. The basic principles and practices of assessment and evidence-based interventions are introduced. Prerequisites: CDI 275 with a grade of B or better, CDI 410, and a cumulative 3.0 GPA.

CDI 445 Pediatric Language Disorders (3). A study of pediatric speech disorders as they contrast with typical speech development. Observations outside of class time, as well as oral and written communication are emphasized as students learn characteristics and etiologies. Prerequisites: admission to the CDI undergraduate program; CDI 340 and a minimum of 3.0 cumulative GPA.

CDI 451 Maximizing Functional Outcomes for Individuals with Hearing Loss (3). A study of the perceptual, psychological, and educational implications of hearing loss and current methods available to address the needs of this population. Prerequisites: CDI 275 with a grade of B or better, CDI 405, and a cumulative 3.0 GPA.

CDI 452 Signing Exact English I (3). This course serves as an introduction to Signing Exact English, a form of manual communication used primarily by children. The course includes study of manual communication and development of basic skills in finger spelling and signing.

CDI 465 Neuroanatomy and Physiology for Applied Health Sciences (3). A study of the organization of tissues and gross structural elements of the human nervous system and current knowledge of the physiology of neural transmission. The course will cover the neural substrates for cognition, communication, and movement and will explore clinically relevant pathology related to function. Prerequisites: cumulative GPA of 2.5 and admission to Communication Disorders program. For all others, advisor approval. (Same as EXS 435.)

CDI 470 Pediatric Speech Disorders II (3). A course dealing with assessment and treatment techniques appropriate to speech sound disorders. This is an applied course and consists of reading, discussion, and guided practice as well as limited lecture. Some activities will take place in the clinic. Prerequisite: CDI 325. Corequisite: CDI 474.

CDI 472 Pediatric Language Disorders II (3). A course dealing with assessment and treatment techniques appropriate to child language disorders. This is an applied course and consists of reading, discussion, and guided practice as well as limited lecture. Some activities will take place in the clinic. Prerequisite: CDI 345. Corequisite: CDI 474.

CDI 474 Elementary Clinical Skills (1-3). Observation, shadowing of graduate clinicians, or individual clinical assignment in communication disorders. May be repeated up to four hours. Corequisite: CDI 470 or 472.

CDI 475 Clinical Applications in Communication Disorders (3). This writing-intensive course is focused on integrating students' professional skills with their developing clinical skills. Students who have not completed 25 hours of observation must do so prior to completing required clinical experiences. Observations and clinical experiences may take place outside of class time. Two hours lecture with one hour lab. Corequisite: INF 320. Prerequisites: admission to CDI undergraduate program; *B* or better in CDI 425 and 445, minimum of 3.0 cumulative GPA.

CDI 480 School Services for Communication Disorders (3). This course is an in-depth study of roles and responsibilities of the speech-language pathologist and speech-language pathology assistant practicing in the schools. Prerequisite: admission to Communication Disorders program.

CDI 482 Augmentative-Alternative Communication (3). A study of communication modalities available to meet the communication needs of persons across the life-span with severe communication disorders. The course will emphasize augmentative and alternative communication strategies, techniques, technologies, and characteristics of communication partners based on research and theory. Prerequisites: CDI 340 and 345.

CDI 598 Directed Study (1-3). Available for students who want to investigate special problems. Can be repeated up to six credit hours. Prerequisites: senior standing and permission of instructor directing the study.

CDI 601 Professional Issues (2). Advanced course for students in speech-language pathology will foster professional growth and competence in the skills necessary for professional success. Professional issues addressed will include ethics, accreditation, certification, licensure, reimbursement, and applications of evidenced-based practice. Prerequisite: documentation of the acquisition of basic knowledge and skills as outlined in the standards for the Certificate of Clinical Competence.

CDI 611 Seminar in Current Trends and Issues (1-3). Extensive review and discussion of current issues and trends in the profession. Topics will include state-of-the-art research, technology, healthcare, education, etc., to be determined by shared professional concerns of instructor and students. May be repeated up to eight credit hours. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 615 Instrumental Methods for SLPs (3). An investigation of technologies and methodologies for assessing and documenting human communication processes. Demonstration and training are provided for evidence-based practice and research. Prerequisite: admission to speech-language pathology or permission of instructor..

CDI 620 Phonological Disorders (3). Course will include advanced education in diagnosis and treatment for speech sound disorders. Includes an extensive review of current literature. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 621 Student Teaching in Speech Language Pathology (5). The study and clinical practice of speech-language pathology in the public schools. A seminar component includes current issues in certification, licensure, ethical and legal aspects of service delivery, program administration and interaction with allied professionals.

CDI 624 Disorders of Voice (3). Study of voice pitch, quality, and intensity, including etiology, diagnosis and therapy for functional and organic problems. Course includes a study of alaryngeal speech. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 625 Fluency Disorders (3). A study of theories and varying characteristics of stuttering, including therapy programs, methods, procedures and materials for treatment of stuttering of different ages and with different characteristics. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 635 Graduate Seminar in Communication Disorders (1-3). Topical seminar in speech and hearing. May be repeated to a maximum of six hours.

CDI 640 Individualized School Placement (4-6). Provides opportunities for students to participate in all activities and duties generally expected of a speech-language pathologist in the public schools. Specific supervision will be provided. This course is designed for students with at least one year of teaching experience and seeking a new certificate (students with less than one year of experience must take CDI 621). Course activities include planning, preparation and therapy under on-site supervision. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 646 Research Methods for Speech-Language Pathologists (3). Review of research procedures and designs that have relevance to special populations. Special emphasis will be given to those skills (understanding, assumption, reading and abstracting articles, interpreting data, and evaluating results) needed to understand the relationships between research strategies, clinical problem solving and the assessment of clinical effectiveness in speech-language pathology. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 647 Early Language Development and Disorders (3). A study of language development, disorders and intervention in infants, toddlers, and preschool children. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 648 School-Age Language Disorders (3). A study of theories of language development and language disorders affecting school children. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 651 Neuromuscular Disorders (3). The study of pathology, etiology, diagnosis and speech rehabilitation of cerebral palsy and other neuromuscular disorders. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 656 Advanced Audiology (3). An in-depth study of audiology and hearing science as they relate to speech communication. Emphasis will be on clinical theory and application for special problems in audiology. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 660 Motor Speech Disorders (3). A study of dysarthria and apraxia of speech with emphasis on differential diagnosis and current clinical theory and application. The course will also include assessment and treatment of swallowing disorders. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 664 Introduction to Clinical Practicum (3). Supervised and directed clinical practice in communication disorders. Emphasis is on developing initial skills in clinical procedures, case management, and self-evaluation. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 665 Neuroanatomy for Allied Health Professionals (3). A study of the organization of tissues and gross structural elements of the human nervous system and current knowledge of the physiology of neural transmission. The course will cover the neural substrates for cognition, communication and movement and will explore clinically relevant pathology related to function. The course will include specific study of the mechanisms of injury to the brain associated with acquired neurological disorders. Acceptance into the program for a Interdisciplinary Brain Injury Studies Graduate Certificate or instructor permission.

CDI 670 Practicum Seminar (1). This seminar is a companion course to the graduate practicum experiences in communication disorders. It explores topics on the assessment, diagnosis, and treatment of communication problems of individuals across all ages. This course also serves as a forum for introduction and discussion of current professional issues that impact diagnosis and treatment. One hour lecture, two hours clinical practicum. Graded pass/fail. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 672 Diagnostic Methods (3). In-depth study and practical use of contemporary tests used by the speech-language pathologist. Includes formal and informal evaluation procedures. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 674 Clinical Practicum (1-3). Supervised clinical practice with communication disorders. May be repeated up to seven hours. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 676 Medical/Clinical Placement (5). Supervised clinical practice within medical and health care settings including hospitals, rehabilitation centers, home health and private practice. Assessment and treatment population will be mainly adults with neurogenic communication disorders. May be repeated to a maximum of 10 hours. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 677 Clinical Pathologies (3). Course will include a review of the various pathologies that the master's level clinician will encounter. Also included will be an overview of relevant educational and medical issues pertinent to the speech pathologists. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 680 Adult Neurogenic Communication Disorders (3). An in-depth study of the characteristics of aphasia, right hemisphere disorders, and dementia. The cognitive, linguistic, and communicative aspects of each disorder will be explored as the foundation for differential diagnosis and clinical intervention. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 684 Craniofacial Anomalies (3). A study of etiology, assessment and treatment of the oral cleft and other oro-facial anomalies. Includes a survey of the roles of various specialists represented on the oral cleft team. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 685 Communication Disorders of Aging (3). Course will include information relative to the effect of communication disorders on the aging population and to acquaint the student with intervention techniques appropriate for the communicatively handicapped older person. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 686 Swallowing Disorders (3). A study of normal and disordered swallowing processes. The course includes a review of the anatomy and physiology of the swallowing mechanism and the etiology of acquired swallowing disorders. Special emphasis is placed on current clinical theory, application, and technology in differential diagnosis and treatment. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 690 Interdisciplinary Leadership Project (2). This course provides advanced professional development integrating the cumulative knowledge and skills obtained over the duration of the Interdisciplinary Brain Injury Studies Graduate Certificate. The course primarily focuses on an individually designed leadership project that addresses the needs of persons with acquired injury and their families. May be repeated for up to four credits. Prerequisites: CDI 665 or consent of instructor.

CDI 694 Advanced Clinical Practicum (3). Supervised clinical practice in communication disorders. Course activities include supervised planning, preparation and therapy. Prerequisites: completion of CDI 670 and CDI 674. May be repeated for up to six hours of credit.

CDI 695 Independent Study (3). Available for selected students who desire to investigate a special area or problem. A final written paper will be submitted to the instructor. May be repeated up to six credit hours. Prerequisite: admission to speech-language pathology or permission of instructor.

CDI 698 Thesis (3).

CDI 699 Thesis (3).

CIVIL/CONSTRUCTION ENGINEERING TECHNOLOGY (CET)

CET 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Meetings with advisors, department personnel, service areas, and campus field trips comprise the main involvement. Availability of university resources is stressed with emphasis on personal needs. Graded pass/fail. (Fall)

CET 199 Environment Science and Technology Concepts (4). Pollution assessment and control introduction intended for general public awareness. Topics include basic environmental science and ecological principles; population dynamics and resource management; sampling and analytical techniques; regulatory considerations; and water treatment, air pollution control, solid waste handling, and hazardous waste management systems. Laboratory required.

CET 280 Plane Surveying (3). Field and office procedures necessary for measuring distances, elevations, horizontal and vertical angles. Boundary and area calculations and basic construction applications of survey procedures. Care and use of survey instruments. Two hours lecture and three hours lab. Prerequisites: MAT 130 and ITD 107.

CET 282 Construction Methods and Equipment (3). A study of the production rates and owning and operating costs of construction equipment along with methods used in heavy and building construction. Prerequisite: MAT 130. (Fall)

CET 284 Sustainable Design and Construction (3). Introduction to principles of sustainable design and construction of residential and commercial facilities. Topics include "green" building fundamentals and certifications, landscaping, energy, materials, indoor environmental quality, and economics. (Spring)

CET 298 Strength of Materials (3). A study of internal stresses and physical deformations caused by externally applied loads to structural members. Topics include normal and shearing stresses, stress and strain relationships, simple tension and compression of axial members, composition beams, inelastic bending, transverse shear stresses in beams, deflections, and elementary design of beams and shafts. Includes a laboratory investigation of mechanical properties of materials and structural elements. Prerequisites: ENT 287 and MAT 230.

CET 302 Structural Drawing (3). A study of methods and procedures used in architectural drawing and in graphical presentations of steel and concrete structures. Emphasis is placed on structural drawing and detailing with special emphasis on detailing of structural steel and reinforced concrete members of buildings. Six contact hours. Prerequisite: ITD 107 or equivalent. (Spring)

CET 310 Anatomy of Buildings (3). Study of the function, physical makeup, and working principles of various building systems, components, and materials. Emphasis on the basic design principles and interdependence of the structural, utility and climate control systems. This course is designed to enhance the student's knowledge of the total building process. (Spring)

CET 330 Water Quality Technology I (3). Course of study includes fundamental design and operation of water treatment and reclamation systems. Topics include analyses of water and wastewater characteristics, system design conforming to regulatory requirements, and related chemical, biological, and hydraulics concepts. Prerequisite: MAT 130. (Fall)

CET 331 Water Quality Technology II (3). A continuation of CET 330 and includes fundamental design and operation of water treatment and reclamation systems. Topics include analyses of water characteristics, system design, and related chemical, biological, and hydraulics concepts. Prerequisite: CET 330. (Spring)

CET 342 Air Quality Technology (3). Ecosystem air chemistry and dynamics are stressed. The impacts of natural and human-derived pollution, both indoor and outdoor, are studied. The impact of regulations upon industrial production is also addressed. Prerequisite: MAT 230. (Spring)

CET 353 Solid and Hazardous Waste Management (3). Generation and remediation of solid and hazardous wastes are examined. Transportation and recycling within legislative guidelines are studied. Waste management planning, recycling technologies and risk assessment are also included. The course scope includes municipal, industrial and forest/agricultural solid waste generation. Prerequisite: MAT 130. (Spring)

CET 370 Route Surveying (3). Field and office practice in surveys needed for road construction and improvement. Computer mapping, preparation of digital terrain models, earth volume and mass diagram computation. Radial staking using electronic distance measurement and total station surveying instruments. Methods of free positioning on the construction site. Prerequisites: CET 280, MAT 230. (Spring)

CET 381 Boundary Surveying I (3). Field surveys and computational procedures necessary for boundary retracement and land subdivision in both metes and bounds and public lands states. Boundary law, subdivision ordinances, statutory requirement for boundary surveys. Two hours lecture and three hours lab. Prerequisites: CET 280 and MAT 230 or 250. (Spring)

CET 385 Construction Estimating I (3). Basic estimating procedures relating to quantity surveying, earthwork computations, and cost of labor and materials. CPM determinations of project durations and resources required for construction. (Fall)

CET 386 Construction Estimating II (3). Estimating and bidding large construction projects with an emphasis on reinforced concrete and structural steel work. Prerequisites: CET 385. (Spring)

CET 410 Transportation Systems and Design (3). Fundamentals and concepts of transportation engineering, including abroad overview and introduction of design tools and concepts. Prerequisite: CET 370.

CET 460 Geodesy (3). Basic elements of geometric and physical geodesy. Geodetic direct and inverse. Data adjustment. Observations using the global positioning system. Two hours lecture plus three hours lab. Prerequisites: CET 381 and MAT 308 or 330. (Fall)

CET 480 Construction Planning and Management (3). Project management including planning, scheduling, supervision, and emphasis on contracts and specifications. (Fall)

CET 481 Structural Steel Design (3). Elementary structural analysis and design of tension members, beams, columns and connections. Emphasis is placed on the AISC specifications. Prerequisite: CET 298. (Fall)

CET 482 Reinforced Concrete Design (3). Analysis and design of reinforced concrete beams, columns, footings and one-way slabs using the strength design method. Emphasis is placed on the ACI Building Code. Prerequisite: CET 298. (Spring)

CET 483 Construction Materials (4). Basic properties of materials used in construction concrete, asphalt, aggregates, and timber. Design procedures, field control, and adjustments. Three hours lecture and two hours laboratory. (Fall)

CET 484 Soil Mechanics and Foundations (4). Mechanical and physical properties of soils and their relations to engineering considerations, such as soil classification, permeability, shearing strength, consolidation, stress distribution, and bearing capacity of soils. Introduction to the analysis and design of shallow footings. Lecture and laboratory. Prerequisite: ENT 287. (Spring)

CET 485 Land Use and Watershed Protection (3). Focuses on impacts of land use on receiving waters, storm water management, erosion control, stream bank restoration, and reclamation of disturbed lands. Two hours lecture and three hours lab. Some weekend field trips required. Prerequisites: CET 280, ENT 286, and 382.

CET 486 Boundary Surveying II (3). Addresses field surveys and computational procedures necessary for land subdivision. Boundary retracement of state and municipal boundaries along with the colonial land system and Virginia/Kentucky land grant systems will also be components of the course. Two hours lecture and three hours lab. Additional field exercises are required. Prerequisite: CET 381.

CET 490 Construction Scheduling and Methods (3). Project management including planning, scheduling, and emphasis on construction methods and project delivery. Prerequisite: CET 480. (Spring)

CET 555 Environmental Regulatory Affairs (3). Laws and regulations pertinent to the management of water and wastewater, hazardous and toxic wastes, air contaminants, underground storage tanks and other timely environmental issues are studied. General legal concepts, the relationships among industries and local, state, and federal agencies, environmental audits and community right-to-know requirements are among the topics included. Prerequisites: CET 331, 342 and 353. (Spring)

CET 585 Remediation Technology (3). Study includes process design and operations for biological and physical/chemical systems used to remove organic and inorganic contaminants from soil and groundwater. (Fall)

CET 587 Sustainable Environmental Technology (3). Course focuses on analysis and design of environmental systems that enhance sustainable development and conserve natural resources. Topics include bioresiduals land application, natural treatment systems, life cycle analysis, and environmental economics.

CET 589 Environmental Modeling (3). Computer modeling of environmental/ecosystem phenomena including predictive impact of pollution discharges and engineering hydrology will be stressed. Prerequisite: ENT 382.

CET 610 Geodetic Survey Systems (3). Mathematical and conceptual elements of advanced survey systems including instrument calibration and error detection, coordinate system rotation and translation, gyroscopic surveys, and applications of calculus to survey computations. Prerequisites: CET 381 and MAT 308.

CET 620 Advanced Geodetic Surveying (3). Concepts and procedures for advanced horizontal and vertical control surveys designed to support geographic information systems; least squares adjustment of both traditional and Global Positioning System observations; digital terrain modeling using triangulated irregular networks and various polynomials. Prerequisite: CET 381.

CET 655 Environmental Regulatory Affairs (3). Laws and regulations pertinent to the management of water and wastewater, hazardous and toxic wastes, air contaminants, underground storage tanks and other timely environmental issues are studied. General legal concepts, the relationships among industries and local, state, and federal agencies, environmental audits and community right-to-know requirements are among the topics included. Prerequisites: CET 341, 342 and 353 or permission of instructor.

CET 681 Pollution Assessment and Control (3). A seminar/laboratory class that covers selected course areas within the environmental technology field. Pollution assessment and control will be introduced and specific topics will include environmental science and ecological principles; sampling and analytical techniques; regulatory considerations; and natural wastewater treatment systems.

CET 682 Industrial Ecology (3). The focus includes study of environmental planning and design to effect Total Quality Environmental Management (TQEM). Industrial economic impacts amid regulatory agency prescriptions and philosophical trade-off regarding energy conversion and pollution remediation and/or avoidance are addressed.

CET 685 Remediation Technology (3). Study includes process design and operations for biological and physical/chemical systems used to remove organic and inorganic contaminants from soil and groundwater. Prerequisite: CET 341 or permission of instructor.

CET 687 Sustainable Environmental Technology (3). Course focuses on analysis and design of environmental systems that enhance sustainable development and conserve natural resources. Topics include bioresiduals land application, natural treatment systems, life cycle analysis, and environmental economics. Prerequisite: CET 341 or permission of instructor.

CET 689 Environmental Modeling (3). Computer modeling of environmental/ecosystem phenomena including predictive impact of pollution discharges and engineering hydrology will be stressed. Prerequisite: ENT 382.

CHEMISTRY (CHE)

CHE 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

CHE 101 Consumer Chemistry (4). A brief course in chemistry for those who plan to take no more chemistry. Designed specifically to satisfy the University Studies physical science requirement. Explores social and cultural issues associated with science and technology to provide knowledge of resource conversion in a world dominated by an information explosion. Considers the impact of chemistry and technology on history, art, and business. Three lectures and two hours of laboratory per week. Not applicable to major or minor.

CHE 105 Introductory Chemistry (4). A beginning course in general chemistry designed for students who plan to take additional chemistry courses. Three lectures and two hours of laboratory per week. Not applicable to major or minor. Math ACT score of at least 20 or MAT 097 (or the equivalent) strongly advised.

CHE 111 Essentials of Chemistry and Biochemistry (5). A course that covers the essentials of general chemistry, organic chemistry and biochemistry with an emphasis on health-related topics. Three hours of lecture, two hours of recitation, and two hours of laboratory work per week. Not applicable to major or minor. Students may not receive credit for both CHE 105 and CHE 111 or CHE 111 and 210. Prerequisites: MAT 140 and one of the following: EXS 100T, HEA 100T, NUR 100T or permission of instructor.

CHE 120 Chemical Laboratory Safety (1). A general course in laboratory safety. It is recommended for all students seeking chemistry degrees and students in other fields involving extensive laboratory work. This course does not count for University Studies credit. Corequisite: CHE 201 or permission of instructor.

CHE 201 General College Chemistry (5). A thorough course in inorganic chemistry emphasizing atomic structure, stoichiometry, thermochemistry, the gaseous state of matter, periodic classification, nuclear chemistry, and chemical bonding. Three lectures, two hours of laboratory, and two hours of recitation per week. Prerequisites: Math ACT score of 24, or MAT 150 with a grade of *C* or better, or both MAT 140 and 145 with a grade of *C* or better in each.

CHE 202 General Chemistry and Qualitative Analysis (5). A continuation of CHE 201 emphasizing thermochemistry, solution chemistry, oxidation-reduction reactions, chemical kinetics, chemical equilibrium, acid-base chemistry, thermodynamics, electrochemistry, and other selected topics. Three lectures, two hours of laboratory, and two hours of recitation per week. Prerequisite: CHE 201.

CHE 210 Brief Organic Chemistry (3). An elementary course in organic chemistry for non-majors emphasizing the nomenclature, properties and reactions of important classes of organic compounds. Three lectures per week. Prerequisite: CHE 105 or 202. Not applicable to major or minor.

CHE 215 Brief Organic Chemistry Laboratory (1). Two hours of laboratory per week to accompany CHE 210 which is a co- or prerequisite. Not applicable to chemistry major or minor.

CHE 305 Analytical Chemistry (5). Fundamental principles and techniques of volumetric and gravimetric analysis. Two lectures and two three-hour laboratory periods per week. Prerequisite: CHE 202.

CHE 312 Organic Chemistry I (5). Introduction to organic chemistry, including structure, properties, methods of preparation, and selected reactions of aliphatic and aromatic hydrocarbons and halides. Stereochemistry and basic reaction mechanisms are also included. An introduction to the theory of modern instrumental techniques (GC, IR, NMR, GC/MS) used in the identification of organic species is also taught. An introduction to the theory and practice of organic chemical laboratory procedures and manipulations which include hands-on experience with the preparation, separation, purification, and identification of typical compounds. Three hours of lecture, one hour of recitation and three and one-half hours of lab per week. Prerequisite: CHE 202.

CHE 320 Organic Chemistry II (3). A continuation of CHE 312 including similar studies of other fundamental classes of organic compounds. Three lectures per week. Prerequisite: CHE 312 with a grade of *C* or better.

CHE 325 Organic Chemistry II Laboratory (3). A continuation of CHE 312 involving more complicated syntheses and compound identification. One hour of pre-lab lecture and four hours of laboratory per week. Prerequisite: CHE 320.

CHE 329 Molecular Visualization in Chemistry (1). Survey of the techniques and methods used to visualize biological and organic molecules. One hour of lecture per week. Corequisite: CHE 330, 530 or 540 or permission of instructor.

CHE 330 Basic Biochemistry (3). A basic course surveying the chemistry and metabolism of carbohydrates, proteins, lipids and nucleic acids, and the action of vitamins, hormones and enzymes. Three lectures per week. Credit for either CHE 330 or CHE 530, but not both, can count toward a major or minor in chemistry. Prerequisite: CHE 210 or equivalent. (Spring only.)

CHE 352 Basic Chemical Instrumentation (4). An introduction to chemical instrumentation and instrumental methods of analysis, including chromatographic, optical, and electrometric techniques. Three lectures and one three-hour laboratory period per week. Prerequisite: CHE 305. (Fall only.)

CHE 388 International Experience in Chemistry (3). A short-term (10-14 days of travel) study abroad experience highlighting selected historical and modern contributions to chemistry from another country and culture. The course includes pre- and post-travel meetings, lectures, readings, and discussions. This course may be repeated for up to nine hours of credit. These hours will not count toward either the major or minor. Letter-graded course. Prerequisites: CHE 105 or 201 or consent of the instructor.

CHE 400 Chemical Literature (1). An introduction to methods of locating and accessing chemical information, both in the library and through on-line searching of computerized chemical databases; instruction in the writing of technical papers and reports. Prerequisite: CHE 320.

CHE 401 Ethics for the Chemist (1). An ethics course designed primarily for chemistry majors that explores, discusses and debates ethical issues faced by scientists.

CHE 403 Basic Physical Chemistry (5). Broad coverage of physical chemistry with inclusion of biological applications. Topics include gas laws, kinetic theory, states of matter, thermodynamics, solutions, chemical kinetics, and quantum theory. Designed for students in biological, medical, veterinary, and allied health fields, and those who require one semester of physical chemistry. Four lectures and three hours laboratory per week. Prerequisites: CHE 305, MAT 250, PHY 132 and 133 or 255 and 256. (Spring only.)

CHE 410 Physical Chemistry I (4). Theoretical chemistry with mathematical involvement. Topics included are gas laws, kinetic theory, laws of thermodynamics, and states of matter. Three lectures and three hours of laboratory per week. Should be taken in junior year. Prerequisites: CHE 305, PHY 255 and 256, or PHY 132 and 133 with permission of instructor, and MAT 309. (Fall only.)

CHE 420 Physical Chemistry II (4). A continuation of CHE 410 including solution chemistry, electrochemistry, chemical kinetics, basic quantum chemistry, and basic statistical thermodynamics. Three lectures and three hours of laboratory per week. Prerequisite: CHE 410. (Spring only.)

CHE 435 Undergraduate Seminar (1). An undergraduate seminar program in which the student must attend all departmental chemistry seminars scheduled during the semester of enrollment. In addition, the student will present two short seminars in the departmental seminar program or at an approved professional meeting. Graded pass/fail. These hours will not count toward either the major or minor. Prerequisite: CHE 305 or 312 or permission of chair.

CHE 446 Physical Chemistry for the Technical and Engineering Sciences (3). A course in physical chemistry for students in technical and engineering fields. Topics include kinetic theory, thermodynamics, phase diagrams, solution chemistry, electrochemistry, kinetics, quantum theory, and spectroscopy. Prerequisites: CHE 305, MAT 309, PHY 255.

CHE 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

CHE 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

CHE 495 Senior Research (3). Problems and hours arranged individually with staff members directing the research; minimum of nine hours per week. A valuable course for students entering the chemistry profession at the bachelor's degree level and for those who plan graduate study. A written report is required. Prerequisites: Approval of research director and department chair.

CHE 504 Fundamentals of Toxicology (3). This course surveys the scope and fields of toxicology, including the methods and design of toxicity studies with attention to toxic chemicals, their effects and regulatory considerations. Prerequisite: CHE 320 or permission of instructor.

CHE 509 Advanced Inorganic Chemistry I (3). Practical aspects of wave mechanics and bonding theories for covalent and ionic compounds; considerations of symmetry; properties and theories associated with the solid state, acids, bases, and coordination compounds. Limited descriptive chemistry. PES, NMR, IR, and UV/VIS spectroscopy applications in modern inorganic chemistry. Prerequisite: CHE 420 or its equivalent with a grade of *C* or better. (Fall only.)

CHE 510 Inorganic Chemistry Laboratory (2). Syntheses, characterization and introduction of techniques of inorganic chemistry. Four hours of laboratory per week. Prerequisite: CHE 509.

CHE 513 Environmental Chemistry (3). Studies related to chemicals in the environment as to origin, identification, distribution, modification and effect on biological systems. Prerequisite: CHE 320 or consent of the instructor.

CHE 517 Advanced Organic Chemistry (3). An intensive survey of modern organic chemistry with emphasis on theoretical concepts, reaction mechanisms and syntheses. Prerequisites: CHE 320 and 420 or permission of instructor. (Spring only.)

CHE 519 Instrumental Analysis (5). Theory, calculations, and use of modern analytical techniques, such as visible, ultraviolet, infrared and Raman spectrometry, flame methods, gas chromatography, electrometric methods of analysis and magnetic resonance. Two lectures and six hours of laboratory per week. Prerequisite: CHE 420 or permission of instructor. (Fall only.)

CHE 525 Biochemical Toxicology (3). A study of the basic biochemical aspects of toxicology including adverse chemico-biological interactions and chemical and biologic factors modulating these interactions, descriptions of effects of specific chemical classes, and biochemical mechanisms of toxic effects. Three lectures per week. Prerequisites: CHE 504 and 330, 530, or permission of instructor.

CHE 530 Fundamentals of Biochemistry I (3). Survey of the chemical properties and biological functions of proteins, carbohydrates, and nucleic acids. Topics include: protein structure and function, enzyme kinetics and mechanisms, and elements of organismal metabolism, including a description of glycolysis and the citric acid cycle. Three lectures per week. Credit for either CHE 530 or 330, but not both, can count toward a major or minor in chemistry. Prerequisite: CHE 320. (Fall only.)

CHE 537 Experimental Biochemistry (3). This course will emphasize a mastery of modern biochemical laboratory techniques and the analysis of experimental data. One hour of lecture and four hours of laboratory per week. Prerequisite: CHE 530 or permission of instructor.

CHE 540 Fundamentals of Biochemistry II (3). Continued study of the elements of metabolism, including their chemical reactions, energetics and regulation. Additional topics include hormones, biochemical function of various organs and replication, transcription and translation of genetic information. Three lectures per week. Prerequisite: CHE 530. (Spring only.)

CHE 545 Glassblowing (1). Laboratory demonstrations and exercises. Mastery of the different types of seals used in construction of scientific glass apparatus. Three hours of laboratory per week. Course restricted to chemistry majors. Prerequisite: senior standing. Cannot be used as an elective for ACS-accredited area.

CHE 565 Biogeochemistry (3). Survey and discussion of the scientific literature on global cycles of carbon, nitrogen, phosphorus and man-made chemicals with special emphasis on the biogeochemical and ecological processes that affect terrestrial and aquatic ecosystems. The course will focus on interdisciplinary themes that incorporate new research results from the fields of biology, chemistry, and geosciences. Prerequisite: junior or higher standing in biology, chemistry or geosciences. (Same as BIO/GSC 565.)

CHE 569 Spectrometric Identification of Organic Compounds (3). Course dealing with the theory and applications of the following methods to the structural analysis of organic compounds: IR, NMR, UV-Vis, and MS. Three hours of lecture per week. Prerequisites: CHE 320 and 519.

CHE 576 Polymer Chemistry (3). The chemistry and physical properties of natural and synthetic polymers of practical importance, coupled with the instrumental and spectroscopic methods of their evaluation. Prerequisite: CHE 320.

CHE 591 Special Problems in Chemistry (1). Laboratory and/or library investigations on special topics. Minimum of three hours per week. May be repeated once for credit. Prerequisites: senior standing and permission of instructor.

CHE 592 Special Problems in Chemistry (2). Laboratory and/or library investigations on special topics. Minimum of six hours per week. May be repeated once for credit. Prerequisites: senior standing and permission of instructor.

CHE 593 Special Problems in Chemistry (3). Laboratory and/or library investigations on special topics. Minimum of nine hours per week. May be repeated once for credit. Prerequisites: senior standing and permission of instructor.

CHE 600 Chemistry of Fuels (3). An advanced study of the chemical basis of fuel technology. Topics may include alternatives to petroleum products, synthetic fuels, and electrochemical fuel cells.

CHE 601 Seminar (1). Reports concerning current chemical literature including student-faculty discussions.

CHE 602 Seminar (1). Reports concerning recent research carried out in the department including student-faculty discussions.

CHE 603 Industrial Chemistry (3). Discussion of the application of chemistry principles to industrial processes.

CHE 604 Fundamentals of Toxicology (3). This course surveys the scope and fields of toxicology, including the methods and design of toxicity studies with attention to toxic chemicals, their effects and regulatory considerations. Prerequisite: CHE 320 or permission of instructor.

CHE 609 Advanced Inorganic Chemistry I (3). Practical aspects of wave mechanics and bonding theories for covalent and ionic compounds; considerations of symmetry; properties and theories associated with the solid state, acids, bases, and coordination compounds. Limited descriptive chemistry. PES, NMR, IR, and UV/VIS spectroscopy applications in modern inorganic chemistry. Prerequisite: CHE 420 or its equivalent at another four-year institution with a grade of *C* or better.

CHE 610 Chemical Thermodynamics (3). Mathematical treatment of the laws of classical thermodynamics with special emphasis on the applications to chemical systems. Prerequisite: CHE 420.

CHE 611 Advanced Inorganic Chemistry II (3). A continuation of CHE 609 with increased emphasis on the descriptive chemistry of the various groups

of elements as rationalized by bonding concepts and periodic trends studied in CHE 609. Prerequisite: CHE 509 or 609.

CHE 613 Environmental Chemistry (3). Studies related to chemicals in the environment as to origin, identification, distribution, modification and effect on biological systems. Prerequisite: CHE 320 or consent of the instructor.

CHE 617 Advanced Organic Chemistry (3). An intensive survey of modern organic chemistry with emphasis on theoretical concepts, reaction mechanisms and syntheses. Prerequisites: CHE 320 and 420 or permission of instructor.

CHE 619 Instrumental Analysis (5). Theory, calculations, and use of modern analytical techniques, such as visible, ultraviolet, infrared and Raman spectrometry, flame methods, gas chromatography, electrometric methods of analysis and magnetic resonance. Two lectures and six hours of laboratory per week. (Fall only.)

CHE 620 Chemical Kinetics and Mechanisms (3). Rate theory, experimental methods, treatment of data, simple and complex reactions, and reaction mechanisms. Prerequisite: CHE 420.

CHE 623 Radiochemistry (3). Theory of nuclear radiations, their interactions, detection and chemical applications. Laboratory experiments utilizing ionization chambers, Geiger counters, proportional gas-flow counters, solid crystal and liquid scintillation detectors, gamma ray spectrometers and experimental simulations. Two lectures and three hours laboratory per week. Corequisite: CHE 420.

CHE 625 Biochemical Toxicology (3). A study of the basic biochemical aspects of toxicology including adverse chemico-biological interactions and chemical and biologic factors modulating these interactions, descriptions of effects of specific chemical classes, and biochemical mechanisms of toxic effects. Prerequisites: CHE 530, 330 and 604 or permission of instructor.

CHE 627 Chemical Separations (3). An in-depth study of modern analytical and preparative separation techniques. Emphasis is placed on molecular and bulk processes that affect the overall performance of a separation, as well as on practical aspects of commonly-employed methods and instrumentation. Prerequisite: CHE 619 or permission of instructor.

CHE 628 Mass Spectrometry (3). Advanced study of the theory and practical aspects of molecular characterization by mass spectrometry. Topics will include molecular ionization and fragmentation, mass fragment separation, and fragment detection with an emphasis on accurate interpretation of resultant mass spectra. Prerequisite: CHE 619 or instructor consent.

CHE 629 Medicinal Chemistry (3). Course that emphasizes the role of organic chemistry in drug design and development and its correlation to the molecular mechanisms of drug action. Prerequisites: CHE 320; CHE 530 or 617 is recommended.

CHE 630 Electrochemical Methods of Analysis (3). A study of the applications of electrochemistry in chemical analysis. The course focuses on the behavior of electrochemical cells, oxidation/reduction reactions, and electrochemical reaction mechanisms, particularly under controlled-potential conditions. Various experimental techniques are emphasized, along with the variety of chemical information that can be obtained from such techniques. Prerequisite: CHE 619 or instructor consent.

CHE 637 Experimental Biochemistry (3). This course will emphasize a mastery of modern biochemical laboratory techniques and the analysis of experimental data. One hour of lecture and four hours of laboratory per week. Prerequisite: CHE 530 or permission of instructor.

CHE 640 Biochemistry II (3). Continued study of the elements of metabolism, including their chemical reactions, energetics and regulation. Additional topics include hormones, biochemical function of various organs and replication, transcription and translation of genetic information. Prerequisite: CHE 530.

CHE 641 Spectroscopy and Group Theory (3). Applications of group theoretical considerations of observed spectra. Spectra are discussed with emphasis on inorganic compounds. Prerequisite: CHE 509 or 609.

CHE 645 Computational Chemistry (3). This course concerns applications of quantum theory to solving problems in chemistry by means of advanced software and computer technology. It covers advanced quantum mechanical concepts, energy calculations, geometry optimization, potential energy surfaces, calculation of spectra, calculation of thermodynamic functions, and studying chemical reactions. Prerequisite: CHE 420 or instructor consent.

CHE 665 Biogeochemistry (3). Survey and discussion of the scientific literature on global cycles of carbon, nitrogen, phosphorus and man-made chemicals with special emphasis on the biogeochemical and ecological processes that affect terrestrial and aquatic ecosystems. The course will focus on interdisciplinary themes that incorporate new research results from the fields of biology, chemistry, and geosciences. (Same as BIO 665.)

CHE 669 Spectrometric Identification of Organic Compounds (3). Course dealing with the theory and applications of the following methods to the structural analysis of organic compounds: IR, NMR, UV-Vis, and MS. Three hours of lecture per week.

CHE 670 Special Topics in Inorganic Chemistry (1-3). Selected topics which may include chemical applications of group theory, coordination compounds, organometallic compounds, and chemistry of less familiar elements. May be repeated for credit as different topics are featured. One to three lectures per week. Prerequisite: CHE 509 or 609.

CHE 671 Special Topics in Physical Chemistry (1-3). Topics of current interest in physical chemistry. May be repeated for credit as different topics are featured. One to three lectures per week.

CHE 672 Special Topics in Analytical Chemistry (1-3). Topics of current interest in analytical chemistry. May be repeated for credit as different topics are featured. One to three lectures per week. Prerequisite: CHE 619.

CHE 673 Topics in Organic Chemistry (1-3). Advanced study in selected areas of organic chemistry. May be repeated for credit as different topics are featured. One to three lectures per week. Prerequisite: CHE 320 with 617 very strongly recommended.

CHE 674 Topics in Biochemistry (1-3). Advanced study in selected areas of biochemistry. May be repeated for credit as different topics are introduced. One to three lectures per week. Prerequisite: CHE 530 or permission of instructor.

CHE 676 Polymer Chemistry (3). The chemistry and physical properties of natural and synthetic polymers of practical importance, coupled with the instrumental and spectroscopic methods of their evaluation.

CHE 677 Physical Organic Chemistry (3). A study of the mechanisms of organic reactions and the effect of structure on reactivity in organic reactions as interpreted from experimental data. Prerequisite: CHE 617.

CHE 681 Advanced Physical Chemistry (3). Continuation of some topics included in the one-year physical chemistry course and inclusion of new topics. Among these topics are quantum chemistry, bonding, statistical thermodynamics, spectroscopy, macromolecules and the solid state. Prerequisite: CHE 420.

CHE 691 Special Problems in Chemistry (1). Laboratory and/or library investigations on special topics, minimum of four hours per week. Prerequisite: Graduate status in the department of chemistry.

CHE 692 Special Problems in Chemistry (2). Laboratory and/or library investigations on special topics, minimum of eight hours per week. Prerequisite: Graduate status in the department of chemistry.

CHE 693 Special Problems in Chemistry (3). Laboratory and/or library investigations on special topics, minimum of 12 hours per week. Prerequisite: Graduate status in the department of chemistry.

CHE 698 Thesis Research (3). Problems and hours arranged individually with staff members directing the research. Registration must be approved by the chair of the department.

CHE 699 Thesis Research (3). Continuation of CHE 698, which is a prerequisite.

CHINESE
(CHN)

CHN 101 Elementary Chinese I (3). A study of the sounds and structural patterns of modern Chinese through instruction in listening, speaking, reading, and writing. Some instruction in Chinese whenever possible using the Pinyin Romanization and simplified Chinese characters.

CHN 102 Elementary Chinese II (3). A continuation of Chinese 101. A study of the sounds and structural patterns of modern Chinese through instruction in listening, speaking, reading, and writing using the Pinyin Romanization and simplified Chinese characters. Some instruction in Chinese whenever possible. Prerequisite: CHN 101.

CHN 105 Introduction to Chinese Culture (3). A survey of Chinese society. Contemporary and historical perspectives, attitudes, achievements, institutions, and lifestyles of the Chinese people are explored. Conducted in English.

CHN 110 Basic Conversational Chinese (3). A conversation-oriented introduction to pronunciation and essential structures and vocabulary of Mandarin Chinese. Pronunciation, listening comprehension, speaking and simple reading and writing of material related to conversational situations are included. No continuation offered. Only taught abroad.

CHN 201 Intermediate Chinese I (3). A continuation of Chinese 102. A study of the sounds and structural patterns of modern Chinese through instruction in listening, speaking, reading, and writing using the Pinyin Romanization and simplified Chinese characters. Instruction will be in Chinese whenever possible. Prerequisite: CHN 102.

CHN 202 Intermediate Chinese II (3). A continuation of CHN 201. A study of the sounds and structural patterns of modern Chinese through instruction in listening, speaking, reading, and writing using the Pinyin Romanization and simplified Chinese characters. A large part of instruction will be in Chinese whenever possible. Prerequisite: CHN 201.

CHN 210 Intermediate Conversational Chinese (3). Course designed to develop the vocabulary and oral communication skills of the student with a background of one year of college Chinese or equivalent. Emphasis will be placed on bringing the student into contact with the Chinese people are various aspects of their culture. No continuation offered. Only taught abroad. Prerequisite: CHN 102 or consent of instructor.

CHN 305 Understanding China: Traditions and Trends (3). A study of modern Chinese cultural trends, political situations, and social issues, as well as their roots in traditional history, philosophy, and ethics. Historical and contemporary perspectives, attitudes, achievements, and lifestyles of the Chinese people and their interaction with the rest of the world are explored. Taught in English. Prerequisites: ENG 105 or ENG 150, or consent of instructor.

CHN 310 Chinese Conversation and Composite Abroad (3). Intensive practice in speaking and writing Mandarin Chinese based on the student's interaction with native speakers and the international setting. No continuation offered. Only taught abroad. Prerequisite: CHN 202 or equivalent, or consent of instructor.

CHN 314 Chinese Culture Abroad (3). Chinese culture taught in Mandarin Chinese and only taught in study-abroad programs in Mainland China and Taiwan. The course entails planned activities as well as excursions to cultural sites in conjunction with readings about the activities, the sites, and the intellectual history and milieu behind their conception. The student will explore the history, art, architecture, literature, politics, and music of the host country.

CHN 340 Chinese Diversity Through Food (3). A general study of the cultural and historical significance of food in China and of China's diverse regional cultures. It introduces the history, geography, and cuisine of five major regions in China. There will be some required field trips locally. Taught in English. Prerequisite: ENG 105 or 150.

CHN 451 Directed Study (1-3). Independent work in the area of language, culture, or literature, designed to meet the needs and interests of individual students. May be taught abroad. May be repeated up to a maximum of six credit hours. Prerequisite: CHN 202 or 210, or instructor's consent.

CHN 460 Study in a Genre (3). The course will explore a particular genre, such as drama, poetry, short story, and prose; the theory behind the respective genre; and an examination of a variety of works within that genre. May be repeated for up to six credit hours if genres are different. Prerequisites: CHN 202, 210, 310, or 314; or instructor's consent.

COMPUTER INFORMATION SYSTEMS
(CIS)

CIS 243 Business Statistics I (2). Statistical techniques used in analyzing and solving problems encountered in a business environment. Techniques include organizing and presenting statistical data, descriptive statistical analysis, probability distributions for discrete and binomial random variables, normal probability distribution, and simple random sampling. Techniques are applied to practical business problems using appropriate computer resources. Prerequisites: CSC 199 and MAT 220 or MAT 250.

CIS 290 Internship (3-6). Open to sophomore associate degree candidates in computer data processing. These students, upon approval of the computer data processing faculty, are placed with cooperating firms to receive on-the-job training or advanced design and programming training of equivalent value. Work experience is supervised by faculty. Written progress reports are required.

CIS 296 International Experience in CSIS (3). A study of topics relevant to courses taught in the computer science and information systems disciplines. It is taught as part of a Study Abroad program and therefore includes material specific to the country/region of study. Topics may include: data organization and analysis, art and craft of web site development, quantitative techniques for solving business problems, etc.

CIS 299 Special Topics in Computer Applications (1-3). A special topics course designed to permit the teaching of appropriate topics as needed in a changing high-tech discipline. The course will include those topics which are relevant but not necessarily appropriate for permanent, specific course status. Topics will be selected and offered on university/community need and/or interest. Does not apply to the CSC or CIS majors. May not be substituted for any course in the business core. Prerequisites vary with topics covered. May be repeated for a maximum of six hours. (Same as CSC 299.)

CIS 307 Decision Support Technologies (3). An in-depth study of techniques used in business application modeling and decision-making to solve managerial problems. Students will use contemporary spreadsheet, database, web application software packages and query languages (SQL) to implement various business decision-making scenarios. A student may receive credit for only one of the following courses: ACC 308, BUS 355, or CIS 307. Prerequisites: CSC 101 and 199.

CIS 317 Principles of Information Systems Analysis and Design (3). Topics to be covered are systems development processes, structured analysis design methods, prototyping, systems development life cycle, and communication skills. A systems design model will be developed during the course. Prerequisite: CSC 101.

CIS 325 E-Business Programming (3). An introduction to programming languages and Web server technologies used in E-business applications. This course focuses more on client-side E-business development issues such as good web page design techniques, prevalent technologies, interactive and dynamic Web applications, and programming using common scripting languages. Some server-side issues are also covered. Prerequisites: CSC 125 and 232 or permission of instructor.

CIS 343 Business Statistics II (2). Statistical techniques used in analyzing and solving problems encountered in a business environment. Techniques include point estimates, confidence intervals for a population mean, hypothesis testing for mean of one and two populations, statistical inference of proportions and simple linear regression. Techniques are applied to practical business problems using appropriate computer resources. Prerequisites: CIS 243 or STA 135 with a minimum grade of *C* and MAT 220.

CIS 361 On-Line Applications (3). Study of development of on-line computer usage with specific applications in the functional areas of business. Topical coverage includes the design and development of a complete application, use of utilities to create and support user libraries, and the implementation

of the system through the use of commercial on-line software and the COBOL programming language. Prerequisites: junior standing; CSC 260 or permission of instructor.

CIS 399 Topics in Information Systems (1). Seminar for students of Computer Science and Information Systems programs to expose them to a variety of topics and their relevance to the broad discipline of information technology. Students will discover career paths and areas of focus in their upper-division courses. Graded pass/fail. Prerequisite: sophomore standing.

CIS 407 Advanced Database Management Systems (3). This course is designed to cover both the theoretical and practical aspects of database design and implementation. The theory and practice of design approaches and languages for the relational model are stressed. Specific topics will include data modeling; database design using normalization theory and relational query languages; issues of concurrency control, recovery, optimization, database security, privacy and integrity; new database technology, developments, and trends. Students in the course will be expected to design and implement a practical database application using a contemporary database management software package. Prerequisite: A high level programming language and either CIS 307 or ACC 308; or permission of instructor.

CIS 417 Software Development Technologies (3). This course will examine specialized software development problems and their solutions. Topics such as advanced Internet programming, interfaces between applications and data sources, software development using open source and proprietary software environments, development of distributed applications and Web services will be studied. Prerequisites: CIS 317 and CSC 332.

CIS 420 Senior Capstone Project (3). The capstone course for students graduating with an Area in Computer Information Systems (CIS). Students will work in teams to design and implement a complete information system using contemporary software development tools. The workplace will be simulated to the extent possible by stressing in-depth analysis of the client's requirements, formal modes of communication and established project management techniques. Evaluation is based on the completed project using feedback from clients. Prerequisites: CIS 317 and 407; or permission of instructor.

CIS 425 Building E-Business with Web Design (3). Course covers how to build the front-end, middleware, and back-end components that drive E-business. Emphasis is on building a functional E-business site that is capable of processing transactions and interacting with a database. Topics include common E-business technologies, Web database technology, content management, on-line payments, Web usability, client-side and server-side programming using common scripting languages and middleware technologies, and website registration, promotion, and maintenance. Prerequisites: CIS 325 and 407.

CIS 443 Business Statistics III (3). Statistical techniques used in analyzing and solving problems encountered in business organizations. Techniques include multiple regression analysis, time series analysis and forecasting, analysis of variance and nonparametric statistics. Additional topics will include conditional probability, the Poisson, exponential and uniform probability distributions, and the chi-square goodness-of-fit test. Techniques are applied to practical business problems using computer statistical software. This course provides preparation for those students considering graduate school and for those students pursuing programs requiring statistical preparation beyond CIS 343. Prerequisite: CIS 343 with a minimum grade of *C*.

CIS 480 Foundations of Information Systems Design (3). Thorough knowledge of database management and systems analysis and design techniques is essential for any Information Systems professional. This course covers important aspects of database management and systems analysis and design techniques. This course is also open to graduate students but will not count towards the graduate degree. Prerequisite: permission of instructor.

CIS 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

CIS 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

CIS 490 Survey of Calculus and Statistics (3). A survey course in topics from calculus and statistics that will prepare those lacking proper foundation in quantitative subjects for the MBA program. Not open to students with credit for CIS 343 and MAT 220 or 250 or their equivalent courses. Covers most of the material in CIS 343 and MAT 220. Prerequisite: MAT 140 or equivalent.

CIS 508 Computer Simulation (3). A study of computer simulation models of systems and processes. Simulation methodology, simulation model development, simulation computer languages, and the analysis of simulation results are considered. The course makes use of simulation computer software. Prerequisites: CIS 343 and CSC 199 or equivalent, or permission of instructor.

CIS 509 Data Management for Data Warehouses (3). Course provides the student with a review of database technology, the technical skills required to plan, implement and maintain databases using appropriate software. A significant part of the course will be spent on development of Structured Query Language (SQL) queries and processes to extract (E) data from multiple sources, transform (T) data as needed and the loading (L) of the same into datawarehouses. Prerequisites: junior standing; CIS 407.

CIS 525 Overview of E-Business Technologies (3). This course provides an overview of important technologies that underlie and enable E-Business. A solid understanding of the common E-Business models and their underlying enabling technologies will be examined using a practical case-based approach. Prerequisite: permission of instructor.

CIS 543 Advanced Business Analytics (3). Course provides conceptual overview of data mining techniques that are used to discover patterns, to predict trends, and to classify observations. In addition, the course includes hands-on practice using modern analytic software and analysis of contemporary business case studies. Prerequisite: CIS 343 or consent of instructor.

CIS 548 Enterprise Resource Planning (3). This course provides the knowledge required to appreciate the functions and benefits of Enterprise Resource Planning (ERP) systems. Students will learn the impact of an ERP system, how ERP software integrates business functions, and how to make current business functions compatible with an ERP system. The students will also develop an appreciation of live, interactive information from an ERP system and the value of its availability throughout the organization. Prerequisite: permission of instructor.

CIS 585 Special Problems (3). This course consists of independent in-depth study of some problem in computer methods and/or quantitative methods. Periodic conferences will be arranged with the supervising faculty member on an individual basis. Prerequisite: permission of instructor.

CIS 601 Telecommunications Principles (3). A graduate level introduction to the underlying principles of telecommunications. This course presents the problems and solutions involved in communicating over extended distances. Topics include: fundamental physical and electronic concepts; information theory; types of media; requirements and capacity calculations; modulation and multiplexing methods; standards and architectures; modern applications and issues. Throughout the presentation of the technical fundamentals, discussion will focus on relevant management issues such as cost, infrastructure, support, and business advantage. (Same as TSM 601.)

CIS 603 Telecommunications Project Management (3). Introductory project management course where students acquire key project competencies. Students will learn how to apply the competencies to implement project management processes established by the Project Management Institute Body of Knowledge (PMBOK Guide). Prerequisite: TSM 601 or permission of instructor. (Same as TSM 603.)

CIS 609 Data Management (3). Course provides the student with a comprehensive introduction to databases, the technical skills required to plan, implement and maintain a databases using appropriate software. A significant part of the course will be spent on development of Structured Query Language (SQL) queries and processes to extract (E) data from multiple sources, transform (T) data as needed and the loading (L) of the same into datawarehouses (ETL). Prerequisite: permission of instructor.

CIS 615 Information System Security (3). Graduate-level study of modern computer, network, and information systems security. This course presents systems-oriented approaches to network defense, malicious software, and data encryption. Topics include network intrusion prevention and detection, incident response, worms, viruses, Trojan horses, public key encryption, message authentication, and privacy issues. Throughout the presentation of security issues, discussion will focus on the cost of security to business and society at large. (Same as TSM 615.)

CIS 625 Overview of E-Business Models (3). Course provides an overview of technologies that enable the design, development, and management of E-Business. Techniques for analysis and development of E-Business models, strategies for leveraging mobile technologies, cloud computing and social media will also be covered. Based on the class material, students will develop a business plan for a new E-Business and present it to class. Prerequisite: permission of instructor.

CIS 643 Advanced Business Analytics (3). Course provides a conceptual overview of data mining techniques that are used to discover patterns, to predict trends, and to classify observations. In addition, the course includes hands-on practice using modern analytic software and analysis of contemporary business case studies. Prerequisite: CIS 343 or permission of instructor.

CIS 645 Decision Support and Expert Systems (3). Study of the theories and techniques of computerized decision support and expert systems. The practical application of these systems to problems of business and industrial organizations is stressed. A major part of the course will be devoted to the use of appropriate decision support and expert system computer software. Prerequisite: BUS 355 or permission of instructor.

CIS 646 A Manager's Guide to Database (3). This course places the database environment in an organizational context. Information is an increasingly valuable corporate resource. Allocation of resources is a primary managerial responsibility. This course provides managers with the background necessary for making decisions regarding the information resource. Topics include information resource planning, managing implementation in the database environment, human factor in the database environment, and software and hardware selection. Prerequisite: ACC 308 or BUS 355 or CIS 307 or permission of instructor.

CIS 647 Systems Analysis and Design for End User/Manager (3). This course presents an overview of information systems (IS) and the systems development life cycle for the systems analyst. The course will focus on tools and techniques that the end user, analyst and/or programmer can use to document IS. Classical and structured tools for describing data flow, data structure, process flow, file design, input and output designs, and program specifications will be applied to documenting systems. The course will also survey other important topics for the systems analyst such as data gathering and reporting, project management, cost/benefit analysis, and computer-aided system engineering (CASE) technologies. Prerequisite: BUS 355 or permission of instructor.

CIS 648 Enterprise Resource Planning (3). This course provides the knowledge required to appreciate the functions and benefits of Enterprise Resource Planning (ERP) systems. Students will learn the impact of an ERP system, how ERP software integrates business functions, and how to make current business functions compatible with ERP system. The students will also develop an appreciation of live, interactive information from an ERP system and the value of its availability throughout the organization. Prerequisite: permission of the instructor.

CIS 650 Software Development (3). Explores software development practices used in contemporary software projects using technical perspectives. Software development methods including structured, object oriented, and patterns based development will be covered. Starting from fundamentals of software development, the course will cover advanced techniques in software development.

CIS 653 Introduction to Business Analytics (3). Business analytics refers to the techniques and practices of statistical data analysis useful to business organizations. This course covers the fundamental concepts of data analysis, and intermediary concepts such as predictive analysis and prescriptive analysis. The analytical techniques covered include visualization, regression, forecasting, simulation, optimization and risk analysis. Students get to learn and use advanced spreadsheet functions and visualization tools to analyze business data. Prerequisite: CIS 343.

CIS 663 Developing Analytics Applications (3). Software applications development in analytics draws on requirements analysis skills, data management skills, data analysis skills, and programming skills. This course will focus on techniques and tools for developing analytics applications. Students will get to complete numerous analytics mini-projects. Prerequisites: CIS 609, CIS 650, and CIS 643 or 653; or permission of instructor.

CIS 670 Developing E-Commerce Applications (3). A study of programming languages and operating systems used in Internet applications as well as the technologies available for the implementation of customer transactions using Internet technology. Prerequisites: High-level programming language and CIS 407 (or equivalent).

CIS 680 Information Technology Policy and Strategy (3). Course incorporates a case study strategy to actively develop the student's ability to analyze information technology issues from the overall perspective of the organization.

CIS 685 Special Problems (3). This course consists of independent in-depth study of some problem in computer methods and/or quantitative methods. Periodic conferences will be arranged with the supervising faculty member on an individual basis. Prerequisite: permission of instructor.

CIS 688 Graduate Internship in Information Systems (3). Application of knowledge and skills developed in core courses in an organizational environment to solve Information Systems problems. Emphasizes practical industry experience. Periodic reports and a final comprehensive report at the end of the internship project period are submitted to the departmental graduate committee. A formal presentation is also required. Graded pass/fail. Prerequisite: permission of the graduate program director.

CIS 695 Comprehensive Project in Computer Information Systems (3). This course consists of an independent, in-depth study of a topic or problem in computer information systems under the direct supervision of a faculty member. Periodic conferences will be arranged with the supervising faculty member on an individual basis. Graded pass/fail. Prerequisites: 12 hours of graduate work in computer information systems or computer science and consent of the instructor.

CIVILIZATIONS (CIV)

CIV 201 World Civilizations I (3). An interdisciplinary survey of the history of world civilizations from the origins of humankind to the 15th century. This will be a lecture/discussion course following a chronological outline and, within this framework, will focus on traditions, change, and diversity in the dePrerequisites: ENG 101 and 102; or ENG 105 or 150.

CIV 202 World Civilizations II (3). An interdisciplinary survey of the history of world civilizations from the 15th century to the present. This will be a lecture/discussion course following a chronological outline and, within this framework, will focus on traditions, change, and diversity in the development of social hierarchies (e.g., gender or class), power systems, religion, technology, and warfare.

COUNSELING (CNS)

CNS 319 Professional Interpersonal Skills (3). Course is an introduction to the principles, procedures and skills necessary for providing interpersonal clinical skills for helping professions.

CNS 615 Behavioral Assessment and Intervention (3). To examine, in theory and practice, issues in behavioral management, which affect behavior change within various school/clinical settings, and to learn techniques applicable to the process of behavior in change.

CNS 617 Introduction to Counseling (3). An introductory course in the philosophy, ethical and legal issues, principles and techniques of counseling with emphasis on the organization and administration of mental health services in a variety of settings and diverse populations.

CNS 618 Issues in Mental Health Counseling (3). A course designed to survey the foundations of community and agency mental health counseling. Topics such as administration and supervision of mental health systems, needs assessment and program development, education and consultation practices, as well as case management and treatment services will be covered.

CNS 619 Foundational Counseling Techniques (3). An experiential study and practice of basic relationship and conceptualization counseling techniques will be the central focus of the course. Students must complete this course with a grade of B or better in order to continue in the program. Successful completion of CNS 619 is a prerequisite for CNS 790.

CNS 620 Learning Theories and Applications (3). Course will cover behavioral learning theory in detail with a heavy emphasis on respondent and operant conditioning. After completing this course, students will possess an in-depth understanding of behavioral learning theory needed for subsequent skill-based courses in behavioral assessment and intervention design.

CNS 624 Theories of Counseling (3). Critical analysis and evaluation of leading theories of counseling and their implications for practice.

CNS 625 Legal and Ethical Issues (3). This course will present the legal and ethical ramifications that being a counselor in today's complex society demands. An in-depth examination of current contemporary issues will highlight the course.

CNS 635 Human Development (3). A detailed study of the human life-span in terms of growth and development, foundations and dynamics of human behavior, personality, and learning.

CNS 671 Multicultural Counseling (3). A focus on pluralism, identity development, cultural awareness, and the role that cultural environment plays in the lives of people and the implications of that role in the helping process.

CNS 676 Clinical Diagnosis and Treatment Planning (3). Course is designed to prepare students in the knowledge and understanding of human behavior, diagnosis, and methods in assessment. Students will gain knowledge and skill in conducting mental status exams, intake assessments, biopsychosocial histories, and risk assessments. Prerequisite: permission of instructor.

CNS 677 Instructional Assessment and Intervention (3). Students will be provided the theory and skills needed to assess academic skills and instructional environments in order to formulate and implement instructional interventions in educational settings.

CNS 679 Advanced Practicum: Guidance and Counseling (3). Closely supervised practice in counseling under staff supervision in selected educational and agency settings. Open only to those possessing a provisional counseling certificate or its equivalent. Must be or have been a practicing counselor.

CNS 683 Tests and Measurements (3). The selection, administration and uses of psychoeducational tests are discussed with emphasis on application in various settings, legal/ethical issues, and measurement concepts. Usually taken within first nine hours. (Same as PSY 683.)

CNS 684 Problems (3). This course is designed for advanced students who want to work on special problems in the student's program of study according to individual needs. Staff supervision should be arranged prior to enrollment. Course may be repeated for up to six hours of credit. Prerequisite: permission of instructor.

CNS 686 Career Counseling (3). A survey of the theories, principles, practices, and techniques of career development and career counseling.

CNS 687 School-based Consultation (3). Students will be introduced to the models, concepts, processes, and issues relevant to psychological consultation with special emphasis placed on consultation in educational settings. Both individual and systems-level consultation will be discussed. This course will largely focus on the necessary theoretical, conceptual, and empirical knowledge bases required to understand the delivery of effective consultation practices.

CNS 688 Professional School Psychology (3). This course provides an overview and integrates theory and practice of all areas of school psychology. This will include historical evolution of school psychology, professional standards, legal and ethical issues and the roles and functions of the school psychologist.

CNS 689 Individual Testing (3). Supervised practice in the administration and interpretation of a variety of individual cognitive tests such as the WJ-III Cognitive and WISC-IV. This course is designed for individuals in the school counseling, Individual Intelligence Assessment endorsement, and school psychology programs. Prerequisites: CNS 683 and permission of instructor.

CNS 690 Advanced Individual Testing (3). Supervised practice in the administration and interpretation of a variety of individual cognitive, memory, and adaptive tests such as the KABC-II, WAIS-IV, UNIT, SIB-R, and BASC-II. This class is designed solely for school psychology students and those school counselors seeking the Individual Intelligence Assessment Endorsement. Prerequisites: CNS 689 and permission of instructor.

CNS 692 Group Counseling (3). An experiential course in the dynamics of group behavior. The student will participate in an encounter-type group experience as well as being introduced to theory and techniques of group counseling. In addition, group guidance procedures are emphasized to include meaning, purposes, scope, and methods. Strongly recommended to be taken within the first 12 hours of course work.

CNS 694 Advanced Counseling and Supervision (3). An extension of CNS 619 whereby students will study and apply advanced counseling techniques and basic supervisory skills. Prerequisite: CNS 619.

CNS 695 Advanced Group Counseling (3). An extension of CNS 692. An advanced study in group counseling, research and technique application. Prerequisite: CNS 692.

CNS 696 Advanced Research (3). Emphasis on individual research for advanced students in counseling. Prerequisites: approval of advisor and permission of instructor.

CNS 697 Organization and Administration of Personnel Services (3). The selection, organization and implementation of personnel services. Analysis of programs, staffing and relationships of programs will be emphasized.

CNS 698 Perspectives of Gifted Individuals for Mental Health Practitioners (3). This course will help mental health practitioners better understand the ways gifted individuals perceive their world and how, due to their rich cognitive functioning, their perceptions have a profound impact on their emotions, their coping, and their healthy development.

CNS 699 Survey of Effective School Counseling (K-12) (3). Course provides knowledge and skills to be an effective school counselor for grades P-12. In particular, the American School Counselor's Association (ASCA) National Model of Foundations, Delivery, Management and Accountability will be stressed as well as the utilization of ASCA's Student Skills of Academic Development, Career Development, and Personal/Social Development. In addition, Kentucky learning goals and Kentucky's ILP's will be discussed and integrated into the course.

CNS 710 Counseling Children and Adolescents (3). Course is designed to provide students with a theoretical foundation and working knowledge of contemporary interventions for children and youth. Specific childhood issues and treatment strategies will be explored. Material in the course is aimed at helping students develop basic skills necessary for effectively counseling and communicating with children and youth. Students are expected to be actively involved in their learning and are invited to share their knowledge and personal experiences with the class. May be repeated for a maximum of nine hours.

CNS 720 Elementary School Counseling (3). Course provides professional knowledge, skills, and practices to be an effective school counselor in the elementary school setting. It focuses on theory, techniques, and proficiency that are developmentally appropriate to promote the academic, career, and personal/social development of all P-5 grade students. Prerequisite: CNS 617.

CNS 722 Substance Use and Addictions Counseling (3). A graduate course that provides counselors and other human service workers with an overview of the addictive process. Theories of addiction counseling and application of these theories will comprise a significant part of this course, particularly with how they apply to work with individuals, couples, families, and groups. Co-oc-

curring disorders, such as process addictions and mental illnesses will also be addressed. Students will develop conceptual knowledge, practical skills, and self-awareness concerning the etiology of addiction, assessment strategies, wellness strategies for facilitating optimal development and preventing clinician burn-out, and diagnosis and treatment planning. This will be accomplished through assigned readings, seminar discussions, videotapes, lectures, case presentations, guest speakers, and student assignments.

CNS 725 Middle/Secondary School Counseling (3). Course prepares 5-12 School Counselors with professional knowledge, skills, and practices necessary to promote the academic, career and personal/social development of all 5-12 students. Emphasis is placed on skills, theory, and techniques that are developmentally appropriate for middle and secondary school settings focusing on the American School Counselor's Association (ASCA) National Model of Foundations, Delivery, Management and Accountability and on ASCA's Student Skills of Academic Development, Career Development, and Personal/Social Development as they pertain to the developmental level of middle and secondary school students. Prerequisites: CNS 617 and 720.

CNS 734 Marriage, Couples and Family Counseling (3). A graduate course that provides counselors and other human service workers with an overview of the processes and theories involved with counseling couples and families. The focus of this course is to prepare students to think systemically and to learn about family concepts, dynamics, theories, and techniques. This will be accomplished through assigned readings, seminar discussions, small group work, role plays, lectures, case presentation, audiovisual materials, guest speakers, and student assignments.

CNS 746 Wellness and Prevention Approaches (3). Course integrates the preventive origins of counseling with other models of prevention. This teaching and learning approach will balance between understanding wellness and prevention conceptually and studying some illustrations of wellness and preventive practices and hold promise for enhancing the counseling field. It is anticipated that students will gain a better understanding of how evolving theories of prevention can be utilized to help individuals and groups avert specific psychological, educational, and health problems via "before-the-fact" preventive actions. As a hands-on learning tool, students will identify an area of interest as a focal point for their development of a prevention model that is of special interest to them. The course will also address ethical and professional issues and multicultural issues related to prevention work.

CNS 748 Expressive Activities Counseling (3). Course is designed as an exploration of play and activity counseling theories and interventions applicable to counselors working with a variety of client concerns in school and community counseling settings. This course emphasizes the development of play and activity counseling skills through didactic and experimental activities.

CNS 752 Trauma and Crisis Counseling (3). An examination of diverse trauma and crisis situations used by counselors to assist individuals, groups, and organizations experiencing crisis and/or trauma. Course will include an overview of roles and responsibilities of counselors in crisis intervention. Assessment and case management for crisis and traumatic situations in educational, community agency, medical, emergency management, and human resources settings will be explored.

CNS 760 Eating Disorders and Body Image Counseling (3). Course provides an overview of the etiology, diagnosis and treatment of eating disorders, including anorexia nervosa, bulimia, and binge eating disorder. Treatment is considered from a team-based approach to include psychological, cognitive, and physiological processes. Obesity and its relationship with eating disorders as well as self-image will also be addressed.

CNS 790 Practicum (3). Closely supervised practice in an appropriate professional setting. See program handbook for criteria for site selection and supervision requirements. Arrangements for the practicum must be made a semester in advance. Also, the student must be admitted to the program. Students must successfully complete CNS 790 with a grade of *A* or *B* before being allowed to continue in their program. May be repeated for a maximum of six hours of credit. Prerequisite: CNS 619 and 624.

CNS 794 Internship I (3-6). Designed to provide the student with 300 hours (600 hours for school psychology interns) of professional experience in an appropriately supervised mental health or school setting. Weekly supervision requirements will be provided by faculty and on-site professionals, and interns are expected to apply the knowledge and skills previously acquired in their program. Course may be repeated for a maximum of six hours of credit. Students must successfully complete CNS 794 with a grade of *A* or *B* before being allowed to take CNS 795. Note: School Psychology students must earn a passing score on the School Psychology Praxis exam before the internship can begin. Prerequisite: CNS 790 with a grade of *A* or *B* and instructor permission.

CNS 794 Internship I (3-6). Designed to provide the student with 300 hours (600 hours for school psychology interns) of professional experience in an appropriately supervised mental health or school setting. Weekly supervision requirements will be provided by faculty and on-site professionals, and interns are expected to apply the knowledge and skills previously acquired in their program. Course may be repeated for a maximum of six hours of credit. Students must successfully complete CNS 794 with a grade of *A* or *B* before being allowed to take CNS 795. Note: School Psychology students must earn a passing score on the School Psychology Praxis exam before the internship can begin. Prerequisite: CNS 790 with a grade of *A* or *B* and instructor permission.

CNS 795 Internship II (3-6). A continuation of CNS 794, culminating in a minimum of 600 contact hours at the internship setting for the total internship experience and will include the capstone oral defense. Course may be repeated for a maximum of six hours of credit. Students must successfully complete CNS 795 with a grade of *A* or *B* before being allowed to continue in program or graduate. Prerequisite: CNS 794 with a grade of *A* or *B*.

CNS 796 Advanced Internship I (3). Designed to provide a minimum of 300 hours of intensive counseling experience conducted in a setting as similar as possible to that in which the intern subsequently intends to seek employment. This class is designed for students who want to seek a second counseling degree. Weekly supervision requirements will be provided by faculty and on-site professionals; and interns are expected to apply the knowledge and skills previously acquired in their programs. Course may be repeated for a maximum of six credit hours. Prerequisite: CNS 795 with a grade of *A* or *B*.

CNS 797 Advanced Internship II (3). A continuation of CNS 796, culminating in a minimum of 600 hours at the internship setting for the total internship experience and will include the capstone oral defense. Course may be repeated for a maximum of six hours of credit. Prerequisite: CNS 796 with a grade of *A* or *B*.

CNS 798 Specialty Study (3). This course is designed to enable the student, with the supervision of his/her graduate faculty committee, to select a problem directly related to the student's area of concentration, survey the research literature, collect research data and write the research paper.

ORGANIZATIONAL COMMUNICATION (COM)

COM 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

COM 131 Introduction to Interpersonal Communication (3). Communication in an interpersonal environment. Topics studied include interpersonal perception, verbal and nonverbal communication, conflict reduction, and language and its use. Will not satisfy requirements for organizational communication major or minor.

COM 160 Managing Public Speaking Anxiety (1). This course assists highly apprehensive students in developing strategies to manage public speaking anxiety. The communication needs of each student are identified and individualized action plans are developed. Grade pass/fail. Prerequisite: Instructor permission. Corequisite: COM 161**.**

COM 161 Introduction to Public Speaking (3). Organization and presentation of ideas through participation in frequent speech activities. Students present speeches to inform, solve problems and persuade. Communication needs of the individual students are considered and guidance is given by the instructor.

COM 201 Communication Foundations and Theory (3). Theoretical constructs of the speech communication discipline. A survey from classical through contemporary perspectives of human discourse. Focus is on the development of the major content areas of the field. Corequisite: COM 161.

COM 215 Introduction to Sports Communication (3). An introduction to the theories and processes of sports communication. Surveys the communication processes of sport fans, coaches, athletes, teams, organizations, and society. Application of these theories and processes to careers in sports communication, research, and administration is emphasized.

COM 260 Communication Ethics (3). An introduction to the ethical challenges and responsibilities of being a competent communicator in a diverse and changing world. Students will learn to apply ethical theory and reasoning to a variety of communication processes and contexts.

COM 261 Debate and Advocacy (3). Review and application of debate and advocacy skills including the ability to develop, organize, present, refute, and analyze well-reasoned arguments. Appropriate for individuals seeking preparation for those professions (e.g., law, business, teaching, ministry) where advocacy of ideas is essential.

COM 315 Coaching as Communication (3). Course explores the craft of sports coaching as a communication enterprise. Examines how communication variables and techniques differ as coaches communicate with athletes, recruits, other coaches, administrative personnel, families, and other external constituents. Task, career, relational, and generative contexts of coach communication are examined.

COM 331 Interpersonal Communication (3). In-depth study of communication and interpersonal relations.

COM 340 Intercultural Communication (3). Designed to explore communication principles from the viewpoint of different western and non-western cultures.

COM 345 Diversity, Communication, and the Workplace (3). Survey of the unique communication challenges, processes and strategies that result from diversity markers such as age, race, gender, sexual orientation, social class, physical ability, and body image in organizational settings.

COM 353 Team Communication and Leadership (3). Study of communication principles and leadership strategies for effective teamwork. Focus is on communication and leadership skills that produce team cohesion, synergy, and productivity. Communication theory is applied to analyze leadership roles in team projects, decision-making, and conflict management.

COM 361 Career Presentations (3). Study of presentation techniques within business and professional contexts. Presentations made to staff, clients, and constituents, as well as conference and keynote addresses, will be studied and practiced. Students will create and deliver presentations tailored to their individual career objectives. Prerequisite: COM 161.

COM 367 Communication and Critical Thought (3). The course explores the relationship between communication and critical thought. Based on the rhetorical traditions of oral discourse, students will explore argumentation, negotiation, reason, fallacy, language, and evaluation of information as each relates to critical thinking.

COM 372 Communication in Educational Environments (3). Special communication needs of teachers of any discipline. Students develop an understanding of communication concepts applicable to the classroom as well as communication skills useful in other aspects of educational environments. Course content is developed through readings, lectures, discussions, structured activities, and classroom visitations; provides the teacher an experiential and a cognitive understanding of the role of communication in the educational environment.

COM 380 Organizational Communication (3). A study of concepts, theories, and processes of human communication in organized workplaces. Emphasis is given to the nature and function of human communication in different organizational structures and designs.

COM 384 Communication Skills for Professionals (3). Study of applied communication skills for professionals in for-profit and non-profit organizations. Emphasis is given to oral and written communication techniques for providing performance feedback, conducting interviews, managing meetings, delivering training, promoting strategy and change, maintaining organizational identity and image, and responding to organizational crises.

COM 386 Corporate Communication (3). A study of the strategic communication processes that manage the dynamic needs of internal and external stakeholders. Examines how systemic discourse among corporations and their diverse stakeholders facilitates survival in the competitive business environment. Corporate communication processes for managing reputation, sustaining social responsibility, engaging employees, navigating change, and resolving organizational crises are examined**.**

COM 390 Communication Research (3). An introduction to the quantitative and qualitative research methods used to study communication. Emphasis is placed on familiarity with scholarly publications, understanding various research methodologies, and critique of basic and applied research findings. The connection between theory, research, and decision-making is highlighted.

COM 401 Contemporary Issues in Communication (1-3). Studies of interest to faculty and students (e.g., effective mentoring skills, communication and the family, health communication, gender issues). A different subject is examined each time the course is offered, with the topic being announced one semester in advance. Variable credit is assigned on the basis of instruction hours (15-20 hours per unit of credit). Enrollment is open to juniors and seniors and may be repeated once for a total of six hours.

COM 422 Communication and Technology (3). Examines how technology impacts communication processes in personal and organizational contexts. This course explores theories, concepts, and research associated with computer-mediated communication, mobile devices, social networking, and virtual teams. Students will develop competencies related to effective interpersonal and organizational communication via technology.

COM 439 Conflict and Communication (3). Examines conflict processes as communication phenomena. Explores theories of conflict communication and develops competencies for a range of professional and interpersonal contexts by applying theory to practice.

COM 461 Persuasive Communication (3). Course explores theories and concepts of persuasive communication strategies. Emphasis is placed on examining persuasive strategies used in attitude change. Ethical problems related to persuasion, audience analysis and dialogue, rationality, and the free marketplace of ideas are also explored. Students develop and present a persuasive campaign. Prerequisite: COM 161.

COM 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

COM 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

COM 510 Internship (3-6). A course designed for students to get experience in the application of theory to practical situations. Businesses and organizations selected to participate draw from qualified students with skills in organizational communication,. May be repeated for a total of six hours. Graded pass/fail. Prerequisite: senior standing or permission of instructor.

COM 530 Seminar in Interpersonal Communication (3). A study of the contemporary approaches to interpersonal communication with opportunities for practical application of those approaches in diverse interpersonal situations.

COM 553 Advanced Team Communication and Leadership (3). Survey of theory, research, and current practices relevant to the study of team communication and leadership. Students will examine communicative behavior of productive teams and effective leaders, and participate in team building exercises.

COM 577 Organizational Learning and Dialogue (3). Explores organizations as systems of learning based on productive alternative forms of human communication. Theories and tools of dialogue and organizational learning are applied to contemporary workplace practices. Prerequisite: COM 380.

COM 580 Advanced Organizational Communication (3). Survey of theory and research relevant to the study of organizational communication. Students will examine how communication processes shape and reshape the activities of organizing within and between organizations. Prerequisites: 75 hours earned and COM 380.

COM 594 Directed Individual Study in Communication Theory (3). A course designed to meet the needs of individuals and groups who wish to explore topics not covered in other organizational communication courses or to do in-depth study of an issue introduced in another course. A proposal for study must be approved by the instructor during the first week of classes. General areas of study from which specific topics can be drawn include interpersonal communication, small group communication, and communication within organizations. May be repeated for a maximum of six hours. Graded pass/fail.

COM 595 Senior Seminar in Organizational Communication (3). Capstone course for majors and minors in organizational communication surveys theoretical and applied content areas within the discipline. Requirements include a major paper, presentation, and a one-hour oral exam. Graded pass/fail. Prerequisite: permission of instructor.

COM 603 Seminar in Communication Variables (3). Variables affecting communication including perception, language, attitudes and cognitive processes. Research related to each variable will be examined.

COM 610 Internship (3-6). A course designed for students to get experience in the application of theory to practical situations. Businesses and organizations selected to participate draw from qualified students with skills in organizational communication. May be repeated for a total of six hours. Graded pass/fail.

COM 622 Communication Technology in Organizations (3). An in-depth study of how new communication technologies affect traditional processes relevant to organizational life. Special emphasis is given to theories, research, and applications of computer-mediated communication, social media, group decision support systems, and virtual teams in organizations.

COM 630 Seminar in Interpersonal Communication (3). A study of the contemporary approaches to interpersonal communication with opportunities for practical application of those approaches in diverse interpersonal situations.

COM 631 Interpersonal Communication at Work (3). A survey of theory, research, and practice relevant to the study of contemporary approaches to interpersonal communication in organizational contexts. Students will examine individual communicative behaviors in the workplace and the impact those behaviors have on co-workers, superiors, and subordinates, and organizational life.

COM 633 Communication Ethics (3). An advanced study to the ethical challenges and responsibilities of being a competent communicator in a diverse and changing world. Students will learn to apply ethical theory and reasoning to a variety of communication processes and contexts.

COM 635 Customer Communication (3). A survey of communication theories, research and strategies for improving customer service and relations. Emphasis will be placed on analyzing customer communication processes, diagnosing communication breakdowns, resolving conflict, improving customer feedback, managing customer relations, and creating an organizational culture of customer service.

COM 636 Health Communication (3). A comprehensive study of health communication in varied contexts ranging from intrapersonal and interpersonal to organizational and mediated. This course introduces students to theoretical frameworks guiding current scholarship in health communication. Students will also improve their own communication competence in health care contexts.

COM 637 Positive Communication (3). An advanced study of communication theories and behaviors that lead to and perpetuate positive emotions, and to help students thrive in every facet of life.

COM 639 Seminar in Conflict Resolution (3). Designed to illustrate the central role of communication in resolving conflict within various organizational entities. The course will focus on conflict resolution skills required in such environments as management and labor, public administration, families and education. A particular area of concentration will be selected each semester.

COM 640 Seminar in Intercultural Communication (3). Analysis of theories and research in intercultural communication. Application of theories and research to contemporary intercultural issues in organizations.

COM 644 Graduate Cooperative Education (3). May be repeated for a maximum of six credits. Graded pass/fail. Prerequisite: permission of chair.

COM 653 Advanced Team Communication and Leadership (3). Survey of theory, research, and current practices relevant to the study of team communication and leadership. Students will examine communicative behavior of productive teams and effective leaders, and participate in team building exercises.

COM 661 Theories of Persuasion and Argumentation (3). Classical and modern theories of persuasion and argumentation. Behavioral theory and research are examined and the effects of various forms of argument and attitude change are studied. Ethical standards of persuasion and argumentation are explored.

COM 672 Communication in Instructional Environments (3). Communication in a variety of instructional contexts with focus on introductory courses at the college level. Emphasis is placed on the literature, philosophies and theories concerning communication instruction.

COM 673 Organizational Training and Development (3). Specific problem areas in communication structures within particular organizations are identified. A concentrated examination is made of the areas of assessment, diagnosis, prescription, intervention and evaluation of communication problems and the training and development opportunities resulting from those problems within organizations.

COM 677 Organizational Learning and Dialogue (3). Explores organizations as systems of learning based on productive alternative forms of human communication. Theories and tools of dialogue and organizational learning are applied to contemporary workplace practices.

COM 680 Advanced Organizational Communication (3). Survey of theory and research relevant to the study of organizational communication. Students will examine how communication processes shape and reshape the activities of organizing within and between organizations.

COM 682 Seminar in Crisis Communication (3). A comprehensive study of crisis communication in organizations. From preparation and planning to post-crisis recovery, this class helps students develop a thorough understanding of communication processes during each phase of organizational crisis as well as different types of crises that occur within organizations. Emphasis is placed on how communication functions to manage and resolve organizational crisis.

COM 684 Complexity and Organizational Communication (3). Course examines the nature, function and role of complexity thinking in organizational communication theory and practice. As such, the course offers an alternative to mainstream and conventional assumptions about organizations and communication.

COM 685 Seminar in Organizational Communication (3). Detailed studies in organizational communication of interest to faculty and students. A contemporary topic, to be announced one semester in advance, is examined each time the course is offered. Past topics include consulting, subordinate-superior relations, gender communication, mentoring and intercultural communication. The course may be repeated for a total of nine hours.

COM 686 Communication Apprehension and the Workplace (3). An introduction to communication apprehension, its impact on the individual and the organization, and strategies for managing it.

COM 687 Leadership Communication. An advanced study of the strategic communication processes and skills of leading in diverse organizational contexts. The course emphasizes self-analysis and the development of leadership communication skills through the application of related theories.

COM 689 Philosophy and Future of Organizational Communication (3). A survey of the development of organizational communication from early communication thinkers to contemporary individuals who have contributed theory and influenced the discipline. Prerequisite: COM 680.

COM 690 Research Methods in Organizational Communication (3). Review and application of research methods used in the study of communication variables.

COM 692 Research Practice (2). Application of research methods used to study communication variables. Miniature thesis required. Prerequisite: COM 690.

COM 693 Readings in Communication Research (3). Students read 4,000-5,000 pages of research in a particular area of interest. Usually the product is a research paper written in a publishable format. Graded pass/fail. Prerequisite: permission of the graduate advisor is required prior to enrollment.

COM 694 Directed Individual Study in Organizational Communication (1-3). The student has the opportunity to pursue specific areas of research under the supervision of the participating faculty member. Particular expectations are negotiated between the student, department and faculty member. May be repeated once for a maximum of six hours. Graded pass/fail.

COM 698 Thesis (3).

COM 699 Thesis (3).

COM 887 Seminar in Organizational Leadership (3). An advanced study of the organizational challenges facing leaders in the 21st century. Requisite knowledge and communication competencies for effective, contemporary leadership are reviewed. The course emphasizes how leaders navigate systemic complexity, collaborative learning, and dialogue among constituents to continuously guide organizations through these challenges. Special emphasis is placed on educational and nonprofit organizations.

CRIMINAL JUSTICE (CRJ)

CRJ 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Introductory seminar for all first semester criminal justice majors. Graded pass/fail.

CRJ 140 Introduction to Criminal Justice (3). An overview of the criminal justice system as a critical component of national, state, and local government, including the relationships with legislative, executive, and judicial branches at the domestic and international levels. The active role of citizens in reporting crime, serving as jurors, and electing district attorneys, judges, and sheriffs are explained. Criminal behaviors, ethics, and constitutional protections in the Bill of Rights are addressed. The history, composition and functions of police, prosecutors, judges, courts, corrections and juvenile justice are covered. Note: This course, with a grade of C or higher, is a prerequisite to all other courses in criminal justice. Prerequisites: ENG 096 or ACT English score of at least 18 and ACT Reading score of at least 20 or successful completion of REA 096 and ESS 120.

CRJ 220 Law Enforcement (3). Philosophy, theory, and processes of policing at the federal, state and local levels. Prerequisite: CRJ 140 with a grade of *C* or better.

CRJ 240 Corrections (3). Philosophy, theory and processes of adult and juvenile corrections at the federal, state and local levels. Prerequisite: CRJ 140 with a grade of *C* or better.

CRJ 300 Crime and Criminals (3). Examines various forms of juvenile and adult criminal behavior with particular attention to the psychological, social and educational needs and characteristics of offenders and the role of law enforcement and correctional officers in dealing with offenders.

CRJ 305 Internship (3). Supervised internship placement in a criminal justice agency. Only for juniors and seniors completing an area, major, or minor in criminal justice. May be repeated for a maximum of six credit hours. Graded pass/fail. Prerequisites: CRJ 140 with a grade of *C* or better, one from CRJ 220, 240, 320, 355 and six hours additional CRJ courses with a minimum grade of *C*; permission from agency after background check; and permission of instructor.

CRJ 320 Juvenile Justice (3). An overview of juvenile justice systems and juvenile delinquency in the United States. This course traces the evolution of a separate justice system for children and considers the causes, prevention and treatment of delinquency, with particular attention devoted to sources of juvenile crime and to characteristics of juvenile offenders. PIt is recommended to take CRJ 140 prior to CRJ 320.

CRJ 325 Criminal Justice Ethics (3). An examination of the application of ethical decision-making within the field of criminal justice with special attention to police deviance, judicial misconduct, control of inmates in correctional facilities, and other ethical dilemmas within the field. CRJ 140 with a grade of *C* or better.

CRJ 333 Criminalistics (3). A study of the application of scientific knowledge, instruments and techniques to the investigation of crime. Includes discussion of the recognition, identification, examination and evaluation of physical evidence through scientific means. Prerequisites: CRJ 140 with a grade of *C* or better.

CRJ 346 Criminal Investigation (3). Techniques of evidence collection and preservation, *modus operandi*, interviews and interrogations, report writing, and preliminary and follow-up investigations. Prerequisites: CRJ 140 and 220 with a grade of *C* or better.

CRJ 355 Security in Business and Industry (3). A study of planning, development, organization and management of modern security systems. Discusses the processes of personnel, property and information security. Includes major concepts, legal aspects, principles and practices of risk assessment, loss control, prevention and related functions of protective services. An approved business and occupational safety and health elective. Prerequisite: CRJ 140 with a grade of *C* or better or permission of instructor.

CRJ 365 Interviewing and Interrogation (3). An examination of the theory, nature, methods, and principles of interviewing and interrogation in criminal justice with discussion and practical exercises focusing on eliciting information from witnesses and criminal suspects and case documentation. Prerequisite: CRJ 140 with a grade of *C* or better.

CRJ 385 Violent Crime (3). A comprehensive examination of the nature and extent of violent crime in society, with specific consideration given to the workplace, family and other intimate relationships, and schools. Particular attention is given to the criminal justice system's response to the offender and victim in these situations. Prerequisite: CRJ 140 with a grade of *C* or better and CRJ 300 as pre- or corequisite with a grade of *C* or better.

CRJ 400 Applied Criminal Justice Research (3). A writing-intensive course that is an overview of applied criminal justice research methods and procedures. Special emphasis will be placed on ethics in criminal justice research, evaluation of crime-prevention programs, and a review of various specific, consequential studies in criminal justice. Prerequisites: CSC 199 (or equivalent) and STA 135 (or equivalent). CRJ 140, 300, and ENG 105 with grades of *C* or higher and one of the following writing courses: ENG 204, 205, 224, or 324.

CRJ 425 Terrorism (3). The history, philosophy, various forms and definitions of terrorism are examined. The nature and causes of domestic and international terrorism, the possible means for prevention, and criminal justice system of governmental response to terrorist acts, and current issues in terrorism are explored. Prerequisites: CRJ 140 with a grade of *C* or better.

CRJ 442 Probation and Parole: Community Corrections (3). Study of community alternatives to prison confinement. Examination of halfway houses, work release and other community-based approaches to corrections. Prerequisite: CRJ 140 and 240 with a grade of *C* or better.

CRJ 445 Criminal Justice Diversity (3). An examination of issues related to age, culture, disability, ethnicity, gender, national origin, race, religion, sexual orientation, and military veteran status as they apply to criminal incidents, victims, offenders, and criminal justice professionals. Prerequisite: CRJ 140 with a grade of C or higher.

CRJ 447 Business and Political Crime (3). Concepts, policies and issues relating to crimes in business, industry and government. Includes discussions of the impact of white-collar and organized crime, terrorism, fraud, corruption, and other forms of official and unofficial deviance. An approved business elective. Prerequisite: CRJ 140 with a grade of *C* or better or permission of instructor.

CRJ 448 Topical Seminar (3). Inquiry into selected topics and problems in the field of criminal justice. May be repeated, provided topics vary. Prerequisite: CRJ 140 with a grade of *C* or better or permission of instructor.

CRJ 455 Police and Community Relations (3). Individual and collective study of relationships between police officers, agencies and the public. Exploration of areas of conflict and cooperation. Prerequisites: CRJ 140 and 220 with a grade of *C* or better.

CRJ 470 Institutional Corrections (3). Examination of the history, roles, structures, and functioning of institutional corrections within the United States. Emphasis is placed on understanding the philosophies, elements, structures, and programs that shape current institutional operations and their impact on offenders, staff, and the community. Prerequisites: CRJ 140 with a grade of *C* or better.

CRJ 475 Organized Crime (3). Historical dimensions of organized crime and its control. Examination of emerging groups of ethnic and international organized crime and the statutes and techniques used to combat criminal organizations.

CRJ 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisites: CRJ 140 with a grade of *C* or better, six hours of CRJ courses, and permission of chair.

CRJ 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisites: CRJ 140 with a grade of *C* or better, six hours of CRJ courses, and permission of chair.

CRJ 495 Special Problems (3). Individual study and projects designed to meet the needs of each student. Restricted to seniors majoring or minoring in criminal justice. Must have a 3.0 overall GPA and a 3.0 in CRJ courses taken for the major or minor. Prerequisite: Completion of all CRJ core courses with a grade of *C* or better for the major except 499 or 15 hours of CRJ courses with a grade of *C* or better in the minor.

CRJ 499 Senior Seminar in Criminal Justice (1). Capstone course for all criminal justice majors. The course includes an examination of career opportunities, including public and private sector employment, and graduate and professional education. Students will discuss the job search process, consider interviewing techniques, and prepare a professional portfolio. Mastery of criminal justice curriculum will be assessed. Prerequisites: senior standing and completion of CRJ 100T and CRJ 140 and at least 18 additional hours of criminal justice courses with a grade of *C* or better in each class. An overall GPA of 2.5 or better is required.

CRJ 505 Criminal Justice Administration (3). Principles of administration, organization, leadership and management are examined as they apply to the various components of criminal justice. Prerequisites: CRJ 140 with a grade of *C* or better, 220, and 240 or permission of instructor.

CRJ 520 Mass and Serial Murder (3). An analysis of mass and serial murder primarily in the United States. Theoretical explanations for the murders and the development of the offenders will be discussed. Additional topics include the prevalence of these offenses, how they are studied and understood by both researchers and law enforcement, methods of prevention of the offenses and the correction and treatment of the offenders. Prerequisites: CRJ 140 and 300 both with a grade of *C* or better.

CRJ 522 Issues in Policing (3). Examines police function, history, operational strategies, ethics, deviance, use of force, policy, accreditation, accountability, and other contemporary issues. Prerequisites: CRJ 140 and 220 with a grade of *C* or better.

CRJ 533 Juvenile Delinquency (3). Nature and extent of delinquency; competing explanatory theories; evaluation of programs for prevention and control; role of police, detention, juvenile courts and corrections.

CRJ 537 Juvenile Justice Procedures (3). The organization, function and jurisdiction of juvenile agencies; police referrals, preventive techniques and youth divisions; juvenile court procedures and juvenile statutes. Prerequisites: CRJ 140 with a grade of *C* or better, or permission of instructor.

CRJ 544 Constitutional and Legal Issues in Criminal Justice (3). A comprehensive examination of the constitutional law that affects criminal justice professionals, citizens, suspects, and incarcerated individuals, with considerable attention given to both civil and criminal legal issues surfacing in the criminal justice field. Topics will include due process, search and seizure, self-incrimination, bail, and right to counsel and a fair trial. Prerequisite: CRJ 140 with a grade of *C* or better.

CRJ 555 Crime Prevention (3). This interactive seminar will deal with crime prevention strategies for law enforcement, business/industrial security and other criminal justice personnel. Issues of situational crime prevention, environmental design, physical security measures, defensible space, opportunity theories, crime displacement, rational choice theory and selected crime prevention studies will be explored. International issues and extensive case studies will be included. Prerequisite: CRJ 140 with a grade of *C* or better or consent of professor.

CRJ 573 Victimology (3). Analysis of major perspectives on victimization. Emphasis on patterns of victimization, the role of victims in the generation of crime, and the experience of the victim in the criminal justice system. Prerequisite: CRJ 140 with a grade of *C* or better or permission of instructor.

CRJ 575 Comparative Criminal Justice Systems (3). An examination of non-American criminal justice systems. Specific areas of comparison will include but not be limited to, the police, judiciary, and criminal corrections of selected foreign systems. Prerequisite: CRJ 140 with a grade of *C* or better.

CRJ 605 Seminar in the Administration of Justice (3). An overview and evaluation of policies and practices in the administration of justice.

CRJ 610 Seminar in Criminal Justice Issues (3). An assessment of selected issues in the justice system and the development of strategies to meet those challenges.

CRJ 620 Mass and Serial Murder (3). An analysis of mass and serial murder primarily in the United States. Theoretical explanations for the murders and the development of the offenders will be discussed. Additional topics include the prevalence of these offenses, how they are studied and understood by both researchers and law enforcement, methods of prevention, methods of tracking by law enforcement, and potential correction and treatment of the offenders.

CRJ 622 Issues in Policing (3). Examines police function, history, operational strategies, ethics, deviance, use of force, policy, accreditation, accountability, and other contemporary issues.

CRJ 633 Juvenile Delinquency (3). Nature and extent of delinquency; competing explanatory theories; evaluation of programs for prevention and control; role of police, detention, juvenile courts and corrections.

CRJ 637 Juvenile Justice Procedures (3). The organization, function and jurisdiction of juvenile agencies; police referrals, preventive techniques and youth divisions; juvenile court procedures and juvenile statutes.

CRJ 644 Graduate Cooperative Education (3). May be repeated to a maximum of six credits. Cannot be used to meet M.B.A., M.P.A., or M.S. degree requirements. Graded pass/fail. Prerequisite: permission of instructor.

CRJ 645 Graduate Internship (3). Supervised internship placement in a criminal justice agency. Students are expected to examine administrative, operational, legal and ethical issues faced by the placement agency. Prerequisite: permission of instructor.

CRJ 650 Constitutional and Legal Issues in Criminal Justice (3). A comprehensive examination of the constitutional law that affects criminal justice professionals, citizens, suspects, and incarcerated individuals, with considerable attention given to both civil and criminal legal issues surfacing in the criminal justice field. Topics will include due process, search and seizure, self-incrimination, bail, and right to counsel and a fair trial.

CRJ 655 Crime Prevention (3). This interactive seminar will deal with crime prevention strategies for law enforcement, business/industrial security and other criminal justice personnel. Issues of situational crime prevention, environmental design, physical security measures, defensible space, opportunity theories, crime displacement, rational choice theory and selected crime prevention studies will be explored. International issues and extensive case studies will be included.

CRJ 673 Victimology (3). Analysis of major perspectives on victimization. Emphasis on patterns of victimization, the role of victims in the generation of crime, and the experience of the victim in the criminal justice system.

CRJ 675 Comparative Criminal Justice Systems (3). An examination of non-American criminal justice systems. Specific areas of comparison will include but not be limited to, the police, judiciary, and criminal corrections of selected foreign systems.

CRJ 695 Special Problems (3). Individual study and projects designed to meet the needs of each student. May be repeated for credit if topics differ.

CRJ 698 Thesis (3-6).

COMPUTER SCIENCE (CSC)

CSC 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

CSC 101 Introduction to Problem Solving Using Computers (3). This course is an introduction to problem solving using computers which spans the breadth of issues such as logical reasoning in algorithm development, procedural, object-oriented and event-driven/visual programming languages, web programming, networking concepts, security issues and other pertinent topics regarding the use of a computer to solve real-world problems. The student will be provided with an overall picture of the many areas of expertise in the computing field as they apply to other disciplines as well as an introduction to fundamental programming concepts. This course is intended as the first course for CSIS majors and a course for non-majors who want to learn how to instruct computers to solve problems. Prerequisite: Math ACT score of at least 20 or MAT 097 or higher.

CSC 125 Internet and Web Page Design (3). Introductory course covering the Internet, web page and web site design. The student will be introduced to the physical components of client-server networks and basic Internet including mailers, browsers, search engines, and FTP clients. The major part of this course will cover the fundamentals of creating web pages using freely available HTML text editors and a visual web authoring tool that provides a WYSIWYG design environment. Web page development will include the use of lists, hyperlinks, images, client-side image maps, tables, forms, cascading style sheets, and interactivity using basic JavaScript.

CSC 145 Introduction to Programming (3). An introduction to problem-solving methods and algorithm development using an object-oriented programming language. Topics include variables, input and output, selection, repetition, methods, arrays, objects, classes, and text file processing. This is the recommended second course for majors in the discipline. Prerequisite: MAT 150 or equivalent.

CSC 199 Introduction to Information Technology (3). Course is designed for students pursuing any program of study. A student taking this course will gain competency with file management, word processing, spreadsheet, database management, and presentation graphics software. In addition, the student will become familiar with general computer technology such as computer hardware, computer operations, networks, the Internet and the World Wide Web. Prerequisite: math ACT score of at least 19 or MAT 096 (or higher).

CSC 232 Introduction to Programming in C# (3). Introductory programming course for students with little programming experience. Course covers basic algorithm development; structured programming and event-driven programming; introduction to object-oriented programming; graphical user interfaces; and exception handling. C# will be used as the programming language. Two hours lecture and two hours laboratory per week. Prerequisite: CSC 101 or consent of instructor.

CSC 233 Programming in Python (3). An introductory course in programming in Python using both procedural and object oriented methods. Topics include variables; lists and dictionaries, strings and tuples; file input/output; control structures; functions; and object-oriented programming with classes. This course can be taken by non-CS majors to fulfill their requirement for a programming language course.

CSC 235 Programming in C++ (3). A course in programming in C++ using both procedural and object-oriented methods. Topics include variables; expressions; stream and file input/output; control structures; arrays; functions; pointers; records; dynamic memory management; object-oriented programming with classes; single and multiple inheritance. The course will also include an introduction to the Linux operating system. Prerequisite: CSC 101 or permission of instructor.

CSC 260 Application Program Development in COBOL I (3). Introduction to algorithms and programs, variable assignment, and input, decision, looping, tables, subroutines, algorithm design and testing, records, file organization, and processing. The focus of this course is on control structures and their syntax, elementary data structures, and sequential files. Two hours lecture and two hours lab. Prerequisite: CSC 145 or 232.

CSC 275 Introduction to Game Programming (3). Course introduces computer game design and development. Emphasis is on two-dimensional games for a single player. Topics include: game genres, story and character development, rules of play, game physics, sound effects, usability, and the player experience. Students critique classic arcade and console games, discuss future trends in computer games and design and implement their own computer game for a popular platform. Prerequisite: permission of instructor.

CSC 299 Special Topics in Computer Applications (1-3). A special topics course designed to permit the teaching of appropriate topics as needed in a changing high-tech discipline. The course will include those topics which are relevant but not necessarily appropriate for permanent, specific course status. Topics will be selected and offered on university/community need and/or interest. Does not apply to the CSC or CIS majors. May not be substituted for any course in the business core. Prerequisites vary with topics covered. May be repeated for a maximum of six hours. (Same as CIS 299.)

CSC 300 Discrete Structures (3). Course introduces the discrete mathematical foundations of computer science, providing the appropriate theoretical background for advanced courses. Topics include: sets, relations and functions, basic logic, proof techniques, basics of counting, graphs and trees, and discrete probability. Prerequisites: CSC 145 and MAT 150 or equivalent. Corequisite: CSC 345 or permission of instructor.

CSC 310 Database Administration (3). A course in administering database management systems. Topics include data definition language, data control language, backup and recovery, security, performance tuning, network administration. Prerequisites: CIS 307 and TSM 133.

CSC 325 Advanced Object-Oriented Programming (3). Course covers advanced features available in the standard libraries provided with modern object-oriented languages. Topics will include graphical user interface components, graphics, network programming, database programming, multithreading and parallel programming. Prerequisite: CSC 145.

CSC 332 Advanced Programming in C# (3). An in-depth study of the latest version of the C# programming language. Emphasis is placed on advanced programming techniques and database concepts The course covers event driven programming and object-oriented paradigms. Topics include structured programming, class creation, user interface development and database management. Prerequisite: CSC 232 with a grade of *C* or better or permission of instructor.

CSC 345 Data Structures (3). Data structures and abstract data types (ADTs) for arrays, strings, lists, stacks, queues, trees, and graphs. These ADTs are presented in both static and dynamic memory implementations. The course also cover the design and implementation of recursive algorithms such as sorting and searching, hasing functions, priority queues, and heaps. Other topics (recursion, lists, events, inheritance, polymorphism) in object-oriented programming will be covered as time permits. Three hours lecture and two hours laboratory per week. Prerequisite: CSC 145 with a grade of *C* or higher. Corequisite: CSC 300 or permission of instructor.

CSC 360 Scripting Languages (3). Course is a survey of several popular scripting languages. Operating system shell languages and Perl will be discussed. The emphasis will be on applications of scripting languages to network and server administration tasks. Prerequisites: Knowledge of a high-level programming language and a server operating system or permission of instructor.

CSC 370 Introduction to Artificial Intelligence (3). Course is a basic introduction to artificial intelligence (AI) covering fundamental material in problem solving, heuristic search, knowledge representation, deduction, planning uncertain reasoning, learning, and natural-language processing. The course will focus on understanding the concepts, processes and technologies involved in modern computing systems considered to fall in the category of AI. Prerequisites: CSC 345.

CSC 375 Introduction to Machine Learning (3). Course is a basic introduction to topics in the field of machine learning. The course focuses on designing algorithms that allow computers to learn and take actions in a probabilistic fashion using statistical inferences. Students will explore Probabilistic Reasoning, Belief Networks, Bayesian learning, hidden variable learning, supervised and unsupervised learning, linear modeling, Gaussian processes, Mixture Models, and Discrete State Markov Models. Prerequisite: CSC 370 or permission of instructor.

CSC 385 Introduction to Special Topics (3). Supervised independent study of specialized topics in computer science. The course can be repeated once for an additional three credit hours.

CSC 405 Computer Architecture (3). Applications of digital logic circuits, register transfer logic and assembly language to the design and operation of the modern general-purpose computer are reviewed. Course covers the functional components of the ALU, control unit, memory unit, and I/O communications. Course includes an overview of microcontrollers and single-board computers as applied to embedded systems. A study of parallel and distributed architectures, as well as alternative processor architectures are reviewed. Two hours lecture, two hours of digital logic lab per week. Prerequisite: CSC 345.

CSC 410 Parallel and Distributed Computing (3). An overview of principles of network and distributed computer systems. This course covers the concepts of the network control, asynchronous concurrent processes, multi-threaded execution, mutual exclusion, deadlock, distributed storage management, processor scheduling, and system and network security. Two hours lecture and two hours lab per week. This course must be taken with one of the following: CSC 411, 412, 413, or 414. Prerequisite: CSC 345.

CSC 411 Distributed Systems Project in Graphics and Visual Computing (0). Project course to accompany CSC 410. The chosen project will be related to distributed systems and graphics and visual computing. This course must be taken with CSC 410. Graded pass/fail.

CSC 412 Distributed Systems Project in Net-Centric Computing (0). A project course to accompany CSC 410. The chosen project will be related to distributed systems and net-centric computing. This course must be taken with CSC 410. Graded pass/fail.

CSC 413 Distributed Systems Project in Embedded Systems Programming (0). Project course to accompany CSC 410. The chosen project will be related to distributed systems and embedded systems programming. This course must be taken with CSC 410. Graded pass/fail.

CSC 414 Distributed Systems Project in Applications Programming (0). Project course to accompany CSC 410. The chosen project will be related to distributed systems and applications programming. This course must be taken with CSC 410. Graded pass/fail.

CSC 415 Programming Languages (3). Formal definition of programming language syntax and semantics. Global properties of imperative and object-oriented languages including scope of declarations, binding times, simple data types, abstract data types, control structures, subprograms, concurrency, and exception handling. Introduction to functional and logic programming paradigms. Prerequisites: CSC 345.

CSC 420 Numerical Analysis I (3). An introduction to the numerical algorithms fundamental to scientific computer work. Includes elementary discussion of error, polynomial interpolation, quadrature, linear systems of equations, solution of non-linear equations, and numerical solution of ordinary differential equations. The algorithmic approach and the efficient use of the computer are emphasized. Prerequisites: MAT 250, knowledge of high-level programming language and CSC 302 or permission of instructor.

CSC 425 Mobile and Web Programming (3). Course to emphasize the development of software applications on particular hardware platforms. Types of platforms covered include: Web platforms, mobile platforms, and game platforms. Course will cover currently relevant platform languages such as Ruby and HTML5, Java Script, and PHP. For Web platforms, emphasis will be on software as a service (SaaS). Issues for mobile platforms will include wireless communication, location-aware applications, and performance/power tradeoffs. For game platforms, emphasis will be on choice of programming language, cross-platform development and game platform constraints.Prerequisite: CSC 325.

CSC 430 Software Construction (3). Course is a survey of professional software development tools and practices. Topics include agile development methods, version control, test driven development, unit testing, system testing, continuous integration, bug tracking, software design patterns, documentation, and code quality. Students will complete both individual and team programming projects. Prerequisites: CSC 345.

CSC 445 Computer Algorithms (3). Study of the design and analysis of algorithms. This course covers methods of tree and graph traversal for optimal and approximate solutions to semi-numerical problems. It includes a study of the basic problem-solving techniques of greedy method, divide-and-conquer, dynamic programming, backtracking and branch-and-bound. Introduction to complexity and the NP hierarchy. This course must be taken with one of the following: CSC 446, 447, 448, or 449. Prerequisite: CSC 345.

CSC 446 Algorithms Project in Graphics and Visual Computing (0). A project course to accompany CSC 445. The chosen project will be related to algorithms and graphics and visual computing. This course must be taken with CSC 445. Graded pass/fail.

CSC 447 Algorithms Project in Net-Centric Computing (0). A project course to accompany CSC 445. The chosen project will be related to algorithms and net-centric computing. This course must be taken with CSC 445. Graded pass/fail.

CSC 448 Algorithms Project in Embedded Systems Programming (0). A project course to accompany CSC 445. The chosen project will be related to algorithms and embedded systems programming. This course must be taken with CSC 445. Graded pass/fail.

CSC 449 Algorithms Project in Applications Programming (0). A project course to accompany CSC 445. The chosen project will be related to algorithms and

applications programming. This course must be taken with CSC 445. Graded pass/fail.

CSC 450 Cryptography (3). Course provides an introduction to cryptographic algorithms. Topics will include classical cryptography (e.g., Caesar cipher and affine cipher), symmetric-key cryptography (e.g., DES and AES), public-key cryptography (e.g., RSA and ElGamal), hash functions (e.g., MD5 and SHA), and other topics related to cryptography such as number theory, digital certificates, authentication, key management, and password protection. Prerequisite: CSC 300.

CSC 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: consent of chair.

CSC 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: consent of chair.

CSC 510 Network Management and Implementation (3). An introduction to networking and data communication including topical coverage of transmission protocols, interconnectivity, network implementation and server installations. Emphasis will be placed on network design, operations, management, and costing. May not receive credit for both TSM 133 and CSC 510. Prerequisite: permission of instructor.

CSC 515 Computer Graphics Programming (3). Techniques in two-dimensional and three-dimensional computer graphics image generation and animation. Course includes: human visual perception, modeling, rendering, techniques in animation, visualization, and computational geometry. Prerequisites: knowledge of a high-level language or permission of instructor.

CSC 530 Senior Software Project (3). Course requires the development, documentation, and presentation of a significant software project. Must be taken with one of the following: CSC 531, 532, 533, or 534. Prerequisite: CSC 345.

CSC 531 Graphical User Interface Development Project in Graphics and Visual Computing (0). Project course to accompany CSC 530. The chosen project will be related to graphical user interface development and graphics and visual computing. Must be taken with CSC 530. Graded pass/fail.

CSC 532 Graphical User Interface Development Project in Net-Centric Computing (0). Project course to accompany CSC 530. The chosen project will be related to graphical user interface development and net-centric computing. Must be taken with CSC 530. Graded pass/fail.

CSC 533 Graphical User Interface Development Project in Embedded Systems Programming (0). Project course to accompany CSC 530. The chosen project will be related to graphical user interface development and embedded systems programming. Must be taken with CSC 530. Graded pass/fail.

CSC 534 Graphical User Interface Development Project in Applications Programming (0). Project course to accompany CSC 530. The chosen project will be related to graphical user interface development and applications programming. Must be taken with CSC 530. Graded pass/fail.

CSC 540 Social, Ethical and Professional Issues in the Information Age (3). This course emphasizes social, ethical, legal, technical and professional issues encountered in the information age including the historical and social context, professional responsibilities, risks and liabilities, and intellectual property. Prerequisite: senior standing and CSC 345.

CSC 565 Embedded Systems and Robotics (3). Architecture of various microcontrollers and their uses in embedded systems applications are studied. One or more of the popular microcontrollers will be selected for practice in hardware design and programming, including methods for interfacing with computers, sensors and control systems. Prerequisite: CSC 405 or permission of instructor.

CSC 575 Computer Animation and Game Development (3). This course builds on the computer animation techniques of CSC 515. Topics covered include lighting techniques, texture mapping, atmospheric effects, collision detection, user input devices, and sound effects. Physics modeling, real-time animation, AI behavior modeling and other fundamentals of fame design are introduced. Prerequisites: CSC 515 or permission of instructor.

CSC 585 Special Problems (1-3). Supervised independent study of specialized topics in computer science. May be repeated one time. Prerequisite: senior standing and/or permission of instructor.

CSC 685 Special Problems (1-3). Supervised independent study of specialized topics in computer science. May be repeated one time.

CSC 695 Comprehensive Project in Computer Science (3). This course consists of an independent, in-depth study of a topic or problem in computer science under the direct supervision of a faculty member. Periodic conferences will be arranged with the supervising faculty member on an individual basis. Prerequisites: 12 hours of graduate work in computer science or computer information systems and consent of the instructor.

COLLEGE STUDENT PERSONNEL (CSP)

CSP 618 Practicum and Seminar in College Student Personnel Work (3). Practical aspects of college student personnel work will be examined through the use of appropriate placements in working professional settings. A seminar will accompany these placements to provide a forum for a structured discussion and development of concepts observed while in the field placement settings.

CSP 631 Study Abroad Programs Administration (3). Course emphasizes study abroad from a administrative perspective and begins with broader and contextual issues around institutional internationalization. Major topical areas include the importance and relevance of study abroad in a core as well as co-curriculum; orientation and preparation of students, faculty, and staff to participate in study abroad programs; counseling, placing, and supporting interested students; identifying and developing appropriate new program options; and administering a study abroad office. Corequisite or prerequisite: CSP 630.

CSP 632 International Student Administration (3). Course focuses on the management of international student and scholar presence on American campuses. Specific aspects addressed include international student enrollment, orientation, advisement, integration into campus community life, visiting scholar administration, and implications for institutional internationalization. Corequisite or prerequisite: CSP 630.

CSP 633 Internship in International Education (3). As the culmination of in the international education concentration, this experience is designed to apply course learnings in an actual higher education work setting. Required in a minimum of 200 assignment hours in a unity devoted to any one or combination of study abroad, international student and scholar support services, or international relations responsibilities at a college or university. The assignment includes close supervision by the professional directly responsible for this area of university service. Prerequisite: CSP 630 with a grade of *B* or better and either CSP 631 or 632 with a grade of *B* or better; simultaneous enrollment in CSP 631 or 632 with instructor permission.

CAREER AND TECHNICAL EDUCATION (CTE)

CTE 200 Introduction to Career and Technical Education (3). This course is designed to provide new and pre-service teachers with an introduction to the field of career and technical education. Included are topics related to motivation, and learning theory, curriculum, school organization, funding, laboratory management and historical, socio-cultural, psychological, and philosophical foundations of career and technical education.

CTE 201 Introduction to Career and Technical Education for In-Service CTE Teachers (3). Course is designed to provide new in-service CTE teachers with an introduction to the field of career and technical education. Included are topics related to motivation and learning theory, curriculum, school organization, funding, laboratory management and historical, socio-cultural, psychological and philosophical foundations of career and technical education.

CTE 210 Overview of Career and Technical Education (3). Course is an introduction to the field of career and technical education. Included are topics related to historical, socio-cultural, psychological and philosophical foundations of career and technical education. Students are introduced to curriculum, school organization, laboratory management of career and technical education. Field experience hours required.

CTE 270 Basic Structures and Foundations of CTE (3). Course will include topics related to the basic structures and foundations of career and technical education such as curricular developments, course organization and content selection, student organizations, and historical, sociocultural, psychological, and philosophical foundations of career and technical education.

CTE 272 Organizing and Managing School Learning Facilities (3). Course is designed to include the principles and practices related to equipping and maintaining shop, laboratory and classroom. Emphasis is given to safety and current technology.

CTE 274 Basic Assessment and Curricula for CTE (3). Course is designed to include assessment development and curriculum construction for selecting and arranging content taught and preparing instructional materials for career and technical education.

CTE 310 Discovering the Career and Technical Education Profession (3). Through this course, students will examine what career and technical education is from its beginnings to current issues, policy, and implementation. Students will discover their personal and professional connections to the field, and their future roles as teachers and career and technical education student organization advisers. Field experience hours required. Prerequisites: CTE 210 and EDU 380.

CTE 312 Teaching Content Area Literacy in Career and Technical Education (3). Designed to help the career and technical education teacher teach reading in the content areas. Topics covered are: the reading process, word recognition skills, comprehension, diagnostic-prescriptive instruction, reading strategies, and reading in the career and technical education content areas.

CTE 320 Career and Technical Education Practicum (1-4). Course will provide structured opportunities for observation in career and technical education environments. Course may be repeated for up to four credit hours.

CTE 331 Instructional Planning in Career and Technical Education (3). Course is designed to provide the new in-service career and technical education teacher with an introduction to the field of career and technical education. Major topics to be examined include career and technical education curriculum, school organization, funding, laboratory management and historical, socio-cultural, and philosophical foundations of career and technical education. Prerequisite: Participation in Kentucky Department of Education New Teacher Induction.

CTE 332 Instructional Strategies in Career and Technical Education (3). Course is designed for the new in-service career and technical education teacher. The focus will include topics related to the instructional strategies utilized in career and technical education such as the creation of a vision for CTE instruction, the use of project based and cooperative learning strategies in the CTE classroom, and academic integration into CTE. Prerequisite: CTE 331.

CTE 333 Classroom Assessment in Career and Technical Education (3). Course is designed for the new in-service career and technical education teacher. The course will include an introduction to understanding assessment and effective grading practices, the development of assessment tools, and the use of assessment data in career and technical education for the new in-service occupational based CTE teacher. Prerequisite: CTE 332.

CTE 334 Classroom Management in Career and Technical Education (3). Course is designed to present various theories and methods for classroom management for the new in-service occupational based career and technical education teacher. The focus will be to assist the new teacher with establishment and maintenance of effective classroom management. Prerequisite: CTE 333.

CTE 363 Evaluation of Instruction in Career and Technical Education (3). Course is designed to provide instruction in the process of instructional evaluation. Emphasis is given to the establishment of student performance criteria, the assessment of student performance in the cognitive, affective and psychomotor domains, and the assignment of grades.

CTE 371 Methods of Instruction in Career and Technical Education (3). Course is designed to provide instruction regarding the presentation and application of instructional materials including the methods, techniques, and technology relevant to teaching career and technical education subjects.

CTE 380 Career and Technical Subjects (3-24). For this course, an assessment will be made of previous educational experiences from universities, community colleges, private and public schools, and all institutions recognized by the National Commission on Accrediting. Graded pass/fail. May be repeated for up to 24 credit hours.

CTE 381 Career and Technical Experiences (3-30). For this course, credit may be earned via thoroughly documented experiences in an occupation where the individual meets the standards for the entry level of teaching as defined by the Kentucky Department of Education, and where one would be eligible for the one-year provisional teaching certificate. On the basis of this review by the department chair, a specific amount of credit will be determined and given. Graded pass/fail.

CTE 410 Effective Career and Technical Education Programs and Practices (3). Through this course, students will examine what is needed to implement effective career and technical education programs. Students will explore strategies that promote an engaging classroom environment that will permit successful delivery of CTE content. Field experience hours required. Prerequisites: CTE 310 and admission into Teacher Education.

CTE 463 Seminar in Student Teaching, Career and Technical Subjects (4). Course is designed to include the identification of selected teaching concepts and a study of their uses as a foundation for instructional methods, student activities, and evaluation of student learning. Graded pass/fail. Prerequisite: permission of instructor.

CTE 501 Structures and Foundations of CTE (3). Course is designed to provide new and pre-service teachers with an introduction to the field of career and technical education. Included are topics related to motivation and learning theory, curriculum, school organizations, funding, laboratory management and historical, socio-cultural, psychological, and philosophical foundations of career and technical education. Prerequisite: admission to Teacher Education.

CTE 502 Assessment and Curricula in Career and Technical Education (3). Course is designed to provide an overview of assessment and curricula unique and appropriate for the career and technical education classroom and laboratory. Prerequisite: admission to Teacher Education.

CTE 503 Planning and Implementing Instruction in CTE (3). Course is designed to provide an overview of current trends and issues in planning and implementing instruction in the media rich career and technical education classroom and laboratory. The course includes exploration of such various teaching methods including lecture, discussion, group instruction, group projects, and instructional modules.

CTE 566 Special Problems in Career and Technical Education (1-6). Course is designed to provide an opportunity for individual study, laboratory practice, and research in career and technical education. The student must justify need for such study and have the proposed problem approved before registering for the course. May be repeated for up to six hours of credit.

CTE 568 Independent Study in Career and Technical Education (3-6). Course is designed to include supervised readings or independent investigative projects in the various aspects of administration, supervision, and coordination of career and technical education programs. May be repeated for up to six hours of credit. Prerequisite: permission of instructor.

CTE 601 Introduction to Career and Technical Education for Initial Certification (3). This course is designed as an introduction to the Master's degree for the occupational based Career and Technical Education (CTE) teacher who has previously earned a bachelor's degree in the technical field for which they are presently employed as a CTE educator. Teachers will examine and reflect on their experiences while aligning with the New Teacher Institute (NTI) experience of the new occupational based secondary teacher. Teachers will research their own schools and community and develop a plan to meet the individual student needs in their classrooms.

CTE 631 Advanced Instructional Planning in Career and Technical Education (3). This course is designed as an introduction to instructional planning for the occupationally based Career and Technical Education (CTE) teacher who has previously earned bachelor's degree in the technical field for which they are presently employed as a CTE educator. It examines the instructional planning process and the influences that affect students, teachers, and schools including socio-economic, cultural, language, historic, and political influences. Teachers will examine and reflect on their experiences in the classroom in relation to the instructional planning process while aligning with the New Teacher Induction (NTI) experience of the new occupationally based secondary teacher. Teachers may research their own schools and community and develop a plan to meet the individual student needs in their classrooms. Prerequisite: Participation in Kentucky Department of Education New Teacher Induction.

CTE 632 Advanced Instructional Strategies in Career and Technical Education (3). Course includes an analysis of the process of curriculum development within schools and the larger community for in-service career and technical education teachers. Students will consider and analyze current theory, school goals, instructional planning, student achievement and curriculum evaluation leading to reflective decision-making and career and technical education teacher development. Prerequisite: CTE 631.

CTE 633 Advanced Classroom Assessment in Career and Technical Education (3). Course will include procedures and techniques for effective and useful assessment and grading practices for the new in-service CTE teacher. Focus will be on the development of assessment tools, and appropriate use of assessment data in career and technical education. Prerequisite: CTE 632.

CTE 634 Advanced Classroom Management in Career and Technical Education (3). Course includes an analysis of selected methods of classroom management for the new in-service CTE teacher. The focus will be on the study of various approaches to assist new in-service career and technical education teachers with the establishment and maintenance of effective classroom management. Prerequisite: CTE 633.

CTE 640 Student Teaching Practicum in Career and Technical Education (6). Course provides opportunities for students to participate in all activities and duties generally expected of a career and technical education teacher. Student will observe, participate, and teach under the supervision of a faculty member and a cooperating teacher. Includes experience in lesson planning, classroom management, record keeping, development and use of instructional materials, and delivery of instruction. Graded pass/fail.

CTE 665 Program Planning and Evaluation (3). Course includes procedures and techniques in planning and evaluating programs in career and technical education.

CTE 666 Special Problems in Career and Technical Education (1-6). Course provides an opportunity for individual study, laboratory practice, and research in career and technical education. The student must justify the need for such study and have the proposed problem approved before registering for the course. May be repeated for up to six hours credit.

CTE 667 Emerging Trends in Instructional Technology (3). Course includes the study of trends in industrial technology affecting career and technical education, including competency-based education, management by objectives, objectives exchange systems, information storage and retrieval, instructional models, etc.

CTE 668 Independent Study in Career and Technical Education (3-6). Course includes supervised readings or independent investigative projects in the various aspects of administration, supervision, and coordination of career and technical education programs. Prerequisite: permission of instructor. May be repeated for up to six hours credit.

CTE 671 Philosophy of Career and Technical Education (3). Course is a study of the social, historical, and philosophical development and current philosophical beliefs of career and technical education. The student will develop a philosophy and understanding of career and technical education and then apply that philosophy and understanding to understanding new or different past-present-future career and technical education. The meaning of career and technical education to the individual and society, as well as the nature and impacts of career and technical education on the individual and society will be introduced and explored.

CTE 672 Managing CTE Learning Facilities (3). Course includes the principles and practices for planning, organizing, and maintaining school shop, laboratory, and classroom facilities used in teaching career and technical education subjects. Emphasis is given to classroom management and control, supply inventory, equipment maintenance, and safety. An independent study project or research report is required.

CTE 676 Organization and Administration of Career and Technical Education (3). Course includes a study of the organization and administration of career and technical education programs on the various school levels and the development and coordination of external advisory boards. The students will experience development of a strategic plan that includes a mission statement, rationale for change, goals and objectives, action steps, and a program evaluation strategy. State and national legislation affecting career and technical education will be studied.

CTE 678 Review of Professional Literature in Career and Technical Education (3). Course includes review and analysis of outstanding professional literature in the various fields of career and technical education. Survey of research and professional papers from other disciplines that relate to career and technical education will be included. The critical analysis of selected publications will be required.

CTE 680 Exit Seminar in Career and Technical Education (1). The purpose of this course is to provide an opportunity for students to conduct a self-analysis of knowledge, skills and abilities relative to the graduate program completed. This is accomplished by a review of past textbooks and notes, small group discussions, simulations, role-playing as well as finalizing of the eligibility portfolio. Course is repeatable up to two hours. Prerequisites: CTE 601 and be within six hours or less of completing the program.

ECONOMICS (ECO)

ECO 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

ECO 140 Contemporary Economics (3). Fundamental economic principles applied to a wide range of real world problems, with the objective of developing an understanding of the market form of economic organization. Designed specifically for two purposes: (1) to meet the needs of the students who are able to take only one economics course in their curriculum, and (2) to satisfy the University Studies social science requirement. Does not apply toward business or economics major, minor, or area requirement.

ECO 190 Consumer Economics (3). The course prepares the student to manage his or her own personal financial affairs in a competent manner as well as providing a foundation for later study and work in the financial planning field. Designed to meet the needs of both business and non-business majors. Cannot receive credit for both ECO 190 and FIN 230.

ECO 200 Economics and Politics (3). This course provides an introduction to the economic analysis of governments and politics. Topics covered include the role of special interest groups in American government, the growth of the government sector in the American economy, and the fundamental differences between private and public sector decision-making. The course is designed to introduce students to the role that incentives play in understanding government decision-making. Does not apply toward business or economics major, minor, or area requirement, but may be used as an elective.

ECO 230 Principles of Macroeconomics (3). An introduction to the application of the basic principles of supply and demand to issues in aggregate economics such as national income accounting, unemployment, growth, inflation, business cycles, and the role played by government through its fiscal and monetary policies. Prerequisites: MAT 117, 120, 140 or 150; or an ACT math standard score of at least 23; or permission of instructor.

ECO 231 Principles of Microeconomics (3). An introduction to the application of the basic principles of supply and demand to the behavior of individual economic agents such as consumers, households, business and nonprofit

firms, industries, and resource owners. Real world examples are used to demonstrate the application of microeconomics to everyday situations, including an analysis of the effects of government policies on individual markets and income distribution. Prerequisites: MAT 117, 120, 140 or 150; or an ACT math standard score of at least 23; or permission of instructor.

ECO 305 Money and Banking (3). A survey of money and its role in the operation of the economy and the banking system. Prerequisites: junior standing; ECO 230 and 231.

ECO 310 Issues in the Global Economy (3). A review of fundamental issues in international trade, payments, investment, and economic and social systems relevant for informed international business and public policy decision making. This class may not be taken for credit in the economics major. Prerequisite: ECO 230 or HON 232.

ECO 311 European Economic History (3). A descriptive study of the economic development of Europe. This course focuses on historical economic thought that developed in Europe and provides a perspective of how Europe is structured today. Prerequisite: ECO 230 or 231 or permission of instructor.

ECO 312 American Economic History (3). A descriptive study of the historical development of major economic institutions in the United States. Prerequisite: ECO 231.

ECO 315 Comparative Economic Systems (3). An analysis and appraisal of the various economic structures utilized by societies to solve the economic problem of how to allocate scarce resources among unlimited wants. Prerequisites: junior standing; ECO 230 or permission of instructor.

ECO 320 Women in the Global Economy (3). An analysis of the economic conditions and opportunities faced by women around the world. The course focuses on women's access to resources and their roles in the formal and informal economies. Analysis of gender and markets as social constructs will be developed.

ECO 325 Economics of Corruption in Transition and Developing Countries (3). Course is an introduction to the various definitions, causes, consequences of, theories about corruption, the techniques employed in measuring it, and the tactics used to combat it. In particular, the course differentiates the type of corruption known as "state capture" (which refers to corrupt efforts to influence how laws, rules, and regulations are formed and implemented) from political corruption (which refers to the use of existing laws, rules, and regulations to secure favor).

ECO 330 Intermediate Macroeconomics (3). An analysis of the application of the principles of supply and demand to the macroeconomic problems that face society, such as inflation, unemployment, growth, deficits and recessions. This course is a continuation of ECO 230 with a greater emphasis on the development of formal models of macroeconomic activity. Prerequisites: ECO 230 and MAT 220.

ECO 331 Intermediate Microeconomics (3). An analysis of the application of the principles of supply and demand to the resource allocation decisions faced by consumers, firms and resource owners. This course is a continuation of ECO 231 with a greater emphasis on the development of formal models of individual product and resource markets. Prerequisites: ECO 231 and MAT 220.

ECO 335 Economics and Public Policy of Telecommunications Industry (3). The study of market performance and business practices of the telecommunications industry. Includes topics such as market power, merger analysis, vertical relationships, entry and regulation of price and lines of business. Prerequisite: ECO 231.

ECO 345 Environmental Economics (3). Development of a framework for investigating the meaning and causes of environmental deterioration. Special emphasis on developing and using economic analysis to evaluate the appropriateness of proposed solutions. Prerequisite: ECO 231.

ECO 370 The Economics of Sports (3). Course explores various aspects of the economics of sports and sports leagues. Prerequisite: ECO 231 or HON 232 or permission of the instructor.

ECO 410 Economic Development (3). An introduction to the economic characteristics and problems of the less developed countries and to theories and policies applicable to the developing economy. Prerequisites: ECO 230 and 231 or HON 232, or permission of instructor.

ECO 420 Behavioral Economics (3). A study of the foundations of behavioral aspects of economics and finance with a focus on how individual behavior can effect decision making processes and influence financial markets. Prerequisite: ECO 230 or 231.

ECO 450 Economic Applications to Law (3). An introduction to the analysis of legal issues and legal reasoning. Case studies include property, contracts, torts, product liability, criminal behavior and the value of life. Prerequisites: ECO 230 and 231 or permission of instructor.

ECO 460 International Trade and Finance (3). A study of the principles, practices, and institutions of international trade and finance. Prerequisite: ECO 231.

ECO 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

ECO 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

ECO 490 Survey of Economics (3). A rigorous introduction to economics including the application of the basic principles of microeconomics and macroeconomics, designed for students who have an inadequate background in economics. Covers the same material as in ECO 231 and ECO 230 or the equivalent. Prerequisites: MAT 117, 120, 140 or 150; or an ACT math standard score of at least 23; or permission of instructor.

ECO 498 Research Methods in Economics (1-3). Course is the first of a two course sequence (with ECO 499) which together make up the senior seminar portion of the economics major. This course will cover research methods including: project design, research methods, writing skills and presentation skills. Those not meeting these requirements must seek the permission of the instructor. Prerequisite: senior standing.

ECO 499 Senior Seminar in Economics (1-3). This is a capstone course in economics and is required of all economics majors. This class will serve to draw together the knowledge and analytical tools developed during the economics major course of study by requiring the development and completion of an independent research project. Prerequisite: ECO 498.

ECO 505 Internship (1-3). Open to junior and senior economics majors. Students are placed with cooperating firms or government agencies to receive on-the-job training in economic analysis. Work experience is supervised by faculty and written reports are required. Graded pass/fail. Prerequisite: permission of departmental chair.

ECO 521 Seminar in Economic Thought: Rand's Objectivism (3). An analysis of the merits and ethical foundations of free enterprise and capitalism from the perspective of Ayn Rand's Atlas Shrugged. The principles of free enterprise will be applied to a variety of historical and current issues as developed in Rand's objectivism.

ECO 538 Monetary and Fiscal Policy (3). An appraisal of the federal government's efforts to promote full employment and price stability. Prerequisite: ECO 330 or permission of instructor.

ECO 539 Microeconomic Policy (3). An analysis of government policy affecting business firms and consumer choice. Prerequisite: ECO 331 or permission of instructor.

ECO 540 Market Structure and Firm Behavior (3). This course examines noncompetitive market structures such as monopoly, oligopoly and monopolistic

competition. The course will focus on output and pricing decisions of such firms, the economic impact of these market structures, and the regulation of non-competitive markets. Prerequisite: ECO 231.

ECO 550 Public Finance (3). A survey of the principles and practices of raising and spending public revenues. Prerequisite: ECO 231 or permission of instructor.

ECO 570 Labor Economics (3). A survey of the economics of labor, the conditions of employment, wages and the development of labor organizations in the United States. Prerequisite: ECO 231.

ECO 595 Special Problems (1-3). Prerequisite: permission of instructor.

ECO 610 Introduction to Economic Development (3). Course will introduce students to the process, purpose, and background needed for the local economic development process. Prerequisite: admission to the M.S. Economic Development program.

ECO 611 Economic Development Methods (3). Course will introduce students to the methods and sources of information used in the economic development process. Prerequisite: Admission to the M.S. Economic Development program.

ECO 615 Directed Study in Economic Development (3). Course will provide students the opportunity to gain expertise in a chosen area of economic development. It is suggested that the student choose to study in an area or areas of elective interest for pursuing certification as an economic development professional.

ECO 617 Capstone Project in Economic Development (3). An independent, in-depth study, of a topic or problem in economic development. Ideally, the nature of this project will grow out of the student's internship experience and the project will address and issue of immediate importance to the Economic Development Agency with which the student has completed an internship. Prerequisite: Admission to the M.S. Economic Development program, completion of or concurrent enrollment in ECO 618.

ECO 618 Internship in Economic Development (3). A meaningful, planned, and evaluated work experience related to the work of the economic development professional. The student receives academic credit and possible remuneration. Prerequisite: Admission to the M.S. Economic Development program.

ECO 621 Freedom and Economics (3). An analysis of the merits and ethical foundations of free enterprise and capitalism from the perspective of Ayn Rand's Atlas Shrugged. The principles of free enterprise will be applied to a variety of historical and current issues as developed in Rand's objectivism**.**

ECO 625 Managerial Economics (3). An application of economic theory to business problems. Prerequisites: ECO 230 and 231 or ECO 490; MAT 220; CIS 343 or 490, or permission of instructor.

ECO 630 Macroeconomic Theory (3). An advanced analysis of the major theories of national income, price level, interest rate, and employment determination; in particular the short-run impact of policy choices and shocks within the major models. Prerequisite: ECO 330 or permission of instructor.

ECO 631 Microeconomic Theory (3). An advanced treatment of price theory, emphasizing the use of differential calculus and linear algebra to formally model the decision-making of individual economic agents. Prerequisite: ECO 331 and 680 or permission of instructor.

ECO 635 Advanced Monetary Theory (3). The evolution of money, monetary theory, monetary policy and the closely related topic of fiscal policy. Prerequisite: ECO 330 or permission of instructor.

ECO 638 Monetary and Fiscal Policy (3). An appraisal of the federal government's efforts to promote full employment and price stability. Prerequisite: ECO 330 or permission of instructor.

ECO 639 Microeconomic Policy and Application (3). An application of basic microeconomic theories to the analysis of the effects of various governmental policies on individual consumers, firms, industries or resource owners. The topics that will be covered in any particular semester will vary, being drawn primarily from policy issues of current importance. Prerequisites: ECO 230 and 231 or permission of instructor.

ECO 640 Market Structure and Firm Behavior (3). This course examines non-competitive market structures such as monopoly, oligopoly and monopolistic competition. The course will focus on output and pricing decisions of such firms, the economic impact of these market structures, and the regulation of non-competitive markets. Prerequisite: ECO 231.

ECO 650 Theory of Public Finance (3). Reviews the problem of resource allocation within the framework of government revenue and expenditure policies, and the impact of these policies on the economy. Prerequisite: ECO 231 or permission of instructor.

ECO 655 Cost Benefit Analysis (3). Course will introduce the student to the techniques of benefit-cost analysis and program evaluation tools used in business and government applications. Prerequisite: Admission to the M.S. Economic Development program or permission of the instructor.

ECO 660 International Business and Finance (3). A review of international economic and financial theories and applications, including international trade, payments, investment and currency markets. Prerequisites: ECO 230 & 231 or permission of instructor.

ECO 670 Labor Economics (3). A survey of the economics of labor, the conditions of employment, wages and the development of labor organizations. Prerequisite: ECO 231.

ECO 680 Quantitative Methods of Economics and Business (3). A rigorous presentation of the fundamental quantitative methods most frequently encountered in the graduate study of economics and business. Topics covered include matrix algebra, partial differentiation, constrained and unconstrained optimization and comparative statics. Prerequisites: ECO 230, 231 and MAT 220 or permission of instructor.

ECO 685 Econometrics (3). The theory and application of statistical methods to the analysis of economic and business data. Topics covered include simple and multiple regression analysis, hypothesis testing of linear and nonlinear restrictions, heteroskedasticity, auto correlation, dummy variables and model selection. Prerequisites: ECO 231 and CIS 343 or permission of instructor.

ECO 690 Forecasting for Business and Government (3). An intuitive presentation of the basic quantitative forecasting techniques widely used in industry and government, including multiple regression analysis, exponential smoothing algorithms and ARIMA modeling (Box-Jenkins). Prerequisites: ECO 230, 231 and CIS 343 or permission of instructor.

ECO 695 Special Problems (1-3). Independent study of a special problem in economics by students who have the background to do independent work. Prerequisites: ECO 680 and permission of instructor.

ECO 697 Teaching and Application of Economic Principles: K-12 (3). A survey of content, materials, teaching methodology and practicum in program design for incorporating economic principles into grades K-12. The course is designed for those with little or no formal economic background. (Same as EDU 697.)

ECO 698 Thesis (3).

ECO 699 Thesis (3).

EDUCATIONAL PSYCHOLOGY (EDP)

EDP 260 Psychology of Human Development (3). A study of the systematic changes in the cognitive, behavioral, social, and biological functioning of the individual across the developmental stages of life. Note: Cannot be counted toward both teacher certification and the psychology major or minor. Field hours required.

EDP 675 Advanced Educational Psychology (3). A psychological perspective and research-based examination of the learner, the teacher, and the classroom interaction processes involved in effective educational processes.

EDUCATION
(EDU)

EDU 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

EDU 103 Issues and Practices of American Education (3). Course designed to provide all students with an overview of the field of education. Included are topics related to motivation and learning theory, curriculum, school organization, and historical, socio-cultural, psychological and philosophical foundations of education. Although this is also an initial education course for students seeking teacher certification, all students will be able to apply what they have learned as parents and concerned citizens in their adult lives. Field observations required.

EDU 104 Exploration of Teaching (3). An elective course for high school students interested in pursuing a career in teaching, this course is designed to provide an overview of the field of education. Presents an introduction to teaching, including teaching as a profession, historical, socio-cultural, psychological and philosophical foundations of education. Course will provide an understanding of the role of the teacher in the classroom, school and community. Field experiences required.

EDU 106 Tutoring and Mentoring in Schools (3). This elective course is intended to provide a collegiate level service learning experience for high school students who wish to provide service to their school or district in the form of tutoring or mentoring student. This course will also provide experiences for high school students interested in pursuing teacher education or other human service oriented careers. The course will include training in basic techniques of tutoring in a number of academic areas. The course may also provide techniques for peer mentoring for students who would benefit from support for the academic, social, or psychological aspects of the school experience. The course will include a minimum of 22 hours of tutoring or mentoring experiences.

EDU 180 Exploring the Teaching Profession (3). Course introduces potential teacher candidates to the work and culture of the teaching profession through required clinical observations and interactions in an appropriate school setting in early childhood, elementary, middle school, and secondary school environments. Candidates will actively explore the importance of professional identity, roles and responsibilities; knowledge, skills, and dispositions; student-centered practice; and students' developmental and cultural needs. By the end of this course, candidates will know if teaching is their career choice. Clinical experiences required.

EDU 222 Instructional Technology (3). Course introduces students to the wide variety of emerging and existing technology applications that are commonly seen in modern educational classrooms. Students will explore, evaluate, and demonstrate competence in the use of instructional technology as a tool for the interactive and engaging classroom. Prerequisite: EDU 103 or EDU 104.

EDU 250 Signed English I (1). Course is designed for students who want to acquire stills to communicate manually with babies, preschoolers, children, and others with special needs. The introductory course includes the manual alphabet and development of basic skills in Signed English (SE), and Baby Signs®. Field experiences are required.

EDU 280 Educating for Human Development (3). Course addresses human development as a foundation for student learning across the lifespan. Specifically, candidates will develop a basis for creating developmentally appropriate instruction and assessment. Emphasis will be placed on understanding the importance of building relationships, developing collaborative partnerships, and creating a culturally responsive, student-centered environment to meet all students' needs. Clinical experiences required.

EDU 303 Strategies of Teaching (3). This course is an investigation of the skills of teaching which are applicable at any grade level. Emphasis placed on the application of teaching strategies in microteaching and classroom settings. The course will also include coverage of classroom management strategies, discipline techniques, and curriculum development as a function of instruction. Field experiences required. Prerequisite: Students must have earned a *B* or better in EDU 103 or 104.

EDU 330 Teaching Strategies for Non-Certification Majors (4). This course is an introduction to and application of the instructional skills for teaching children, middle/late adolescents, and adult students. This course cannot be accepted for any teaching certification program. Topics include the design of lessons to encourage appropriate outcomes and behaviors for all learners, an in-depth study of learning styles and outcomes, and the initial development of a personal philosophy of teaching. Prerequisites: HPE 175 with a *C* or higher.

EDU 370 Expanding Educational Horizons through International Travel (2-6). A short-term (one-to-two week) study abroad experience highlighting the culture and educational system in another country. This course may be taken more than once if travel is to different countries. Students must qualify for participation in a Murray State University-sponsored international experience. Repeatable up to six credit hours. Prerequisite: permission of instructor.

EDU 380 Inclusive Teaching of Diverse Learners (3). Course will examine the design, implementation, and assessment of instruction with the diverse learner in mind. Teacher candidates will synthesize knowledge of learning theories, technology, and evidence-based practices, including classroom management, to develop units of study and lesson plans. The course will introduce candidates to federal laws and guidelines addressing diverse students (e.g. special education, ELL, gifted and talented). Clinical experience required. Prerequisites: EDU 180 and EDU 280 or equivalent courses with a *B* or higher.

EDU 403 Structures and Foundations of Education (2). A course designed to provide the undergraduate teacher education student with an in-depth study of the foundations of education. The course includes a major emphasis in the social, historical, legal, and philosophical foundations of education. Field experiences required. Prerequisite: admission to Teacher Education.

EDU 405 Evaluation and Measurement in Education (3). The selection, administration, and uses of educational evaluation and measurement approaches with emphasis on application in school classrooms. Field experiences required. Prerequisite: admission to Teacher Education.

EDU 422 Student Teaching Seminar (3). A professional experience to be provided concurrently with student teaching to provide theory, research base and a forum to support the performance in the school assignment. Topics arising from problems encountered in the classroom as well as other current topics will be studied. Graded pass/fail. Prerequisite: Admission to Teacher Education and student teaching.

EDU 423 International Teaching Experience (1-3). A course designed to provide an international teaching experience for prospective teachers through which they will come to understand the culture and educational system of another country. Students will be placed in an international educational setting and will collaborate with teachers and administrators to assist in providing instruction to students. Prerequisite: permission of instructor.

EDU 450 Special Problems (0-12). Individual study and projects in education. Repeatable for up to 12 hours of credit. Prerequisite: Permission of instructor.

EDU 480 Effective Pedagogy (2). Teacher candidates will apply content knowledge, educational philosophies, learning theories, differentiated instruction, classroom management strategies, effective assessment practices, instructional technology, co-teaching strategies, student advocacy, and content-area literacy. Emphasis will be placed on roles of teachers, students, parents, school, and community as educational partners. Candidates will design and implement culturally relevant, developmentally-appropriate instruction for all students. The course is paired with a program-specific mega-practicum course. Prerequisites: EDU 380 or equivalent course with a *B* or higher. Admission to Teacher Education.

EDU 485 Professional Perspectives for Teaching (1). Course is designed to prepare the teacher education candidate to engage in ongoing professional learning to continually evalute their practice and the impact on learners. The course develops teacher education candidates to seek appropriate leadership

roles and opportunities to collaborate with learners, families, colleagues, other school professionals, and community members. Students will use assessment and analyze data to ensure growth based on individual learning needs. This course is paired with a program-specific mega-practicum. Prerequisites: EDU 480 or equivalent course with a *B* or higher. Admission to Teacher Education.

EDU 490 Internship I (5). Course is designed to provide students with a practical, in-depth experience for career-related fields in education. Students will be expected to demonstrate 90 hours each semester in an instructor approved setting most closely related to the student's area of study. Graded pass/fail. Prerequisite: Instructor permission required.

EDU 491 Internship II (5). Course is designed to provide students with a practical, in-depth experience for career-related fields in education with a different context/setting placement from EDU 490. Students will be expected to demonstrate 90 hours each semester in an instructor approved setting most closely related to the student's area of study. Graded pass/fail. Prerequisites: EDU 490 and instructor permission.

EDU (601 Teaching Social Studies in K-12 Classrooms (3). Designed to give K-12 teachers depth and understanding of the learning processes of the social studies. Students become familiar with current trends and research-based practices to develop K-12 students' proficiency in social studies. Emphasis is placed on K-12 students' cultural backgrounds, societal context, curriculum materials and individualizing programs.

EDU 604 Mathematics in the Curriculum (3). An in-depth understanding of the learning and teaching process in mathematics for the K-12 classroom. Graduate candidates become familiar with current trends to develop all students' mathematical competencies.

EDU 606 Preparation of Curriculum Materials (3). A course involving the producing of learning materials for use in the elementary and secondary schools.

EDU 608 Teaching Science in K-12 Classrooms (3). Designed to give K-12 teachers depth and understanding of the learning processes of science. Students become familiar with current trends and research-based practices to develop K-12 students' proficiency in the sciences.

EDU 614 Direct Study of Children and Youth (3). A group experience in writing and analyzing anecdotal records composed from direct observation by each member, under the guidance of trained leaders and consultants.

EDU 621 Advanced Methods of Teaching (3). An advanced course that applies theories and practices of models of teaching based upon applied research and practitioners experiences. Prerequisites: EDU 303 or an equivalent course and at least have had student teaching experiences.

EDU 622 Philosophy of Education (3). A course designed to explore the various philosophies of education; the meaning of education to the individual and society; the nature of thinking; educational aims and values; character education; and the interpretation and evaluation of present day issues and problems in education.

EDU 625 Theory and Practice in Classroom Management (3). Analysis of the theoretical and practical aspects of selected systems of classroom management and control. To include the study of several approaches that can assist teachers in establishing and maintaining a healthy and productive system of classroom operation.

EDU 626 Integration of Educational Technology (3). Students use a range of traditional, interactive, and emerging technology tools to enhance learning. Students demonstrate knowledge of existing instructional practices as well as compose and produce artifacts using available resources.

EDU 631 Classroom Management and Student Motivation (3). Analysis of the theoretical and practical aspects of selected systems of classroom management and motivation. Includes the study of several approaches that can assist teachers in establishing and maintaining a healthy and productive system of classroom operation.

EDU 632 Comparative Education (3). A systematic examination of education in various nations for the purpose of an enlarged critical view of education in the United States.

EDU 633 Curriculum Development (3). A comprehensive analysis of the process of curriculum development within schools and the larger community. The process includes consideration of the teacher leader model according to the current theory, school goals, instructional planning, student achievement and curriculum evaluation leading to reflective decision-making and teacher development.

EDU 634 Problems in Curriculum Development in the Public School (1-3). Designed for people desiring to work in specific curriculum areas, K-12. Repeatable to six hours.

EDU 637 Instruction for Diverse Learners (3). Examines the needs of a wide range of diverse learners with the goal of matching instruction and accommodations to improve student learning.

EDU 645 History of Education in the United States (3). A course designed to study of the growth and development of education in the United States from early colonial times to present, including recent trends and movements.

EDU 647 Building K-12 Curriculum (3). A study of curriculum trends, practices, and initiatives in K-12 schools. Emphasis will be placed on building curriculum to address the needs of a diverse student population.

EDU 649 Research in Education (3). This course is a follow-up of ADM 630. The course includes an exploration of elementary statistics as they apply to the completion of an action research project which was proposed and begun in ADM 630. The action research project is to be concluded during this course and presented during a class/departmental colloquium.

EDU 650 Workshops in Education (1-3). Repeatable to six hours. Maximum of six hours from EDU 650 and/or EDU 651.

EDU 651 TQI Workshops in Education (3). Selected workshops in education. Repeatable to six hours. Maximum of six hours of EDU 650 and/or 651.

EDU 670 Expanding Educational Horizons through International Travel (2-6). A short-term (one-to-two week) study abroad experience highlighting the culture and educational system in another country. This course may be taken more than once if travel is to different countries. Students must qualify for participation in a Murray State University-sponsored international experience. Repeatable up to six credit hours. Prerequisite: permission of instructor.

EDU 698 Thesis (3-6). Repeatable to six hours.

EDU 798 Specialty Study (3). Selection of problem, collection of data, and interpretation of data in preparation for writing a research paper.

EARTH AND ENVIRONMENTAL SCIENCES (EES)

EES (GSC) 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

EES (GSC) 101 The Earth and the Environment (4). An introduction to the materials of the earth and the processes that modify them to form our landscapes and create our physical environment. Includes an introduction to aerial photo and topographic map interpretation. Three hours of lecture and two hours of laboratory per week.

EES (GSC) 102 Earth Through Time (4). An introduction to the study of how the earth's environment has changed through time and the geological processes that are causing the changes. Topics include hypotheses regarding the earth's origin, the evolution of the earth's oceans and atmosphere, and the interaction between environmental factors and appearance of life on the earth. The methods that geologists use to measure time will be identified and described. Particular emphasis will be given to the North American continent. The laboratory will focus on interpretation of earth history through the study of minerals, rocks, and fossils. Three hours of lecture and two hours of laboratory per week. Prerequisite: EES 101 or 199.

EES (GSC) 110 World Geography (3). A course designed to introduce students to the geographic distribution of major regions of the world. Attention will be focused on the delicate interrelationships between the natural landscapes of the earth and corresponding major cultural activities.

EES (GSC) 115 Dinosaurs (3). Course introduces the scientific study of dinosaurs through the lenses of historical geology, paleontology, and biology. This course will systematically walk through the major groups of dinosaurs focusing on their interrelationships, anatomy, lifestyle and appearance. Special attention will be paid to how we reconstruct dinosaur biology from physical evidence and how our scientific impressions of dinosaurs have changed over time. Topics include fossil preservation, feathered dinosaurs, the origin of birds, thermoregulation, the cause of the dinosaur extinction, and common dinosaur misconceptions.

EES (GSC) 125 Weather and Climate (4). Introduction to the dynamics of the atmosphere and how humans interact with and are influenced by atmospheric processes and climatic variations. Three hours of lecture and two hours of laboratory per week.

EES (GSC) 151 Geosciences of Alcohol (3). Alcoholic beverages and their production are restricted to particular geographic regions. This course will explore the geographic distribution of four different alcohols (Kentucky bourbon, wine, hard cider, and rum) using an interdisciplinary approach as broad as the geosciences department itself (including geology, geography, and archaeology). The discussion of each alcohol will begin by examining the ingredients and chemical processes involved in fermentation as well as the geographic distribution of production centers. We will evaluate how climate, hydrology, geology, and soils within the production center impact the availability, chemistry, and flavor of raw materials (e.g., water, corn, grapes, apples, and sugar cane). By examining the archaeological history of alcohol production, we will explore how the geographically restricted production of each alcohol caused it to be incorporated into the cultural identity of a region and how that translates into impacts on local economies, tourism, and state identity. The course will also include an optional field trip to a regional production facility.

EES (GSC) 199 Earth Science (4). This course introduces basic earth science concepts with elaboration on the origin, structure, and the complex interactions between the major earth components of the atmosphere, hydrosphere and lithosphere. Three hours lecture and two hours lab per week.

EES (GSC) 200 Introduction to Oceanography (3). An introduction to the study of oceans and marine processes, with emphasis on the morphology of the ocean floor, life in the ocean, oceanic circulation, sea floor spreading and shoreline management. Prerequisite: One college-level physical or biological science course or consent of the instructor.

EES (GSC) 202 Introduction to Geographic Information Science (4). This course is designed to provide an introduction to the fundamental principles and concepts of the mapping sciences. The course will focus on digital image processing and geographic information systems as techniques utilized in such areas as land cover and land capability mapping. The introduction of global positioning systems (GPS) as an auxiliary mapping tool is also included in the course. Three hours lecture and two hours lab per week.

EES 205 Mapping for Society (3). This course will examine the fundamental concepts and techniques of geographic information system (GIS) technology and their application to social sciences and humanities. Students will learn how to collect, organize, process, and display geographical data from national, state, and local sources. Emphasis will be placed on spatial data fundamentals, examining the utility of online mapping services and related applications, preparing various data types and formats of use in the development of an online mapping application. Labs will introduce students to current industry-wide software, cloud-based mapping technology, cartographic design, and methods for preparing digital maps for public consumption.

EES (GSC) 210 Hydrology (3). Occurrence, movement, quality and behavior of water in hydrologic cycle with reference to recovery of underground water in areas of detrital and carbonate rocks. Three lectures per week. Prerequisite: EES 101 or permission of instructor.

EES (GSC) 250 Geography of the Developing World (3). A survey, by climatic regions, of the cultural, economic and natural setting of the developing world, including the transitional nature of the subtropics.

EES (GSC) 251 Geography of the Industrialized World (3). A survey, by climatic regions, of the cultural, economic and natural setting of the industrial world.

EES (GSC) 300 Economic Geology (3). Distribution, mode of occurrence, origin and uses of mineral deposits. Environmental problems associated with extraction and utilization of mineral resources. Prerequisite: EES 102 or permission of instructor.

EES (GSC) 301 Understanding Scientific Communication (3). Course concentrates on the methods for preparation and presentation of scientific papers, posters, and oral communication. Students will utilize a data set to produce a publication-quality manuscript, a poster suitable for a scientific meeting, and a presentation such as would be given at a scientific meeting. Topics covered include abstracts, nature of scientific writing, structure and organization of scientific publication, use of literature, graphics and graphic design, and methods of polishing the oral and poster presentations. Prerequisites: COM 161 and ENG 105. (Same as SCI 301.)

EES (GSC) 303 Introduction to Water Science (3). An introduction to the study of the marine and freshwater environments of the earth. Study of the oceans as the largest component of the earth's hydrosphere will emphasize geological forces which are shaping the ocean floor, ocean currents and tides, the origin of ocean salt, and life in the ocean. Study of freshwater components of the earth's hydrosphere will emphasize connections with the ocean and the special role of each component in the earth's hydrologic cycle. Prerequisite: one college-level physical or biological science course, or permission of instructor.

EES (GSC) 305 Introduction to Cartography (3). Course will emphasize the art, science, and history of the mapping process. Elements of map design and construction will be explored, including coordinate systems, map projections, design concerns, and information management necessary for map creation. Fundamental map skills will be developed, common map applications covered, and future mapping trends explored. Lecture topics will be augmented by hands-on exercises using current GIS software.

EES (GSC) 306 Landscapes of the National Parks (3). Course explores the most distinctive and intriguing features of America's National Parks. Emphasis is placed on the geology, ecology, and archaeology of each park, with emphasis placed on how each of these components influences the other in a dynamic feedback system. One Saturday field trip will be required. Prerequisite: EES 102 or permission of instructor. (Same as ARC 306.)

EES (GSC) 310 Rock and Mineral Resources (3). An introduction to common rock and mineral resources, including ore deposits, fossil fuels, and minerals; igneous rocks; metamorphic rocks; and sedimentary rocks. Emphasis is on geologic occurrence and origin, geographic distribution, and importance to humans. Saturday field trips will be required. Prerequisite: EES 102 or permission of the instructor.

EES (GSC) 312 Introduction to Remote Sensing (4). The purpose of this course is to introduce students to the fundamental concepts and techniques in the processing, interpretation and utilization of remotely sensed imagery. The focus of the course is on applications in such fields as agriculture, environmental studies, minerals exploration and resources management/planning. Three hours lecture and two hours lab per week.

EES (GSC) 314 Sediments and Soils (4). An in depth study of sediments and soils. Emphasis will be on the geologic formation, interpretation, and significance of sediments and soils in a variety of geologic, environmental, and archaeological contexts. Three hours lecture and two hours laboratory per week plus one required Saturday field trip. Prerequisite: EES 102 or permission of the instructor. (Same as ARC 314.)

EES (GSC) 320 Geography of North America (3). Regional approach to studying the dynamic interaction between the physical and cultural aspects of North America.

EES (GSC) 325 Geography of the Russia and Central Asia (3). Regional approach to studying the dynamic interaction between the physical and cultural aspects of the Russia and the republics of Central Asia.

EES (GSC) 327 Geography of the Middle East and North Africa (3). Regional approach to studying the dynamic interaction between the physical and cultural aspects of the Middle East and North Africa.

EES (GSC) 330 Economic Geography (3). Course facilitates discussions that focus on the spatial distribution of resources that pertain to economic use, the production, distribution and consumption of goods, the flow of labor and capital and the process of economic and urban development in the context of globalization.

EES (GSC) 336 Principles of Geomorphology (4). The origin, characteristics and development of landforms and the processes which determine their formation. Three hours lecture and two hours lab per week.

EES (GSC) 339 Field Geology (3). A course designed to acquaint the student with field and laboratory techniques used by the geologist and to familiarize the student with the geology of Kentucky and adjacent areas. Lectures, laboratory, and field study. Prerequisites: EES 102 and permission of instructor.

EES (GSC) 350 Field Techniques in Geosciences (3). An introduction to the variety of field techniques utilized by geoscientists in the geologic, environmental, and archaeological fields. Emphasis is placed on the techniques of field surveying and mapping; locational assessment utilizing Global Positioning Systems; orienteering with compass and topographic map; basic descriptive field geology; soil sampling and description; remote and direct hydrologic assessment; and land cover/land use mapping. Field trips will be taken to locations of geologic or environmental significance to the region. Prerequisite: junior status or permission of the instructor.

EES (GSC) 388 International Experience in the Geosciences (3). A short-term (10-14 days of travel) study abroad experience highlighting selected historical and modern contributions to the geosciences from another country and culture. The course includes pre- and post-travel meetings, lectures, readings and discussions. Course may be taken only once for credit. Graded pass/fail. Prerequisite: consent of the instructor.

EES (GSC) 390 Geoarchaeology (3). Survey of geological methods and techniques used to answer archaeological research questions. Topics covered include sedimentary and geomorphic processes, depositional environments, site formation processes, environmental reconstruction, and radio metric dating techniques. One Saturday field trip will be required. Prerequisites: ARC 150 and EES 101. (Same as ARC 390)

EES (GSC) 424 Conservation and Environmental Geosciences (3). Course will study human population growth and associated resource requirements considering the physical makeup and history of the earth. Natural resource inventory, protection of the environment, geologic hazards and other conservation related topics will be discussed. Use of Geographic Information Systems (GIS) will be emphasized.

EES (GSC) 426 Applied Meteorology (4). A detailed study of synoptic meteorology and weather forecasting. Emphasis placed upon weather maps, their construction and interpretation. Attention given to the micro and meso aspects of meteorology/climatology. Prerequisite: EES 125.

EES (GSC) 427 Population Geography (3). An in-depth look at world population distributions and dynamics including past, present, and future trends and the influence of population growth on world economic activity.

EES (GSC) 430 Crystallography and Optical Mineralogy (4). Crystallography, crystal chemistry, optical theory and technique. Identification of the common rock-forming minerals by indices of refraction and other optical properties. Three lectures and two hours of laboratory per week. Prerequisite: EES 102 or equivalent.

EES (GSC) 431 Igneous and Metamorphic Petrology (4). Detailed study of igneous and metamorphic rocks and the processes by which they form. Prerequisites: EES 310, CHE 105 or CHE 121.

EES (GSC) 432 Stratigraphy and Sedimentary Petrology (4). A course to focus on sedimentary petrology and stratigraphy pertaining to environmental modeling, an essential component in the field of petroleum geology. Three lectures and two hours of laboratory per week. Prerequisite: EES 102 or equivalent.

EES (GSC) 433 Structural Geology (3). An introductory course in genetic and descriptive aspects of the deformational features of the earth. Two lectures and two hours laboratory per week. Prerequisite: EES 102 or equivalent.

EES (GSC) 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

EES (GSC) 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

EES (GSC) 507 Land Use Planning (3). Analyze the principles and techniques utilized in the planning process. Emphasis is placed on the practical aspects of planning: needs, problems and proposed solutions. (Same as PLN 507.)

EES (GSC) 510 Geophysics (3). Practical aspects of applied and environmental geophysics including gravity, magnetics, electricity, electromagnetic theory and practice. Prerequisite: MAT 150 or equivalent.

EES (GSC) 512 Remote Sensing (4). Emphasis will be placed upon the fundamentals of image interpretation using a wide variety of image types both airborne and spaceborne. The application of remotely sensed data and techniques in many areas. Three hours of lecture and two hours of laboratory per week. Prerequisite: BIO 240 or EES 202 or EES 312.

EES (GSC) 515 Geochemistry (3). The chemistry of the geologic environment including the distribution of chemical elements in the earth and natural waters, the nature and causes of chemical processes, and the application of chemical laws, methods and data to the solution of geologic problems. Emphasis is on the low-temperature geochemistry as it pertains to sedimentation, weathering and groundwater quality.

EES (GSC) 520 Geography of Kentucky (3). A survey of the topography, soils, climate, industries, commerce and population in Kentucky with emphasis upon the interrelationships between these various phenomena.

EES (GSC) 521 Geographic Information Systems (4). Techniques course that introduces digital georeferenced information systems, including data capture, editing and encoding techniques, data storage structures, database management systems, data analysis and model development, and information display methods. Three hours of lecture and two hours of laboratory per week. (Same as PLN 521.)

EES (GSC) 522 Advanced Cartography (3). A course designed to introduce students to effective cartographic design, which is key for successful communication between map readers and map creators. Map design components and construction will be discussed, including map scale, map projection, and spatial analysis. This course will focus on computer-based and online map production techniques with emphasis on using *ArcGIS* mapping tools. Students will gain hands on experience in creating their own datasets by either digitizing satellite imagery or by using *Google Earth*. Prerequisite: EES 305 or equivalent, or permission of instructor.

EES (GSC) 523 Problems in Urban Geography and Urban Planning (3). Theories, techniques and research in urban geography and planning. Focus placed on the designs and strategies addressing present-day urban problems. (Same as PLN 523.)

EES (GSC) 533 Paleoecology (3). The study of the formation of the first ecologies with the origin of life on earth, and the continuing changes in the earth's ecologies through time. Classic paleoecological communities are examined, including Precambrian, Ordovician, Cretaceous and Pleistocene ecosystems. Specific attention paid to the interaction and co-evolution of the organic and inorganic environments. Prerequisite: BIO 101 or EES 101, or equivalent.

EES (GSC) 534 Invertebrate Paleontology (4). The classification, morphology and paleontological significance of fossil invertebrates. Three lectures and two hours of laboratory per week. Prerequisite: EES 102 or equivalent.

EES (GSC) 536 Soils and Geomorphology (3). Students will study soil formation and how it varies as a function of climate, topography, organisms, relief, parent material, and time. They will be trained to describe soil properties in the field and lab, and learn how to infer pedogenic processes using these data. One weekend field trip required. Prerequisite: EES 336.

EES (GSC) 542 Watershed Ecology (3). The study of the movement of water through the environment and its relationship to biotic systems. Areas emphasized include the hydrologic cycle and its influence on groundwater, lotic and lentic systems; the effect of water on plant and animal communities; and the influence of human activity on watershed structure and function. Prerequisite: BIO 330 or permission of instructor. (Same as BIO 542.)

EES (GSC) 556 Geophysical Surveying (3). An overview of the application of terrestrial geophysical survey techniques and aerial remote sensing techniques in archaeological research. Emphasis will be placed on terrestrial geophysical survey methods with hands on training in the use of instruments such as ground penetrating radar and magnetic gradiometer. Weekend field trip to local archaeological sites are required. Prerequisite: ARC 300 or permission of instructor. (Same as ARC 556.)

EES (GSC) 561 Precision GIS/GPS Applications (1-3). An introduction to Geographic Information Systems (GIS) and Global Positioning System (GPS) applications in natural resources, business and land management. The course is divided into three distinct parts: 1) Introduction to GIS/GPS applications, 2) Business applications, and 3) Precision land management applications. Students must take the introduction phase before continuing with the other two parts. Variable credit hours: one credit for Part 1, two credits for Part 1 and 2 or 1 and 3, or three credits for Parts 1, 2, and 3. Course may be repeated for a maximum of three credit hours.

EES (GSC) 562 Hydrogeology (3). Knowledge and experience in the use of hydrologic and erosion models. State-of-the-art surface water, ground water and erosion models will be studied, along with hands-on training in the use of digital computers for applying these models to real-world geological situations. Prerequisite: MAT 150 or equivalent or permission of instructor.

EES (GSC) 565 Biogeochemistry (3). Survey and discussion of the scientific literature on global cycles of carbon, nitrogen, phosphorus and man-made chemicals with special emphasis on the biogeochemical and ecological processes that affect terrestrial and aquatic ecosystems. The course will focus on interdisciplinary themes that incorporate new research results form the fields of biology, chemistry, and geosciences. Prerequisite: junior or higher standing in biology, chemistry or geosciences. (Same as BIO/CHE 565.)

EES (GSC) 570 Computer Applications in Geosciences (3). Introduction to the use of computers in geoscientific problem-solving and data processing. Students will utilize existing programs and will develop original routines. Prerequisites: EES 521 or EES 522 and CSC 101.

EES (GSC) 575 Field Vertebrate Paleontology (4). The study of vertebrate fossils in both field and lab, including collection, processing and identification. Field work may include trips throughout the continental United States and occasionally overseas. (Usually taught during summer.) Prerequisites: completion of two semesters of undergraduate laboratory science and upper-class.

EES (GSC) 578 Terrestrial Ecosystem Modeling (3). Course will introduce students to the basic concepts of climate and terrestrial carbon cycle. The course will examine terrestrial ecosystem processes that influence the global carbon cycle and the climate. The focus of this course is in the modeling of carbon, water, and energy fluxes between the terrestrial ecosystem and the atmosphere. Methods for analyzing and modeling these processes at different spatial scales will be presented. Students will participate in at least one field trip to Hancock Biological Station. Prerequisite: EES 301.

EES (GSC) 579 Remote Sensing of Vegetation (3). Course will introduce students to the use of remote sensing imagery to monitor vegetation functions and structure. The course will examine the techniques used to extract remote sensing features related to vegetation functions and structure. The focus of this course is in the use of remote sensing data to model and monitor vegetation carbon and water fluxes at different spatial scales. The aim of this course is to provide students with skills in applied remote sensing, particularly for application related to terrestrial ecosystem. Prerequisite: EES 512.

EES (GSC) 591 Special Problems (1). This course is designed for students who have an aptitude for research in the area of geosciences. Prerequisite: permission of instructor. (May be repeated once.)

EES (GSC) 592 Special Problems (2). This course is designed for students who have an aptitude for research in the area of geosciences. Prerequisite: permission of instructor. (May be repeated once.)

EES (GSC) 593 Special Problems (3). This course is designed for students who have an aptitude for research in the area of geosciences. Prerequisite: permission of instructor. (May be repeated once.)

EES (GSC) 601 Graduate Study in the Geosciences (1). Course will familiarize incoming graduate students with various aspects of graduate education at the university and in the department. Topics will include requirements of the Graduate Office and the department, utilization of library, other campus, and department resources, and an introduction to research methods, instrumentation, types of data and software utilized in the geosciences. The course will be team-taught. Prerequisite: admission to the graduate program in geosciences.

EES (GSC) 607 Land Use Planning (3). Analyze the principles and techniques utilized in the planning process. Emphasis is placed on the practical aspects of planning: needs, problems and proposed solutions. (Same as PLN 607.)

EES (GSC) 612 Remote Sensing (4). Emphasis will be placed upon the fundamentals of image interpretation using a wide variety of image types both airborne and spaceborne. The application of remotely sensed data and techniques in many areas such as geoscience, agriculture, forestry and planning will be emphasized. Three hours lecture and two hours of laboratory per week.

EES (GSC) 616 Isotopic Geochemistry (3). In this class students will comprehend how variations in the isotopic abundances of elements are used to understand past and present Earth systems.

EES (GSC) 619 Seminar in Research Techniques (3). Introduces graduate students to the methods and techniques of research in geosciences. Focus is on utilizing modern techniques of problem-solving employing statistical methods, digital image processing/remote sensing, geographic information systems, global positioning systems, environmental modeling, computer mapping and programming language.

EES (GSC) 621 Geographic Information Systems (4). Techniques course that introduces digital georeferenced information systems, including data capture, editing and encoding techniques, data storage structures, database management systems, data analysis and model development, and information display methods. (Same as PLN 621.)

EES (GSC) 622 Advanced Cartography (3). A course designed to introduce students to effective cartographic design, which is key for successful communication between map readers and map creators. Map design components and construction will be discussed, including map scale, map projection, and spatial analysis. This course will focus on computer-based and online map production techniques with emphasis on using *ArcGIS* mapping tools. Students will gain hands on experience in creating their own datasets by either digitizing satellite imagery or by using *Google Earth*. Prerequisite: EES 305 or equivalent, or permission of instructor.

EES (GSC) 631 Geology for Teachers (4). An introduction of the materials of the earth and the processes to modify them to form our landscapes and create our physical environment. Laboratory is integrated into the classroom lectures and will include study and identification of rocks and minerals and the interpretation of geological maps and photos. The literature of geology teaching will be reviewed with an emphasis on exercises that can be used in the teacher's classroom or laboratory.

EES (GSC) 633 Paleoecology (3). The study of the formation of the first ecologies with the origin of life on Earth, and the continuing changes in earth's ecologies through time. Classic paleoecological communities are examined, including Precambrian, Ordovician, Cretaceous, and Pleistocene ecosystems. Specific attention will be paid to the interaction and co-evolution of the organic and inorganic environments.

EES (GSC) 636 Soils and Geomorphology (3). Students will study soil formation and how it varies as a function of climate, topography, organisms, relief, parent material and time. They will be trained to describe soil properties in the field and lab, and learn how to infer pedogenic processes using these data.

EES (GSC) 640 Advanced Remote Sensing (3). The principles associated with the digital processing of remotely sensed imagery. Image enhancement techniques, quantitative accuracy evaluation, unsupervised and supervised, will be stressed. Prerequisite: EES 612 or equivalent or permission of instructor.

EES (GSC) 641 Digital Image Processing Research (3). Application of digital image processing to remotely sensed and other diverse data; hands-on experience using PC and UNIX-based image processing software, such as ENVI and ERDAS Imagine; data conversions and other processing; simple to complex algorithm development/application using a programming language and/or an image processing software. Prerequisite: EES (GSC) 640 or equivalent or permission of instructor.

EES (GSC) 642 Watershed Ecology (3). The study of the movement of water through the environment and its relationship to biotic systems. Areas emphasized include the hydrologic cycle and its influence on groundwater, lotic and lentic systems; the effect of water on plant and animal communities; and the influence of human activity on watershed structure and function. Prerequisite: BIO 330 or permission of instructor. (Same as BIO 642.)

EES (GSC) 643 Soil Micromorphology (4). This course emphasizes practical laboratory microscopic (micromorphological) study of thin sections of surficial (Earth) materials, including modern soil, stream sediments, and weathered rock (saprolite), as well as "fossil soils" preserved in the geological record as paleosols.

EES (GSC) 644 Graduate Cooperative Education (3). May be repeated to a maximum of six credits. Graded pass/fail.

EES (GSC) 656 Geophysical Surveying (3). An overview of the application of terrestrial geophysical survey techniques and aerial remote sensing techniques in archaeological research. Emphasis will be placed on terrestrial geophysical survey methods with hands on training in the use of instruments such as ground penetrating radar and magnetic gradiometer. Weekend field trip to local archaeological sites are required. (Same as ARC 656.)

EES (GSC) 660 Spatial Analysis Techniques (3). Introduces students to spatial analysis and spatial statistical techniques. "Hands-on" experience with software packages and associated algorithms is emphasized. Prerequisite: EES (GSC) 640 or permission of instructor.

EES (GSC) 661 Precision GIS/GPS Applications (1-3). An introduction to Geographic Information Systems (GIS) and Global Positioning System (GPS) applications in natural resources, business and land management. The course is divided into three distinct parts: 1) Introduction to GIS/GPS applications, 2) Business applications, and 3) Precision land management applications. Students must take the introduction phase before continuing with the other two parts. Variable credit hours: 1 credit for Part 1, 2 credits for Part 1 and 2 or 1 and 3, or 3 credits for Parts 1, 2, and 3. Course may be repeated for a maximum of three credit hours.

EES (GSC) 662 Hydrogeology (3). Knowledge and experience in the use of hydrologic and erosion models. State-of-the-art surface water, ground water and erosion models will be studied, along with hands-on training in the use of digital computers for applying these models to real-world geological situations. Prerequisite: MAT 150 or equivalent, or permission of instructor.

EES (GSC) 665 Physical/Chemical Limnology (3). This course will consider important physical and chemical processes in lakes and reservoirs. The focus of these processes is their relation to biological processes and their importance to understanding aquatic ecosystem dynamics. Physical processes to be discussed include heat, light, water movement and thermal structure in lakes. The chemical cycles of carbon, nitrogen, phosphorus and oxygen will be considered in detail. A few intensively studied lakes will serve as models for integrating the various processes. Prerequisite: permission of instructor.

EES (GSC) 678 Terrestrial Ecosystem Modeling (3). This course will introduce the students to the basic concepts of climate and terrestrial carbon cycle. The course will examine terrestrial ecosystem processes that influence the global carbon cycle and the climate. The focus of this course is in the modeling of carbon, water, and energy fluxes between the terrestrial ecosystem and the atmosphere. Methods for analyzing and modeling these processes at different spatial scales will be presented. Prerequisite: consent of the instructor.

EES (GSC) 679 Remote Sensing of Vegetation (3). This course will introduce the students to the use of remote sensing imagery to monitor vegetation functions and structure. The course will examine the techniques used to extract remote sensing features related to vegetation carbon and water fluxes at different spatial scales. The aim of this course is to provide students will skills in applied remote sensing, particularly for application related to terrestrial ecosystems. Prerequisite: consent of the instructor.

EES (GSC) 680 Advanced Geographic Information Systems (3). A project-based course for students seeking greater understanding of GIS theory, technology, and applications. Students will apply GIS to their research interests and gain hands-on experience through using ArcGIS software package. By the end of the class, students will be able to identify the appropriate methods for solving particular research problems, be familiar with current research directions in spatial analysis, and demonstrate their ability to complete a research project. Prerequisite: EES (GSC) 621 or PLN 621, or permission of instructor.

EES (GSC) 691 Special Problems (1). (May be repeated one time.)

EES (GSC) 692 Special Problems (2). (May be repeated one time.)

EES (GSC) 693 Special Problems (3). (May be repeated one time.)

EES (GSC) 696 Understanding Scientific Communication (2). This course concentrates on the methods for preparation and presentation of scientific paper and oral communications. Students will utilize a data set to produce 1) a publication quality manuscript, 2) a scientific meeting quality poster, and 3) a 15 minute presentation such as would be given at a scientific meeting. Topics covered include abstracts, nature of scientific writing, structure and organization of scientific publication. The course is required of all biological sciences graduate students in their first spring semester of residence and is open to all other graduate students with permission of instructor. One, two-hour course meeting per week. (Same as BIO 696.)

EES (GSC) 698 Thesis Research (3).

EES (GSC) 699 Thesis Research (3).

ENGINEERING (EGR)

EGR 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Introduction to the EGR major, the engineering profession, the department, and the university. Graded pass/fail. (Same as PHY 100T).

EGR 101 Introduction to Engineering (3). An introduction to the field of engineering. Students learn about the engineering design process, engineering measurement, engineering economics, engineering ethics and engineering analysis tools. Career opportunities in a variety of engineering disciplines will also be presented and discussed.

EGR 140 Introduction to Computing Applications in Science and Engineering (3). A course to introduce students to computational techniques employed in scientific, engineering, mathematical and statistical applications. A high-level programming language will be used in several related programming projects, including graphics. The course is designed to meet the needs of students in physics, engineering physics and related sciences in the use of the microcomputer as a tool for the solution of problems and in particular where graphics are required.

EGR 195 Methods of Engineering Physics (2). An introduction to the application of basic tools and methods used in the engineering physics curriculum. Primary emphasis on the use of symbolic computational software packages (such as Mathcad) for organizing, performing, and visualizing complex or tedious calculations. Introduction of fundamental statistical definitions and methods of data analysis.

EGR 240 Thermodynamics I (3). Fundamental engineering concepts of power systems, cooling systems and system efficiency. First and second law analysis. Entropy; exergy; reversible and irreversible processes. Ideal gases. Application to simple physical, chemical and engineering problems. Three lectures per week, incorporating laboratory activities for students and demonstrations as appropriate. Prerequisite: PHY 235. Corequisite: MAT 308.

EGR 259 Statics (3). Force systems: moments, couples, equivalent force systems, distributed force systems. Equilibrium equations, free body diagrams, special cases of equilibrium, static indeterminacy, trusses, friction. For engineers. Three lectures per week. Prerequisite: PHY 235.

EGR 264 Linear Circuits I (4). DC and AC steady state circuit analysis. Resistive circuits, Kirchhoff's laws, nodal and mesh analysis, loop analysis, Thevenin's and Norton's theorems, superposition, capacitors, inductors, diodes, and operational amplifiers. Also includes AC steady state circuit analysis using complex number algebra, introduction to three phase circuits, and computer simulation of steady state circuits. Three lectures per week plus laboratory. Prerequisite: PHY 255.

EGR 310 Fundamentals of Biomedical Engineering (3). Survey course of the application of engineering concepts and techniques to the investigation and exploration of biomedical processes. Emphasis is placed on an understanding of the physical/mathematical models that form the design basis for biomedical sensors, instrumentation, imaging, and diagnostic tools. Some on-site experiences may be included at local medical facilities. Prerequisite: EGR 264 or permission of instructor.

EGR 320 Fundamentals of Flight (3). An overview of the major aspects of aerospace engineering including aerodynamics, performance, stability, and control, orbital mechanics, propulsion, and aircraft structures. Lecture and laboratory activities will be integrated throughout the course. Prerequisites: PHY 235 and 236.

EGR 330 Dynamics (3). Study of motion and forces with application to engineering systems. Planar and three-dimensional kinematics and kinetics of a particle and of rigid bodies; equations of motion; work and energy; impulse and momentum; vibrations. Prerequisite: PHY 235.

EGR 340 Wave Analysis of Dynamic Systems (3). The analysis of vibrating and oscillating systems are introduced and developed in applications to mechanical systems, electric circuits, optics, acoustics, and quantum theory. Necessary mathematical and computational tools required for this study are also introduced as needed. The course is designed to serve as a transition between the introductory survey courses and the more rigorous advanced courses in physics and engineering. Prerequisite: PHY 255.

EGR 342 Thermodynamics II (3). Gas mixtures, air-water vapor mixtures. Air conditioning system design. Principles and design of energy conversion devices, power and refrigeration cycles. Principles of combustion, chemical equilibrium, one-dimensional gas dynamics. Applications to typical engineering problems. Prerequisite: EGR (PHY) 240. Corequisite: MAT 309.

EGR 344 Fluid Mechanics (3). Fundamental principles and applications of hydrostatics and fluid flow for engineers. Three lectures per week, incorporating laboratory activities for students and demonstrations as appropriate. Prerequisite: EGR (PHY) 240. Corequisite: MAT 338.

EGR 346 Heat Transfer (3). Basic principles and applications of heat transfer for engineers. Problems in convection-, conduction-, and radiation-transfer. Three lectures per week, incorporating laboratory activities for students and demonstrations as appropriate. Corequisites: EGR (PHY) 240 and MAT 338.

EGR 359 Mechanics of Materials (3). A study of stress and strain in deformable solids; tension and compression of axial members; stress and strain transformations; stress-strain relations; torsion of shafts; bending of beams; buckling of columns. Three lectures per week, incorporating laboratory activities for students and demonstrations as appropriate. Prerequisite: EGR (PHY) 259. Corequisite: MAT 308.

EGR 360 Electric Machines (3). Fundamentals of electromechanical energy conversion. Performance and operating characteristics of AC and DC machinery. DC motors and generators, single-phase and three-phase transformers, the three-phase induction motor, and synchronous motors and generators. Prerequisite: EGR 264.

EGR 363 Signals and Systems (3). A course discussing analytical methods of transient phenomena in circuits and systems. Analysis of continuous-time linear systems. Methods include second-order circuits, convolution integral, Fourier series and transform, Laplace transform, and state-space methods. Topics include impulse response, transfer functions, energy spectra, filtering, and applications to networks and controls. Prerequisite: EGR 264.

EGR 365 Linear Circuits II (3). DC and AC transient circuit analysis. First and second order circuit solutions using differential equations, Fourier Series, Laplace and Fourier transforms. Also includes magnetically coupled circuits, variable frequency circuits, and transistor switching. Prerequisite: EGR (PHY) 264.

EGR 366 Analog Electronics I (3). Transistor amplifiers, feedback circuits, filters, frequency response of circuits, power supplies and switching circuits. Computer simulations of circuits will be emphasized. Prerequisites: EGR 264.

EGR 375 Materials Science (3). An introductory study of the science of materials utilization, structure of solid phases, the atomic and electrical processes in solids. Prerequisite: PHY 255.

EGR 376 Computational Analysis of Engineering Applications (3). A course for development of programming skills using modern software tools including advanced structures such as lists, 2-D arrays and graphical user interfaces. The course applies programming techniques to a variety of engineering and scientific applications. Matlab programming is introduced and applied to a variety of engineering and scientific applications. Prerequisite: EGR 140 or equivalent.

EGR 378 Logic Design I (4). Introduction to digital logic design techniques: binary arithmetic, Boolean algebra, combinational and sequential circuits, registers, counters, memory units and programmable devices. Three lectures and two hours of laboratory per week. Prerequisites: EGR 140 or knowledge of a high-level computing language and PHY 255.

EGR 379 Logic Design II (3). Design of digital systems. Topics include CPU control and timing, machine organization, instruction set architecture, addressing modes, I/O interfaces, cache memory and virtual memory. Prerequisite: EGR 378.

EGR 388 International Experience in Engineering (3). A short-term (10-14 day) study abroad experience highlighting selected historical and modern contributions to engineering and physics from another country and culture. Prerequisite: permission of instructor.

EGR 390 Engineering Measurements (3). General considerations of signals and utilization of instruments to measure physical properties of systems. Review and introduction of useful mathematical concepts such as statistical data analysis. Introduction to digital data acquisition and signal processing. Application to the design of instruments which measure displacement, motion, count, strain, force, pressure, level, fluid flow and temperature. Prerequisites: EGR 264; Corequisite: MAT 338.

EGR 392 Nondestructive Testing (3). Course will introduce various methods of Nondestructive Testing (NDT) and analyze its role in industry. Prerequisites: MAT 250, PHY 255, and 256.

EGR 398 Principles of Design (3). The task of engineering design, which includes the formulation of the problem, creative approaches to design problem solution, analysis, material selection and economics, is considered in design decisions from conception to final product. Prerequisites: working knowledge of a high level computer language and junior standing or consent of the instructor.

EGR 420 Aerodynamics (3). A study of the characteristics and dynamics of air flow over aerodynamic shapes. Emphasis is placed on theoretical and experimental descriptions of inviscid, incompressible flow over airfoils and finite wings. Compressible flow is also introduced. Lecture and laboratory activities will be integrated throughout the course. Prerequisites: EGR 240, MAT 309.

EGR 422 Propulsion (3). A study of the characteristics and design of air and spacecraft propulsion systems. The course includes analysis and discussion of gas turbine and rocket engine configurations. An overview of compressible flow is included for use in this analysis. Lecture and laboratory activities will be integrated throughout the course. Prerequisite: EGR 344 or EGR 420.

EGR 425 Bio-inspired Intelligent Systems (3). A study of the computational intelligence approaches that are based on biological systems. Examples of such systems are artificial neural networks, genetic algorithms, and swarm intelligence. Prerequisite: EGR 140 and consent of instructor.

EGR 430 Mechanical Vibrations (3). Course will cover fundamental concepts on the vibration of mechanical systems to include: systems with one degree of freedom, Lagrange's equations of motion for multi-degree of freedom systems, natural frequencies and modes of vibrations, resonance, beat phenomenon, and effect of damping. Free and forced vibrations of mechanical systems with lumped inertia, springs, and dampers are the primary emphases. Prerequisite: EGR 330.

EGR 433 Control Systems (3). Course will involve the control of linear systems with emphasis on linear system dynamics, time and frequency response, stability analysis, classical control theory, and design applications. Prerequisites: EGR 330 and EGR 363.

EGR 440 Thermal and Fluid Systems Laboratory (3). This engineering laboratory explores measurements in fluid and thermal applications. These applications include the basic concepts for measurement devices and their performance characteristics; measurement of fluid and thermal properties; calibration procedures and experimental design; and experiments in thermodynamics, fluid dynamics, and heat transfer including laboratory work and report writing. Prerequisite: EGR 240. Corequisites: EGR 390 and MAT 338.

EGR 450 Mechanics and Materials Laboratory (3). This engineering laboratory explores measurements in materials science and mechanics of materials including basic concepts for measurement devices and their performance characteristics. The laboratory will include activities such as: measurement of material properties, calibration procedures, experimental design, and report writing. Prerequisite: EGR 375. Corequisites: EGR 359 and MAT 308.

EGR 459 Mechanical Design (3). Fundamentals of mechanical design, with methods of approximation. Introduction to optimum design considerations and statistical variations within the engineering design process. Synthesis and problems on the design of various mechanical elements. Prerequisite: EGR 359

EGR 460 Electricity and Magnetism I (3). Electric fields, potential, dielectrics, steady currents, magnetic fields and electromagnetic induction. Prerequisites: PHY 255, MAT 338. (Same as PHY 460.)

EGR 461 Electricity and Magnetism II (3). Magnetic materials, alternating currents, transient phenomena, electromagnetic radiation. Prerequisite: EGR 460. (Same as PHY 461.)

EGR 463 Electric Power Systems (3). This course investigates electric power systems including balanced power systems at steady-state conditions. Problem solution techniques include power-flow studies, the one-line diagram, and the per-unit system. Modeling and calculations are done for transformers, generators and transmission lines. Bus admittance, impedance matrices and elements of power factor correction are used in network calculations. Prerequisite: EGR 264.

EGR 466 Power Electronics (3). This course is a study of power electronics for engineers. DC-DC converters, DC-AC inverters, single-phase and three-phase rectifiers, and motor drives are analyzed. Other topics include voltage source inverters, inductor design, and the design of power supplies. Residential, industrial, and electric utility power electronics applications are included, such as building and simulations power electronics circuits. Prerequisite: EGR 363.

EGR 468 Digital Signal Processing (3). Discrete-time signals and systems; Sampling and aliasing; Discrete Fourier Transform; Z-Transforms; FIR and IIR filter design techniques; Current applications of digital signal processing. Prerequisite: EGR 264.

EGR 469 Digital Signal Processing Laboratory (1). Laboratory to accompany EGR 468. Prerequisite: EGR 264. Corequisite: EGR 468.

EGR 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and education objectives of the student for which he/she may receive academic credit and possible financial remuneration. Student must address engineering topics that involve the creative application of math science concepts. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

EGR 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and education objectives of the student for which he/she may receive academic credit and possible financial remuneration. Student must address engineering topics that involve the creative application of math science concepts. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

EGR 498 Senior Engineering Design I (3). Students will work together in small teams to design, build, and test a project assigned by the instructor. Completion of the project will demonstrate an understanding of multiple engineering disciplines, teamwork, and application of the design process. Students will also become familiar with basic elements of engineering economics. Students will demonstrate communication skills through design reports and memoranda, project drawings, a written test report and a written proposal for individual work in EGR 499. Prerequisite: senior standing in engineering.

EGR 499 Senior Engineering Design II (3). Students will develop an individual design project, working with a faculty advisor to determine the scope of their design. The final product is a major report and complete specification, from which the product could be assembled. Students may, but are not required to, produce a prototype, scale model, or simulation to support their design decisions. The senior exit exam is also administered as a part of this course and in preparation for the fundamentals of engineering exam. Prerequisite: senior standing in engineering.

EGR 515 Special Topics (3). Topics of current interest in engineering. Delivery methods may include lecture, seminar, directed study, and laboratory. Course content addresses engineering topics that involve the creative application of math and science concepts. May be repeated for credit as difference topics are offered. Prerequisite: permission of instructor.

EGR 520 Independent Study (1-3). Supervised reading course in specialized topics for upper-division student of high standing. Course content addresses specialized engineering topics that involve the creative application of math and science concepts. May be repeated for a maximum of three hours. Prerequisites: engineering physics, physics or applied physics and permission of instructor.

EGR 565 AC and DC Circuit Analysis (4). Kirchoff's laws, Thevenin and Norton's theorems, super-position and reciprocity theorems, properties of L, C, R circuits, filters and resonance.

EGR 567 Communications Systems (4). Filtering and signal bandwidth. Introduction to information theory, encoding and decoding, linear and digital electronic implementation. Two hours of laboratory per week. Prerequisite: EGR (PHY) 366.

EGR 569 Microprocessor Techniques (3). Architecture of various microprocessors, assembly of useful microcomputers using one or more of the popular microprocessors, technique of interfacing to microcomputers, programming microcomputers, importance of microcomputers in logic design. Prerequisite: EGR (PHY) 378.

EGR 590 Mathematical Methods in Physics and Engineering I (3). Applications of mathematics to physical and engineering problems, curvilinear coordinates, analytic functions, transform theory, convolutions, Fourier series. Prerequisites: MAT 338; EGR 330 or PHY 330 permission of instructor. (Same as PHY 590.)

EGR 591 Mathematical Methods in Physics and Engineering II (3). Solutions of partial differential equations, special functions, Green's function. Prerequisite: PHY 590 or permission of instructor. (Same as PHY 591.)

EGR 599 Senior Research (1-3). Introduction to research practices, periodicals and literature of physics. Problems arranged individually with faculty members. Formal, scientific report of work required. Prerequisites: senior standing and permission of faculty. (Same as PHY 599.)

ELEMENTARY EDUCATION (ELE)

ELE 301 Language and Early Literacy for Early Childhood (3). This course focuses on the child's emerging literacy and exposure to language stimulation. Combining research, reflection and early childhood practices, the course fosters an understanding of how techniques and activities affect language and early literacy skills development in young children infancy through five years of age with and without disabilities. Field experiences required. Prerequisite: EDU 103.

ELE 302 Music and Movement for Young Children (3). An in-depth exploration of developmentally appropriate music and movement experiences for young children infancy through five years of age. Students will develop skills to assist young children with and without disabilities in producing, recognizing and creating simple songs, playing with melody, and expressing feelings through music and movement.

ELE 308 Teaching Mathematics and Science in Early Childhood (3). This course is a study of mathematics and science curriculum and research-based teaching practices for early childhood. Field experience required.

ELE 310 Classroom Environment and Student Engagement for Elementary Teachers (3). Course explores the importance of creating a positive and productive elementary classroom environment that actively engages all students and promotes learning for all. Students will develop an understanding of developmentally appropriate practices, motivational theories, teacher-student interactions, and strategies for addressing the needs of a diverse student population. Field experience is required for this course. Prerequisites: EDP 260 and EDU 303.

ELE 311 Health, Wellness and Movement (3). This course explores how a mixture of content and pedagogy in physical education relate to the elementary classroom teacher. Emphasis is placed on teaching future teachers how to teach health, wellness, and movement concepts to children in the classroom. Field experiences required. Prerequisite: EDP 260.

ELE 320 (FCS 311) Child Guidance (3). Course is designed to familiarize student with developmentally appropriate guidance strategies for preschool children in inclusive settings. Weekly lecture and field experiences are required.

ELE 321 (FCS 310) Program Planning for Preschool Children (3). Course introduces the knowledge base and practical strategies used to teach preschool children in effective and appropriate ways. This course focuses specifically on developing the skills to design and implement effective instruction based on developmentally appropriate practices and culturally responsive teaching methods, on integrating curriculum content areas (e.g., literacy, mathematics, science, music, movement, and art), and on establishing partnerships with parents and families. Furthermore, this course provides opportunities to practice and refine these skills and techniques in a preschool classroom. This course consists of weekly lecture and weekly field experiences.

ELE 379 Approaches to Teaching in IECE Environments (3). Course will examine early childhood approaches to teaching, play-based learning, and the design, implementation, and assessment of instruction with the diverse young learner in mind. Teacher candidates will synthesize knowledge of learning theories, technology, and developmentally appropriate practices to develop units of study and lesson plans. The course will introduce candidates to federal laws and guidelines addressing diverse students. Clinical experiences required. Prerequisites: EDU 180 and EDU 280 or equivalent course with a *B* or higher.

ELE 383 Evaluation and Measurement in Elementary Education (3). The development, application, and analysis of educational evaluation and measurement approaches in elementary school classrooms. Emphasis is placed on the design and use of formative assessments to facilitate continual student learning and summative assessments to ensure accurate reporting of student progress. Field experiences required. Prerequisite: EDU 303.

ELE 390 Introduction to Kindergarten (3). Course provides a study of the background and evolution of kindergarten, organization of the kindergarten environment, development of kindergarten age children, and developmentally appropriate practices and learning opportunities within a kindergarten classroom. Field experiences required. Prerequisite: EDU 103.

ELE 410 Collaboration and Communication in IECE Environments (3). Examines collaboration processes involving early childhood professionals, families of children with and without disabilities, and other community resource personnel. Communication skills needed to function effectively in interdisciplinary early childhood education environments are a primary focus. The course also addresses topics that are critical to the practitioner's professional development including reflective thinking, ethics, and advocacy. Field experiences required. Prerequisites: EDU 103 and FCS 250.

ELE 411 (401) Elementary Social Studies Methods (3). An exploration of the content, methods, and materials for the teaching of social studies at the elementary level. Topics include the integration of subject areas, technology, thinking skills, and citizenship education. Field experiences required. Participation in a 24-hour Friday overnight environmental education retreat at LBL. Field experiences required. Prerequisites: EDU 303 and admission to Teacher Education. Corequisite: ELE 413.

ELE 413 (402) Elementary Science Methods (3). An exploration of content, materials, and methods of teaching science at the elementary level with an emphasis on discovery, inquiry, and STEM integration. Field experiences required. Participation in a 24-hour Friday overnight environmental education retreat at LBL required. Prerequisites: EDU 303 and admission to Teacher Education. Corequisite: ELE 411.

ELE 414 (304) Teaching Elementary Mathematics in Grades K-2 (3). A study of the structure of mathematics, materials, and methods which build insight and skill in the area of teaching mathematics to elementary students in kindergarten through grade 2. Clinical experiences required. Prerequisite: EDU 303.

ELE 415 (400) Teaching and Learning Math in Elementary School (Grades 3-5) (3). A study of the structure of mathematics, materials, strategies, assessment, and methods which build insight and skill in the areas of teaching and learning of mathematics in the elementary school. There will be an emphasis on content/pedagogy appropriate for grades 3-5. Clinical experiences required. Prerequisite: EDU 303.

ELE 421 Student Teaching Elementary P-5, IECE (7-14). Student teaching in the elementary and IECE should allow the individual to participate in the work and duties of the school that are generally expected of the classroom teacher. These will be a 2, 7-week placements. Student teachers will be supervised by a public school teacher as well as a university coordinator. May be repeated for up to 14 credit hours. Graded pass/fail. Prerequisites: admission to Teacher Education and Student Teaching.

ELE 439 Early Childhood Assessment and Program Development (3). Students will develop skills in observing children birth through five years of age and in conducting developmental screenings, evaluations and assessment. Student will develop skills in creating and implementing individual education programs and individualized family service plans and in monitoring child progress. Students will complete curriculum based assessment and program evaluation. Prerequisites: SED 526 and admission to Teacher Education.

ELE 455 Curriculum and Methods for Infants and Toddlers (3). An in-depth look at care and education for infants and toddlers including children with disabilities and children from diverse backgrounds. Major emphasis is placed on methods to provide quality care to meet physical, emotional, cognitive and social needs of infants and toddlers while working collaboratively with families and other community agencies and service providers. Current best practices in education of infants and toddlers will be reviewed. Field experiences will be required. Prerequisites: EDP 260, EDU 103, and SED 300.

ELE 474 IECE Practicum I (2). This course makes provisions for students to participate in all activities generally expected of an interdisciplinary early childhood education professional. Supervision by the faculty member teaching course will be provided. Regularly scheduled seminars to promote reflective decision-making, discuss student progress and provide additional training in methods, procedures, and evaluation will coincide with the practicum field experience. Prerequisites: admission to Teacher Education. Corequisite: EDU 480.

ELE 475 IECE Practicum II (3). Course makes provisions for students to participate in all activities generally expected of an early childhood professional. Supervision by the instructor teaching the course will be provided. Regularly scheduled conferences to promote reflective decision-making, discuss student progress, and provide additional training in methods, procedures, and evaluation will coincide with the practicum field experience. Prerequisite: admission to Teacher Education. Corequisite: EDU 485.

ELE 481 Clinical Experience for Elementary School Teachers I (2). This concentrated practicum experience for elementary education teacher candidates focuses upon planned and supervised teaching experiences in elementary classrooms. Extensive clinical experiences required. Prerequisite: admission to Teacher Education and EDU 380 with a B or better. Corequisites: EDU 480, REA 404, 405, 406.

ELE 486 Clinical Experience for Elementary School Teachers II (2). This concentrated practicum experience for elementary education teacher candidates focuses upon planned and supervised teaching experiences in elementary classrooms. Extensive clinical experiences required. Prerequisites: admission to Teachers Education and EDU 480 and ELE 481 with a B or better. Corequisites: EDU 485, ELE 411 and 413, REA 412.

ELE 602 Integrating Language Arts in the Curriculum (3). A study of the use of reading, writing, listening, speaking, viewing, and visually representing to aid learning in all content areas.

ELE 604 Advanced Studies in Kindergarten (3). Course provides philosophical, theoretical, historical, and empirical bases of the early childhood field, including current practices, various content areas, environments for learning, and approaches to teaching kindergarten. This course includes an overview of the historical roots of the field, development of the young child and resources for curriculum and professional development. Field experiences required.

ELE 605 Introduction to Interdisciplinary Early Childhood Education (3). A course designed for students entering the field of Interdisciplinary Early Childhood Education (birth to primary school) and students preparing for Kentucky Interdisciplinary Early Childhood Education teacher licensure. It addresses the philosophy of early childhood education, professional development of interdisciplinary early childhood educators, Kentucky Early Childhood Standards, and developmentally appropriate practice for infants, toddlers, preschoolers, and kindergarten age children. Field experiences required.

ELE 606 Supporting Children with Challenging Behavior (3). This course provides knowledge and skills for supporting the development of appropriate social and emotional skills in young children with challenging behaviors. Strategies that support positive interactions include collaboration with families, classroom prevention practices, and social-emotional teaching strategies.

ELE 607 Research in Early Childhood Education (3). Designed to give teachers greater depth in understanding the principles of early childhood education by exploring the development of process and research substantiating current practice.

ELE 612 Infant-Toddler Practicum (2). Course is designed to provide opportunities for students seeking initial certification to participate in activities carried out by early childhood educators working with infants and toddlers with and without disabilities in early childhood settings. A university instructor will provide supervision throughout the required field experiences. Graded pass/fail. Prerequisite: instructor permission.

ELE 613 Clinical Experiences IECE (4). Students seeking initial certification in early childhood will participate in a supervised clinical experience. Graded pass/fail. Prerequisites: Admission to teacher education and student teaching.

ELE 615 Poetry for Children (3). An in-depth study of poetry written for children.

ELE 616 Research in Children's Literature (3). An in-depth study of chosen areas in children's literature with emphasis on books and articles about children's books.

ELE 620 Introduction to the Reggio Approach to Teaching and Learning (3). Course will provide students with an overview of the principles and classroom applications of the Reggio Approach in the early childhood classroom. The roles of the teacher, children, parents, and the community in daily implementation of the approach will be explored.

ELECTROMECHANICAL ENGINEERING TECHNOLOGY (EMT)

EMT 110 Electrical Systems I (4). A study of the utilization of electricity as a source of energy and a method of information transmission. Basic DC and AC circuits, with introduction to the application of electro-magnetic fields. Lecture and laboratory provide learning experiences with basic test instruments, circuits and components. Three hours lecture and two hours lab. Prerequisites: MAT 130 or 150.

EMT 201 Engineering Technology Simulation (3). Introduction to electromechanical component simulation programming used in mechatronics and automation control systems. The course will cover general programming concepts and methods using C or MATLAB to model and control electromechanical systems such as: embedded systems, automation controllers, and servo control systems. Prerequisite: MAT 130 or 150.

EMT 202 Engineering Technology Analysis (3). A study of the application of mathematical concepts taught in traditional mathematics courses as they apply to simple engineering technical systems. The course will use current analysis tools, such as MATLAB, to mathematically model and solve for design and performance characteristics of systems based on the basic concepts of physics in motion mechanics, electrical systems, and fluid and thermal systems. Prerequisites: EMT 201, PHY 130 and 131.

EMT 210 Electrical Systems II (4). A continuation of TSM 110 through the study of semiconductor devices and their applications, and particularly how electronic technology is applied to the field of data transfer and communications. Three hours lecture and two hours lab. Prerequisite: EMT 110. (Fall)

EMT 212 Industrial Electronics (4). A study of semiconductor diodes, transistors, FETs, four-layer devices, operational amplifiers, power devices, and digital devices as they are used in industrial control and signal amplification and processing. Three hours lecture and two hours lab. Prerequisite: TSM 110.

EMT 261 Introduction to Fluid Power Systems (3). The study of the basic physical concepts behind fluid power generation, transmission and conversion. Common industrial hydraulic and pneumatic circuits are designed and analyzed using computer programming. Programmable logic controllers are introduced as a means of system control. Three hours lecture per week. Corequisite: EMT 262. Prerequisite: EMT 202, MAT 130 or 150. (Fall)

EMT 262 Introduction to Fluid Power Systems Laboratory (1). Laboratory course must be taken concurrently with EMT 261. Two hours laboratory per week. Corequisite: 261. Prerequisite: EMT 202, MAT 130 or 150. (Fall)

EMT 305 Electric Machinery and Controls (4). A study of electric motors and their controls including the operating characteristics and applications of various dc and ac motors, electromechanical controls and electronic drives. Three hours lecture and two hours lab. Prerequisite: EMT 210. (Spring)

EMT 310 Programmable Logic Controllers (4). This course will cover the techniques of utilizing the programmable logic controllers (PLCs) in the industrial environment. Hardware aspects, programming techniques, and interfacing situations will be covered. Three hours lecture and two hours lab. Prerequisites: EMT 110, 201, and 305. (Spring)

EMT 312 Industrial Instrumentation (4). A study of electrical measurement and electromechanical control and includes signal conditioning, sensors, interfacing to final outputs, controller principles and control loop characteristics. Three hours lecture and two hours lab. Prerequisites: EMT 310 and MAT 230 or equivalent. (Fall)

EMT 320 Mechatronics (3). Course will cover designing, analyzing, and troubleshooting mechatronic systems, which require the integration of mechanical and electrical concepts. The laboratory-based experiences will prepare students to work with industrial automation systems. Topics covered in the course include: interfacing of software with hardware, digital logic,

analog interfacing, measurement, and sensing; electromagnetic and optical transducers; control of mechatronic systems (e.g., robotic manipulators and vision tracking). Prerequisites: EMT 261, 262, and 312.

EMT 351 Power Distribution (3). A in-depth study of industrial and commercial power distribution including three-phase systems, transformers, cable and conduit, grounding, system protection, and safety. Prerequisite: EMT 110.

EMT 365 Dynamics for Technology (3). A study of motion of particles and rigid bodies and the effects of forces on bodies with acceleration. Topics included are kinematics of particles and rigid bodies, work and energy, impulse and momentum. Corequisite: MAT 308 or 330. Prerequisites: EMT 202, 261, 262; ENT 287; PHY 132 and 133. (Fall)

EMT 455 Industrial Networking Systems (4). This course is a capstone integration course design to apply manufacturing planning systems and manufacturing equipment control systems. This course will focus on the development and integration of local area networks and industrial control processes. The topics included in this course are: local area networks, industrial networks, programmable logic controllers, man machine interfaces, motor control device networks and supervisory control and data acquisition (SCADA) systems. Three hours lecture and two hours lab. Prerequisites: EMT 210 and TSM 301. (Fall)

EMT 461 Robotics and Motion Controls (4). A study of motion control as applied to current production manufacturing and process systems. This course includes an introduction to the mathematics, electronics, and control theory required to understand these system. Non-servo hydraulic and pneumatic systems will be presented; however, the emphasis of the course is on closed-loop servo-mechanisms. The course is laboratory oriented with theoretical and design content presented at the appropriate time. Prerequisites: EMT 261, 262, 312; and ENT 365. (Spring)

EMT 462 Machine Design (3). Design of machines using bearings, belts, clutches, gears, springs and screws. Develops the application of the theory of working stresses, power transmission and lubrication to the analysis and design of machine elements. Prerequisites: CET 298, ENT 365, and ITD 102. (Spring)

ENGLISH (ENG)

ENG 096 Basic Writing (3). A writing skills course that emphasizes paragraph and essay development. The course is required for entering freshman with ACT English scores 16 or below and must be completed before enrollment in ENG 105. Advanced placement into ENG 105 is possible through Murray State University Center for Academic Success English assessment exams. Credit is earned in this course may not be counted toward graduation requirements.

ENG 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

ENG 101 Composition (3). Credit awarded by Advanced Placement examination only.

ENG 105 Critical Reading, Writing, and Inquiry (4). Instruction and practice in close reading, research, and critical thinking as applied to academic writing, with emphasis on analysis, synthesis, and argument. ENG 101 in combination with ENG 102 will substitute for ENG 105. The combination of ENG 101 and 102 marks off ENG 105. ENG 105 marks off the combination of ENG 101 and 102. Only the last sequence completed (ENG 101/102 or ENG 105) will be calculated in the overall GPA and count towards hours earned. Prerequisites: ENG 100 or English ACT of at least 18 and Reading ACT score of at least 20 or successful completion of REA 096 and 120.

ENG 107 Teacher Bridge Writing Project (3). For Teacher Bridge Program participants only, this course helps prepare them to make the transition to a four-year university setting. Students improve their writing skills while exploring teacher education. May not be used for credit for ENG 101, 102, 105, or 150 but may count as an elective toward graduation.

ENG 109 Academic Oral Skills for Non-Native Speakers (3). Course for Academic English Program (AEP) non-native speakers of English. With instructor permission, the course may also be open to any other MSU student who may feel the need to improve English listening and speaking skills. Awards general elective credit. Does not count toward an English major, minor, or University Studies requirement. Letter-graded course.

ENG 110 Academic Text Skills Non-Native Speakers (3). Course for Academic English Program (AEP) non-native speakers of English. With instructor permission, the course may also be open to any other MSU student who may feel the need for enhancement of English reading and writing skills. Awards general elective credit. Is a prerequisite for ENG 105 for all AEP admitted students. Does not count toward an English major, minor, or University Studies requirement. Letter-graded course.

ENG 111 Fundamental Writing Skills I (1). This course is designed for individualized instruction in basics of grammar, punctuation, and composition. Does not count toward an English major, minor, or University Studies requirements. Corequisite: ENG 105 or consent of program director.

ENG 150 Honors Rhetoric, Composition and Research (4). Intensive study and practice of rhetorical approaches to writing and speaking. Course will focus on advanced composition and research skills but will also include practice in oral presentations. Open to students enrolled in the Honors Program. For all degrees, this course may be used in lieu of ENG 105.

ENG 201 Introduction to Literature (3). A course designed to develop a broad literary appreciation and understanding. This course provides for the study of various genres, including fiction, poetry, and drama. ENG 201 is a University Studies humanities elective. Prerequisite: ENG 105 or 150 or equivalent.

ENG 204 Advanced Expository Writing (3). Course is designed to help students achieve proficiency in writing for specific academic contexts, particularly those of the student's own major discipline. Prerequisite: completion of ENG 105 or 150 with at least a *C* average or the equivalent.

ENG 205 Writing for the Social Sciences (3). Preparation for research in the social sciences, with practice in analyzing and writing effectively about professional scholarship. Students will examine the issues, audiences, styles, and rhetorical situations important to the social sciences, developing writing and research skills for their own work in the discipline. Prerequisite: ENG 105 or 150 or the equivalent and at least one course in the social sciences.

ENG 213 Film and Literature (3). A study of the correlations between the film form and traditional literary forms. Prerequisites: ENG 105 or 150 or the equivalent. (Fall)

ENG 214 Introduction to Creative Writing (3). An introduction to the forms of poetry, fiction, and creative nonfiction, combining the careful reading of the works of established writers and original student writing. Designed for majors and non-majors. Prerequisites: ENG 105 or 150, or equivalent. Students in the English area or major may concurrently enroll in ENG 214 and ENG 105 or 150, or equivalent.

ENG 221 Introduction to English Studies (3). An introductory course for English majors and minors designed to familiarize students with a range of literary and writing genres, as well as the discourses, practices, and major theories of English studies. Prerequisite: ENG 105 or 150 or the equivalent. May be taken concurrently by English area or major students.

ENG 224 Writing in the Professions (3). This course prepares students to write documents such as proposals, reports, memos, letters, and e-mail in professional scenarios. Students will learn to assess practical writing situations and to write successful documents for specific purposes and audiences. The course will emphasize computer skills. Course activities may include peer review, collaborative writing, and intensive planning and revision workshops. Prerequisite: ENG 105 or 150 or the equivalent.

ENG 226 Argument and Discourse (3). A study of advanced principles of argumentation and conventions of rhetoric as applied to spoken and written public discourse. Application of the foundational components may be based on an instructor-chosen theme, such as discourse in political, environmental, religious, or other domains. Prerequisite: ENG 105 or 150 or the equivalent.

ENG 228 Standard English Usage (3). The traditional or prescriptive approach to a comprehensive study of standard English grammar and the conventions of punctuation and capitalization.

ENG 243 Literary Masterpieces: Fantasy, Myth and Legend (3). A study of the literary manifestations of fantasy, myth, and legend as they appear in the works of such writers as Homer, Shakespeare, Milton, Coleridge, Yeats, and Tolkien.

ENG 245 African-American Literature (3). Beginning with a consideration of the African American experience during slavery, students enrolled in this survey course will examine the fiction and nonfiction written by African Americans. Thematic emphasis will be given to historical, cultural, and contemporary issues as viewed in seminal African American works written by such authors as Frederick Douglass, Linda Brent, W.E.B. DuBois, Toni Morrison, Zora Neale Hurston, Booker T. Washington, Langston Hughes, and Harriet Wilson. Prerequisite: ENG 105 or 150 or the equivalent.

ENG 250 Contemporary World Literature (3). A study of selected novels, short stories, plays, and poetry from world literature of the last thirty years. Works studied will be by important new authors not native to the United States and will illustrate contemporary literary trends. Works will include representative texts from North America, South America, Asia, Europe, and Africa. Prerequisite: ENG 105 or 150 or the equivalent.

ENG 303 British Literature to 1760 (3). A study of the development of British literature from the Old English through the Early Modern English periods, with emphasis on key texts, figures, genres, and trends, including critical approaches. Prerequisites: ENG 105 or 150 or the equivalent, and ENG 201 or permission of instructor.

ENG 304 British Literature, 1760 to the Present (3). A study of British literature form the late 18th century to the present, with emphasis on key texts, figures, genres, and trends, including critical approaches. Prerequisites: ENG 105 or 150 or the equivalent, and ENG 201 or permission of instructor.

ENG 305 Survey of World Literature, 1700-1945 (3). A survey of world literature in English or English translation from 1700 to 1945. Works studied will include novels, short stories, plays, and poems by authors from Europe, Asia, Africa, Australia, and the Americas. Prerequisite: ENG 105 or 150 or the equivalent.

ENG 306 Contemporary Literature (3). A survey of literature written in English from 1945 to the present. Prerequisite: ENG 105 or 150 or the equivalent.

ENG 307 World Literature to 1830 (3). A survey of world literature in English or English translation, from the ancient world to 1830, including critical approaches. Prerequisite: ENG 105 or 150 or the equivalent.

ENG 308 World Literature, 1830 to the Present (3). Survey of world literature In English or English translation from 1830 to the present, including critical approaches. Prerequisite: ENG 105 or 150 or the equivalent.

ENG 309 History of the English Language (3). A survey of the English language from Old to Middle to Modern English.

ENG 310 Introduction to English Linguistics (3). A survey of modern studies in the English language, with emphasis placed upon its impact on the theory and practice of several grammatical systems.

ENG 311 American Literature to 1865 (3). A study of the development of American literature from its origins through the nation's beginnings to 1865, with emphasis on major works and writers, including critical approaches. Prerequisites: ENG 105 or 150 or the equivalent, and ENG 201 or permission of instructor.

ENG 312 American Literature 1865 to 1945 (3). A study of U.S. literature and its developing ethnic and cultural traditions from 1865 to 1945, including critical approaches. Prerequisites: ENG 105 or 150 or the equivalent, and ENG 201 or permission of instructor.

ENG 313 History of the Cinema (3). This course will cover the international, historical, cultural, artistic, and technical development of the cinema from the beginnings to the present, with some emphasis on American contributions. (Spring)

ENG 314 Shakespeare on Film (3). A study of filmed versions of Shakespeare's comedies, Histories, and Tragedies. Prerequisite: ENG 105 or 150.

ENG 315 Global Cinema (3). A study of national cinemas and industries outside the United States, examining significant directors and film movements. This class meets for two hours for lecture and discussion and two hours for film viewing. Prerequisite: ENG 105 or 150 or the equivalent.

ENG 316 The Bible as Literature (3). A study of the Bible as a literary source. Prerequisite: ENG 105 or 150 or the equivalent. (Same as RGS 316.)

ENG 317 Literature and Religion (3). Course that explores the intersections between literature and religion within larger cultural contexts. Depending on individual research needs and the interest of the group, mandatory field experiences may be scheduled. Prerequisite: HUM 211. (Same as RGS 317.)

ENG 318 Women's Literature (3). A study of literature written by women. Prerequisite: ENG 105 or 150 or the equivalent. (Spring)

ENG 319 Gay and Lesbian Literature (3). Literary works by gay and lesbian authors as well as works about the gay and lesbian experience will be read, spanning the long and varied history of this genre. Prerequisites: ENG 105 or 150 or the equivalent and either ENG 201 or 221.

ENG 320 Survey in African-American Literature (3). A thematic survey and analysis of African-American literature and appropriate theoretical concepts. Prerequisite: ENG 105 or 150 or the equivalent.

ENG 321 Research in Literary Studies (3). An introduction to research tools and methods in literary studies. Prerequisites: ENG 105 or the equivalent and ENG 201, or permission of the instructor.

ENG 322 Rhetorical and Professional Writing (3). Study of rhetorical tradition and theories, and an exploration of the influence of rhetoric in professional and technical writing environments. Field experience may be required. Prerequisite: ENG 105 or ENG 150 or equivalent.

ENG 324 Technical Writing (3). Theory of and practice in the writing of technical documents for industry and technology, with a focus on document design, usability, and writing for a non-technical audience. Students will apply effective rhetorical strategies to letters, instructions and procedures, proposals, and reports. Prerequisite: ENG 105 or 150, or the equivalent.

ENG 325 Professional Document Design (3). Advanced topics and projects in technical writing, document design, and usability, focusing on direct application to business and industry. Field experience may be required. Prerequisite: ENG 105 or ENG 150 or equivalent.

ENG 327 Writing Proposals and Grants (3). Techniques and practices for writing proposals and grant proposals. The course will help students learn and practice the rhetorical and persuasive skills necessary to plan and create successful proposals. Field experience may be required. This course is part of the Service Learning Scholars program. Prerequisite: ENG 105 or ENG 150 or equivalent.

ENG 329 Teaching English in Secondary Schools (3). A practical course in the materials and methods used in teaching English in secondary schools. (Fall)

ENG 330 Special Topics (3). A study of literary genres or sub-genres, or of other special topics. Content will vary from semester to semester according to student and faculty interests. Credit will be given for as many semesters as taken.

ENG 331 Traditional Rhetoric and the Written Argument (3). A study of rhetoric from ancient Greece to the 19th century. Emphasizes the application of traditional rhetoric to written argument while giving students an opportunity to analyze and create persuasive messages pertaining to politics and the law, business, science, and the arts.

ENG 332 Contemporary Rhetoric and the Written Argument (3). A study of rhetoric from the 19th century to the present. Emphasizes the application of

contemporary rhetoric to written argument while giving students an opportunity to analyze and create persuasive messages pertaining to politics and the law, business, science, and the arts.

ENG 334 Shakespeare (3). A study of selected Shakespearean histories, comedies, and tragedies. Prerequisites: ENG 105 or 150 or the equivalent, and ENG 221 or permission of instructor.

ENG 341 Introduction to Writing Fiction (3). An introduction to fiction writing, combining the careful reading of works by established writers with analysis of original student stories. Prerequisites: ENG 201 and 214, or permission of instructor.

ENG 342 Introduction to Writing Poetry (3). An introduction to poetry writing combing the careful reading of works by established writers with analysis of original student poems. Prerequisites: ENG 201 and 214, or permission of instructor.

ENG 343 Special Topics in Creative Writing (3). The study of a special area of creative writing. Content will vary from semester to semester according to student and faculty interest. The course will combine the careful reading of works by established writers with analysis of original student work. Course may be repeated for credit three times with the consent of the instructor and student's advisor. Prerequisites: ENG 201 and 214, or permission of instructor.

ENG 344 Introduction to Writing Creative Non-Fiction (3). An introduction to writing creative nonfiction, combining the careful reading. Prerequisites: ENG 201 and 214, or permission of instructor.

ENG 350 Modern Japanese Literature in Translation (3). Course surveys Japanese fiction from the Meiji Restoration (1868) to the present day. Will examine the personal voice, manifest in literary works, and explore the ways in which literature has been closely interwoven with historical movements and social changes of modern times. Prerequisite: ENG 105 or 150. (Same as JPN 350.)

ENG 351 Special Topics in Film Studies (3). The study of an advanced area in film studies, including, but not limited to studies in major filmmakers, national traditions, genres, schools of theory, or influential actors. The course may be repeated twice for credit with consent from the Chair. Prerequisite: ENG 313.

ENG 352 Film Genres (3). Examination of specific genres in the development of cinema. Genres under consideration will vary according to the instructor and semester. Prerequisite: ENG 105 or 150.

ENG 353 Writing for the Web (3). Practice in writing for online environments. Students will apply rhetorical strategies and document design principles to online writing experiences and learn basic HTML and CSS applications. Prerequisite: ENG 105 or ENG 150 or equivalent.

ENG 360 Literature and Philosophy (3). Interdisciplinary look at ways in which literature raises philosophical questions and also how philosophical writings articulate a relationship between philosophy and literature. Topics may include the role of imagination and emotion in reasoning, interpretation, rhetoric, and the role of literature in moral reasoning. Prerequisite: ENG 105 or 150 or the equivalent. (Same as PHI 360.)

ENG 362 Linquistic Diversity Across Cultures (3). From ethnolinguistic and anthropological perspectives, this course provides an introduction to the study of varieties of English in the United States, global Englishes, and multilingualism in the world. Students will examine the history of linguistic diversity across cultures along with perspectives on language and identity and current issues in language policies.

ENG 365 Collaborative Research (1-4). A collaborative research project with a faculty member aimed at producing a peer-reviewed publication or presentation. May be repeated for up to eight hours of credit. Graded pass/fail. Prerequisites: ENG 221 and 321.

ENG 370 Law and Literature (3). A course that explores the intersections between law and literature within larger cultural contexts. Prerequisite: HUM 211. (Same as LST 370.)

ENG 371 Literature and the Environment (3). A study of literary and other works from a variety of cultures and periods with a focus on the environment, its inhabitants, and their survival. Depending on individual research needs and the interest of the group, field experiences may be scheduled, some of which might include excursions into developed, threatened, and wilderness areas and visits to other relevant sites. Prerequisite: ENG 105 or 150 or the equivalent.

ENG 380 Introduction to Poetry and Poetics (3). An introduction to the traditions and techniques of poetry, including the study of meter, literary devices, and form. Prerequisite: ENG 105 or 150 or the equivalent.

ENG 392 Professional Engagement (1-6). Professional Engagement (1) Practical course for English majors. Each student will work 45 hours on a project or job that requires utilization of skills taught in English courses. Graded pass/fail. Repeatable up to six hours. Prerequisite: junior or senior standing, ENG 321, and permission by instructor.

ENG 400 Major Film Directors (3). One or more major film directors will be studied in depth. This course, with different content by featuring different directors, may be repeated once for credit. Prerequisite: ENG 105 or 150 or the equivalent.

ENG 401 Film Theory and Criticism (3). Study of major aesthetic and critical theories about film and of the theory and practice of film criticism, with focus on American cinema. This course meets for two hours for lecture and discussion and two hours for film viewing. Prerequisites: ENG 105 or 150 or the equivalent and a film course. (Spring)

ENG 402 Early English Literature (3). A critical and historical survey of English literature before 1500, studied partly in translation. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 403 Medieval Drama (3). European secular and religious drama in the Middle Ages, studied partly in translation. Prerequisites: ENG 303 and 321 or permission of instructor. ENG 321 may be taken concurrently by English area or major students.

ENG 404 Advanced Composition (3). Intensive workshop in writing for the English major. Topics include expository writing, rhetorical and literary analysis, and research writing. Required of all English majors. Prerequisite: ENG 105 or 150 or the equivalent.

ENG 405 British Novel to 1830 (3). A study of the background and development of the British novel to 1830. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 406 British Novel Since 1830 (3). A study of the background and development of the British novel after 1830. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 407 Short Fiction (3). A study of the origin and development of the short story, the short-short story, and/or the novella as unique literary genres. Special emphasis will be on the analysis of the form. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 408 Forms of Fiction (3). A study of literary fiction from the writer's point of view. Prerequisites: ENG 341 or permission of instructor. (Spring)

ENG 409 The American Novel (3). A study of the American novel from James Fenimore Cooper to William Faulkner. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 410 Contemporary American Literature (3). An in-depth study of some of the Americas' influential contemporary literature. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 411 Non-Shakespearean Elizabethan-Jacobean Drama (3). A study of selected plays of the period and their historical and critical contexts. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 412 Directed Studies in Film Studies (3). Supervised independent work in film studies. Credit will be given for as many semesters as taken. Prerequisite: ENG 105 or 150 or the equivalent.

ENG 413 American Poetry (3). A study of the development of American poetic traditions and achievement from 1620 to the present. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 415 Writer's Workshop: Short Story (3). An intensive study of the techniques of writing the short story, with special concentration on the student's own work. Prerequisites: ENG 341 or permission of the instructor.

ENG 416 Writer's Workshop: Poetry (3). An intensive study of the techniques of writing poetry, with special concentration on the student's own work. Prerequisite: ENG 342 or consent of the instructor.

ENG 418 Restoration and Eighteenth-Century British Literature (3). A critical and historical survey of British literature from 1660 to the end of the eighteenth century. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 419 European Cinema (3). Survey of European (including British) film by French, English, German, and Spanish directors in the original languages with English subtitles except for the English language films. Selected films will be organized around social themes, which will then be viewed from different national perspectives. The common discussion section on one day will be conducted in English to be accessible to students of all languages; the second discussion section will be conducted in English. Students are required to attend film viewings in a separate lab section. Prerequisite: ENG 105 or 150 or the equivalent.

ENG 420 British Romantic Literature (3). A critical and historical survey of British literature of the Romantic Age. Prerequisite: ENG 321 or permission of instructor.

ENG 424 Forms of Poetry (3). Explores the question of poetic form, including prosody and the historical development of forms, from the point of view of practitioners. Prerequisite: ENG 342 or permission of instructor. (Fall)

ENG 425 Teaching Literature, Writing and Grammar in Middle Schools (3). A practical course in the materials and methods used in teaching English/language arts in middle schools. Prerequisite: ENG 329 or EDU 303. (Spring)

ENG 426 Classical Literature (3). The literature of Greece and Rome, read in translation. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 427 Medieval Literature (3). European literature from the fall of Rome to the Renaissance, read in translation. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 428 Renaissance Literature (3). European literature of the Renaissance, read in translation, with emphasis placed upon its impact on English thought and literature. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 430 British Poetry and Non-Fictional Prose, 1832 to 1900 (3). A survey of selected works of the period and their historical and critical contexts. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 431 American Literature, 1607 to 1820 (3). A survey of selected works of the period and their historical and critical contexts with an emphasis on Colonial and Early U.S. Literature. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 435 Young Adult Literature (3). Background and readings in the genre of young adult literature. May include study of the novel, short story, poetry, drama and nonfiction. (Fall)

ENG 436 Seventeenth-Century British Literature (3). A survey of non-dramatic British literature from 1600-1667, with attention to historical and critical contexts. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 438 British Fiction, 1832 to 1900 (3). A survey of selected works of the period and their historical and critical contexts. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 439 Modern British Literature (3). A critical and historical survey of selected works from 1900 to the present. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 442 American Literature, 1820 to 1870 (3). A survey of selected works of the period and their historical and critical contexts with an emphasis on American Romanticism. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 443 American Literature, 1870 to 1920 (3). A survey of selected works of the period and their historical and critical contexts with an emphasis on American Realism and Naturalism. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 444 American Literature, 1920 to the Present (3). A survey of selected works of the period and their historical and critical contexts with an emphasis on Modernism and Postmodernism. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 445 Teaching Reading and Writing in the Secondary School (3). Teacher candidates will apply content knowledge, educational philosophies, learning theories, differentiated instruction, classroom management strategies, effective assessment practices, instructional technology, co-teaching strategies, student advocacy, and content-area literacy in K-12 English/language arts classes. Emphasis will be placed on roles of teachers, students, parents, school, and community as educational partners. Candidates will design and implement culturally relevant, developmentally-appropriate instruction for all students in English content settings. Clinical experiences required. Prerequisite: ENG 329. (Spring)

ENG 450 Sixteenth-Century British Literature (3). A survey of non-dramatic British literature from 1501-1600 with attention to historical and critical contexts.

ENG 446 Approaches to the Writing Process (3). A consideration of the writing process and its implications for teaching writing to students at all levels.

ENG 451 Introduction to Drama (3). An introduction to the traditions, forms, and techniques of drama in English and/or English translation, including the study of genres, stagecraft, and historical development. Prerequisite: ENG 221 or permission of instructor.

ENG 452 Introduction to Fiction (3). An introduction to the traditions, forms, and techniques of fiction in English and/or English translation, including the study of genres, stagecraft, and historical development. Prerequisite: ENG 221 or permission of instructor.

ENG 460 Comedy and Satire (3). This course will examine the historical development of comedy and/or satire as a literary genre and as a cultural manifestation (e.g., plays, novels, essays, movies, comedians, etc.). It may also focus on theories of comedy and satire. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 470 Literary Criticism (3). An historical survey of literary criticism, including some collateral reading of literature. Prerequisite: ENG 321 or permission of instructor. May be taken concurrently by English area or major students.

ENG 488 Cooperative Education/Editorial Internship (3). A meaningful, planned, and evaluated experience serving as an editor for New Madrid, the national literary journal housed in the Department of English and Philosophy at Murray State. May be repeated for a maximum of six hours. Graded pass/fail. Prerequisites: ENG 214 and one of the following: ENG 341, 342, 343, or 344; or permission of instructor.

ENG 512 Directed Study (1-4). Directed independent study program, mutually developed by student and instructor, leading to one or more papers or projects. May be repeated for a maximum of eight credit hours.

ENG 548 Senior Seminar in Literary Studies (2). An advanced study of the issues pertinent to the discipline of literature, including career and graduate studies opportunities. Students will also produce a semester-long research project culminating in a senior essay that focuses on an interest the student has developed during prior course work. Prerequisites: ENG 321 and senior standing.

ENG 560 Advanced Creative Writing: Fiction (3). Critical discussion of original student fiction. Individual conferences and reading assignments in contemporary literature are included. Prerequisite: ENG 408 and 415 or permission of instructor.

ENG 561 Advanced Creative Writing: Poetry (3). Critical discussion of original student poetry and concentrated exploration of a particular post, subject within poetry, or method of poetry writing. Prerequisite: ENG 416 or 424 or permission of instructor.

ENG 562 BFA Senior Seminar (1). Capstone course for BFA students, taken in the final semester of a student's degree work, compromising a written portfolio review, a public presentation of creative work, and career preparation. Prerequisite or Corequisite: ENG 560 or ENG 561.

ENG 571 Documentation Project Management and Standards (3). Techniques and practices for handling documentation projects. Students will learn to manage the work of multiple authors and reviewers, implement successful consulting practices, plan and schedule projects, design style sheets, and create version control systems. The course also covers the dynamics of managing documentation for the implementation of international standards such as ISO 9001. Prerequisite: ENG 324 or 325 or permission of the instructor.

ENG 572 Writing Training Materials (3). An overview of the pedagogy and procedures used to create training materials for business, industry, and government. Prerequisite: ENG 324 or 325, or permission of instructor.

ENG 600 Research and Bibliography (3). An introduction to principles of research and bibliography as a preparation for further graduate study in English.

ENG 601 Teaching Writing (3). A study of principles and practices of effective writing instruction at middle school, secondary, and post-secondary levels.

ENG 602 Teaching Literature (3). A study of principles and practices of effective literature instruction at middle school, secondary, and post-secondary levels.

ENG 603 Teaching English Language Arts (3). A study of principles and practices of effective English Language Arts instruction especially at middle and high school levels.

ENG 604 Purchase Area Writing Project I (3). An intensive workshop course emphasizing principles and practices of effective writing instruction. Designed for practicing classroom teachers. Prerequisites: K-12 teaching position; application and interview. (Summer)

ENG 605 Purchase Area Writing Project II (3). Follow-up activities to the Purchase Area Writing Project Summer Institute. Designed for practicing classroom teachers. Prerequisites: K-12 teaching position; application and interview. (Summer)

ENG 608 Modern Fiction (3). A critical and historical study of selected European and American prose fiction from 1900 to the present.

ENG 609 Critical Theory (3). An intensive study of critical practices and theoretical approaches to understanding literature.

ENG 610 Graduate Writer's Workshop (3). Supervised independent work in creative writing. May be repeated for credit. Prerequisite: permission of instructor.

ENG 611 Applied Linguistics for Second Language Teaching (3). An overview of the basic concepts, scope, and methodology of the science of language in its historical and descriptive aspects, including topics and issues in current linguistic studies.

ENG 612 Directed Study (3). Supervised independent work in literature, language or writing. Prerequisite: permission of department chair. May be repeated for credit.

ENG 613 Selected Authors (3). A single literary figure or a very small number of related figures will be studied in depth. This course may be repeated for credit provided that the course content is sufficiently different.

ENG 614 Special Topics in English Studies (3). An intensive examination of issues in the study and/or teaching of English. May be repeated for credit.

ENG 615 Topics in Women's Literature (3). Topics in literature written by selected women writers. May be repeated once for credit.

ENG 616 Rhetorical Theory (3). A seminar focusing on important issues in rhetorical theory.

ENG 617 Themes in World Literature (3). Study of selected themes in works of literature from the non-Western world.

ENG 618 Introduction to Linguistic Science (3). A study of the basic concepts, scope and methodology of the science of language in its historical and descriptive aspects. Not open to the student who has credit for ENG 310.

ENG 619 Gay and Lesbian Literature (3). Study of literary works by gay and lesbian authors, works about gay and lesbian experiences, and gay and lesbian literary traditions.

ENG 620 Life-Writing (3). Study of selected genres of life-writing, such as autobiography and biography. Content will vary according to nation, region, period, theme, or genre. All works in English or in translation to English. Students may repeat this course for credit providing that the course content is sufficiently different.

ENG 621 American Literature, 1607-1820 (3). An intensive study of selected works from 1607-1820 and their historical and critical contexts, with an emphasis on Colonial and Early U.S. Literature.

ENG 622 Writing for Health Professionals (3). Techniques and practices for writing in the health professions. The course will help students review/learn and practice the skills necessary to write successful documents in the health industry using APA style. Prerequisite: permission of instructor.

ENG 623 American Literature, 1820 to 1870 (3). An intensive study of selected works of the period and their historical and critical contexts, with an emphasis on American Romanticism.

ENG 624 Historical Principles in Composition Theory (3). An historical survey of rhetorical theories as they originate in the classical era, are reinterpreted by composition theory and pedagogy, and are applied to contemporary writing and writing instruction.

ENG 625 Professional Document Design (3). Advanced topics and projects in technical writing, document design, and usability, focusing on theoretical and direct application to business and industry. Field experience may be required.

ENG 626 Advanced Technical Writing (3). Advanced topics and projects in technical writing, focusing on direct application to business and industry. Course is taught online.

ENG 627 Rhetoric and Professional Writing (3). Study of the rhetorical tradition and theories, and an exploration of the influence of rhetoric in professional and technical writing environments.

ENG 628 Writing Proposals and Grants (3). Techniques and practices for writing proposals and grant proposals. The course will help students learn and practice the rhetorical and persuasive skills necessary to plan and create successful proposals.

ENG 629 Project Design and Usability (3). An overview of the principles, conventions, and technologies used to design and develop projects for business, industry, and government. The course will examine theories and methods of design, audience analysis, and usability testing for documents such as instructions, procedures, reports, and manuals. Course is taught online.

ENG 630 Issues in Professional and Technical Writing (3). Study of issues in professional technical writing, e.g. ethics, gender, career opportunities, research, and collaboration. Topics are the discretion of the instructor.

ENG 631 American Literature, 1870 to 1920 (3). An intensive study of selected works of the period and their historical and critical contexts, with an emphasis on American Realism and Naturalism.

ENG 633 American Literature since 1920 (3). An intensive study of selected works of the period and their historical and critical contexts, with an emphasis on Modernism and Postmodernism.

ENG 634 Language and Culture (3). A study of the relationship among language, society, and the individual's conception of reality. (Same as TSL 634.)

ENG 635 American Poetry (3). A study of American poetry from its beginnings to the present—or on a particular period within its history—with attention to historical and critical contexts.

ENG 636 The American Novel (3). A study of the American novel from its beginnings to the present—or on a particular period within its history—with attention to historical and critical contexts.

ENG 637 Topics in African-American Literature (3). A study of selected works of African-American literature and their historical and critical contexts.

ENG 638 Studies in Southern Literature (3). A survey of southern literature and its historical and critical contexts.

ENG 639 Study of the Short Story (3). An intensive study of the origins and development of the short story with special emphasis placed upon analysis of the form.

ENG 641 Old English Language and Literature (3). An intensive study of selected works from the Old English period (c. 449-1100) and their historical and critical contexts.

ENG 643 Middle English Language and Literature (3). An intensive study of selected works from the Middle English period (c. 1100-1500) and their historical and critical contexts.

ENG 644 Graduate Cooperative Education (3). May be repeated for a maximum of six credits. Graded pass/fail. Prerequisite: permission of chair.

ENG 645 English Renaissance Literature, 1500-1660 (3). An intensive study of selected works of the period and their historical and critical contexts.

ENG 646 Non-Shakespearean Renaissance Drama (3). A survey of non-Shakespearean British dramatic literature, with attention to historical and critical contexts.

ENG 647 Shakespeare (3). An intensive study of selected Shakespearean works and their historical and critical contexts.

ENG 650 Modern Drama (3). A study of selected European and American plays, with attention to literary backgrounds and technical experimentation.

ENG 652 Restoration and Eighteenth-Century British Literature (3). An intensive study of selected works of the period and their historical and critical contexts.

ENG 653 Writing for the Web (3). Theory and practice in writing for online environments. Students will apply rhetorical strategies and document design principles to online writing exercises and learn basic HTML and CSS application.

ENG 654 Eighteenth-Century British Novel (3). An intensive study of selected novels of the period and their historical and critical contexts.

ENG 655 The British Romantic Movement (3). An intensive study of selected works of the period and their historical and critical contexts.

ENG 656 Nineteenth-Century British Novel (3). An intensive study of selected novels of the period and their historical and critical contexts.

ENG 657 Victorian Literature (3). An intensive study of selected works of the period and their historical and critical contexts.

ENG 659 Modern English Literature (3). An intensive study of selected works from 1900 to the present and their historical and critical contexts.

ENG 661 Fiction Tutorial (6). An advanced tutorial in fiction writing, in which the student works one-on-one with M.F.A program faculty via U.S. mail and/or on-line communication to produce a body of original writing. The tutorial will include a directed reading relevant to the student's individual project. May be repeated for credit. Only one tutorial per semester. Prerequisite: admittance into the program.

ENG 662 Poetry Tutorial (6). An advanced tutorial in poetry, in which the student works one-on-one with M.F.A. program faculty via U.S. mail and/or on-line communication to produce a body of original poetry. The tutorial will include a directed reading relevant to the student's individual project. May be repeated for credit. Only one tutorial per semester. Prerequisite: admittance into the program.

ENG 663 Creative Non-Fiction Tutorial (6). An advanced tutorial in creative nonfiction writing, in which the student works one-on-one with M.F.A. program faculty via U.S. mail and/or on-line communication to produce a body of original writing. The tutorial will include a directed reading relevant to the student's individual project. May be repeated for credit. Only one tutorial per semester. Prerequisite: admittance into the program.

ENG 664 Field Study (3). Each student will serve as an intern for *New Madrid*, the national literary journal of the M.F.A. Program at Murray State University. Prerequisite: Students must have completed one semester of the M.F.A. program before enrolling in the Field Study.

ENG 665 Fiction Residency (3). The residency experience will comprise workshops, daily seminars, and readings by faculty members and visiting writers. This course may be repeated for credit, but only one Graduate Residency may be completed per semester. Prerequisite: admittance into the program.

ENG 666 Poetry Residency (3). The residency experience will comprise workshops, daily seminars, and readings by faculty members and visiting writers. This course may be repeated for credit, but only one Graduate Residency may be completed per semester. Prerequisite: admittance into the program.

ENG 667 Creative Non-Fiction Residency (3). The residency experience will comprise workshops, daily seminars, and readings by faculty members and visiting writers. This course may be repeated for credit, but only one Graduate Residency may be completed per semester. Prerequisite: admittance into the program.

ENG 668 Creative Thesis (6). An advanced tutorial in fiction, poetry, or creative nonfiction in which the student works one-on-one with M.F.A Program faculty to revise a body of original writing produced in previous graduate tutorials. Prerequisites: Three sections of ENG 661, 662, and/or 663. (Student must have completed at least two sections in genre of thesis.)

ENG 669 Thesis Residency (1). Culminating 9-day residency comprising the thesis defense, the thesis review conference, a formal reading, and a teaching presentation. Students will also attend readings and lectures. Students will meet with faculty advisors to discuss final revision of the thesis. Prerequisite: ENG 668.

ENG 681 Special Topics in Rhetoric and Composition (3). An examination of contemporary and traditional issues and concerns in the study of rhetoric and composition. The course usually will focus upon an announced topic but will allow students to explore matters of individual concern. May be repeated for credit.

ENG 685 Teaching English at the College Level (3). A study of various theoretical approaches to teaching composition and literature; will also include practical applications.

ENG 698 Thesis Writing (3). Prerequisite: permission of Graduate Coordinator.

ENG 699 Thesis Writing (3). Prerequisite: permission of Graduate Coordinator.

ENG 704 Comparative English Education (3). Comparative study of English education. Travel my be required. Students must be able to travel nationally or internationally.

ENG 745 (945) Teaching Diversity through Literature (3). Intensive study of diversity in literature and exploration of methods of teaching issues of diversity through literature.

ENG 750 Purchase Area Literacy Academy (3). An intense workshop course emphasizing theories of literacy as well as principles and practices of effective reading and writing instruction at the secondary level. Designed for practicing classroom teachers. Prerequisite: Permission of instructor.

ENG 752 The Reading/Writing Connection in English (3). An examination and critical evaluation of the theories of the reading and writing connection as well as related methods of assessment and instruction. Theoretical frameworks are used to identify and respond to individual differences and potential difficulties in developing integrated reading and writing skills and strategies. Prerequisite: Permission of instructor.

ENG 773 Teaching Selected Authors (3). An intensive study of one or more selected authors and approaches to teaching those authors. May be repeated once for credit with a different emphasis. May include field experience. Prerequisite: permission of graduate coordinator.

ENG 791 Reflective Teaching and Roundtable (3). Supervised practicum and facilitated roundtable. Students will apply program principles and dispositions in the course of teaching a class in the broad field of English. Students may conduct the practicum in their own classrooms. Students will keep written and video logs of their experiences and will reflect upon their experiences, questions, and problems in concert with classmates to improve their teaching performance. Experiences may be aligned with appropriate components for Nation Board for Professional Teaching Standards Take One! program. Field experience required. Prerequisite: permission of graduate coordinator.

ENG 795 (995) Teaching Writing through Travel (3). Exploration of methods to teach writing through travel. Topics vary by instructor but may generally include location and inspiration, writing as reflection upon travel experience, matching writing assignments to travel, funding, travel planning, and travel leader responsibilities. Students will apply methods to practical experience. Travel will be required. Student must be able to travel nationally or internationally.

ENG 796 (996) Teaching Literature through Travel (3). Exploration of methods to enrich literary understanding through travel. Topics vary by instructor but may generally include literary landscapes, literary tourism, travel literature, archival experiences, matching literature to travel itineraries, funding, travel, planning, and travel leader responsibilities. Students will apply methods to practical experience. Travel will be required. Students must be able to travel nationally or internationally.

ENG 900 Methods of Analysis and Reflection in English Pedagogy (3). Foundational course in theories and methods of analysis and reflecting in teaching in the broad field of English. Special emphasis upon developing independent and collaborative analytical and reflective skills. Prerequisite: Admission to the Doctor of Arts program in English Pedagogy.

ENG 907 Theories of Curriculum Design and Application in English (3). Advanced survey of historic and current curriculum models and theories for the broad field of English. Emphasis on understanding current Kentucky English curriculum standards and implementing standards in the design of English courses and programs. Sight based projects may be required. Prerequisite: Admission to the Doctor of Arts program in English Pedagogy.

ENG 908 Assessment in English (3). Advanced survey of theories, varieties, purposes, implementations, and limitations of assessment of student achievement and program effectiveness in the broad field of English. Prerequisite: Admission to the Doctor of Arts program in English Pedagogy.

ENG 955 Seminar in English Literacy (3). Advanced study of literacy theory and practice as it relates to adolescents and adults. Prerequisite: Admission to the Doctor of Arts program in English Pedagogy.

ENG 957 Seminar in Adult Literacy (3). Advanced study of theories, issues, and approaches in the field of adult literacy. Provides high school and adult educators with knowledge and tools to design and plan literacy instruction for adult learners. Topics may vary. Prerequisite: Admission to the Doctor of Arts program in English Pedagogy.

ENG 977 Instruction Technology for English (3). Advanced survey of instructional technology as applied to teaching in the broad field of English. Emphasis on current theories, models, and applications of instructional technology including electronic literacy. Site visits may be required. Prerequisite: Admission to the Doctor of Arts program in English Pedagogy.

ENG 978 Teaching English in Online Environments (3). Advanced course in principles and practices of designing English curricula for online delivery and teaching English in online environments. Field experience may be required. Prerequisite: Admission to the Doctor of Arts program in English Pedagogy.

ENG 981 Content Knowledge in English for Age Level (3). Mentored and collaborative course supporting preparation for the National Board Certificate Component 1: Content Knowledge. Successful completion of this course does not guarantee a passing score for the National Board Certificate Component 1: Content Knowledge assessment. May be repeated with permission of director. Prerequisites: Admission to the Doctor of Arts program in English Pedagogy; eligibility as a candidate for National Board Certification. May be repeated once for credit with permission of director.

ENG 982 Differentiation of Instruction in English (1). Mentored and collaborative course supporting preparation for Nation Board Certificate Component 2: Differentiation in Instruction. Successful completion of this course does not guarantee a passing score for the National Board Certificate Component 2: Differentiation in Instruction portfolio submission. May be repeated with permission of director. Field experience required. Prerequisites: Admission to the Doctor of Arts program in English Pedagogy; eligibility as a candidate for National Board Certification. May be repeated once for credit with permission of director.

ENG 983 Teaching Practice and Classroom Environments in English (1). Mentored and collaborative course supporting preparation for Nation Board Certificate Component 3: Teaching Practice and Classroom Environments. Successful completion of this course does not guarantee a passing score for the National Board Certificate Component 2: Teaching Practice and Classroom Environments portfolio submission. May be repeated with permission of director. Field experience required. Prerequisites: Admission to the Doctor of Arts program in English Pedagogy; eligibility as a candidate for National Board Certification. May be repeated once for credit with permission of director.

ENG 984 Effective and Reflecting English Teaching Practice (1). Mentored and collaborative course supporting preparation for the National Board Certification Component 4: Effective and Reflective Practitioner. Successful completion of this course does not guarantee a passing score for the National Board Certification Component 4: Effective and Reflective Practitioner portfolio submission. Field experience required. May be repeated with permission from director. Prerequisites: Admission to the Doctor of Arts program in English Pedagogy; eligibility as a candidate for National Board Certification. May be repeated once for credit with permission of director.

ENG 991 Reflecting Teaching Practicum (3). Supervised professional teaching practicum in which student will apply doctoral core principles and doctoral dispositions in the course of teaching a class in the broad field of English. Student may conduct the practicum in their own classroom, or they may teach a course for Murray State University relevant to the doctoral specialization. Student will keep written and video logs of their experiences and reflections. Prerequisite: Admission to the Doctor of Arts program in English Pedagogy.

ENG 992 Reflecting Teaching Roundtable (3). Facilitated roundtable for the sharing and analysis of experiences, questions, and problems among cohort members during their Reflective Teaching Practicum. Students will reflect upon their experiences, questions, and problems in concert with other cohort members and use collaborative skills to improve their teaching performance. Prerequisite: Admission to the Doctor of Arts program in English, Pedagogy.

ENG 997 Applied Practice I (6). First half of a supervised capstone project in applying doctoral core principles, methods, and dispositions to solving curricular or pedagogical problems in teaching language, literature, or literacy in a real educational environment. Students will plan and design a project to be conducted in ENG 998. Prerequisites: Doctoral candidate status and permission of graduate program director.

ENG 998 Applied Practice II (6). Second half of a supervised capstone project in applying doctoral core principles, methods, and dispositions to solving curricular or pedagogical problems in teaching language, literature, or literacy in a real educational environment. Students will execute a plan developed in ENG 997 and will produce a deliverable artifact or set of artifacts that describe, assess, and reflect upon the project. May be repeated once with director approval. Prerequisites: Doctoral candidate status and permission of graduate program director; ENG 997.

ENGINEERING TECHNOLOGY (ENT)

ENT 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Meetings with advisors, department personnel, service areas, and campus field trips comprise the main involvement. Availability of university resources is stressed with emphasis on personal needs. Graded pass/fail. (Fall)

ENT 111 Electric Systems (4). A study of dc and ac circuits including an introduction to three-phase systems and electric power. Lecture and laboratory provide learning experiences with basic test instruments, circuits, components and computer analysis. Three hours lecture and two hours lab. Prerequisite: MAT 130 or 150.

ENT 286 Introduction to Environmental Engineering Technology (3). An introduction to air and water pollution control, water and wastewater treatment, steam and groundwater hydrology, energy and resource demands. Included are discussion of ecological bases of water and air treatment systems, data and analyses, and statistical and computational techniques.

ENT 287 Statics for Technology (3). A course covering the branch of mechanics which deals with the effects of forces acting on a body at rest. The course deals with the graphical and analytical study of force systems in equilibrium. This entails an understanding of applied and frictional forces, centers of gravity, and vectors. Prerequisites: MAT 130, PHY 130 and 131.

ENT 293 Manufacturing Processes and Materials (3). A technical and economic analysis of the various methods of fabrication, processes utilized, and materials used in today's manufacturing industry. (Fall)

ENT 358 Mechanical and Electrical Systems (3). A study of mechanical and electrical systems in buildings including air conditioning, heating, plumbing, fire protection, electrical power and lighting. Prerequisites: PHY 132/133 (or PHY 255/256).

ENT 364 Introduction to Thermodynamics (3). Basic concepts of thermodynamics with an emphasis on the methods of solving a wide range of technical problems. Topics included are the first and second law, entropy, reversible and irreversible processes and ideal gases. Corequisite: MAT 308 or 330. (Spring)

ENT 382 Hydraulics (4). The principles of fluid statics, dynamics and kinematics are addressed. Included are studies relating to fundamental laws for fluid motion in the form of Euler's Bernoulli's, impulse-momentum, and work-energy relationships. Also studied are resistance to flow, flow measurement, pumping equipment, and an introduction to compressible flow. Prerequisite: MAT 130 or 150. (Spring)

ENT 388 International Experience in Engineering Technology (1-3). A study abroad experience with technical content focusing on engineering technology applications and applied engineering concepts in a country other than the United States. The experience would highlight selected historical and modern contributions to engineering technology for another country and culture. The one, two, or three credit hour course would be based on the length of study abroad experience. Graded pass/fail. Prerequisite: consent of instructor.

ENT 393 Engineering Economy (3). Economic evaluation and financial analysis of engineering systems alternatives to optimize the engineering decision process. Prerequisite: MAT 130 and junior standing. (Fall and Spring)

ENT 400 Energy Management (3). Development, distribution, use, and conservation of energy resources relative to societal applications are examined. Heat transfer within manufacturing and energy production systems and options for increasing thermodynamic and economic efficiencies are studied. Prerequisite: MAT 230.

ENT 419 Senior Project I (3). A project-oriented study of actual manufacturing problems from area industry. The student will be given valuable industrial experience before leaving school. This course requires that students be able to apply all previously acquired knowledge in obtaining a viable solution to their projects.

ENT 420 Senior Project II (3). A project-oriented study of actual manufacturing problems from area industry. The student will be given valuable industrial experience before leaving school. This course requires the students be able to apply all previously acquired knowledge in obtaining a viable solution to their projects. This is the capstone course for the Electromechanical program and is the second part of the ENT 419 and ENT 420 series. Prerequisites: ENT 419 and senior standing.

ENT 458 Applying the National Electric Code (3). A study and application of major parts of the National Electric Code including overcurrent protection, branch and feeder circuit calculations, grounding, motor control circuits, transformers and services. Studies will focus on applications to individual and multifamily dwelling units as well as industrial and commercial buildings. Prerequisite: TSM 110. (Spring)

ENT 491 Industrial Operations (3). Quantitative analysis for planning, organizing and controlling a production/operations system. Prerequisites: CIS 243 and ENT 393. (Fall)

ENT 499 FE Exam Review (1). A review course for the Fundamentals of Engineering registration examination. The course is intended for seniors majoring in engineering technology.

EXPERIENCE-RICH ACTIVITY (ERA)

ERA 287 Experience-Rich Activity (0). Course is designed to assist students with reflection on experience-rich activities embedded in other courses or extracurricular activities. Students will be required to submit written responses in reaction to the experience-rich activities. Repeatable. Prerequisite: Concurrent enrollment in an identified ERA course at the 100- or 200-level.

ERA 487 Experience-Rich Activity (0). Course is designed to assist students with reflection on experience-rich activities embedded in other courses or extracurricular activities. Students will be required to submit written responses in reaction to the experience-rich activities. Repeatable. Prerequisite: concurrent enrollment in an identified ERA course at the upper level.

ENHANCING STUDENT SUCCESS (ESS)

ESS 120 College Study Skills (2). Designed for college students who desire instruction in improving study skills. Emphasis is placed on time management, note-taking skills, test-taking skills, and content area study plans. Instructor reserve the right to limit upper-class enrollment. To be taken with or following REA 096 when the reading ACT score is below 21. Prerequisite: Reading ACT of 16 or below or KYOTE Reading score of 19 or below.

ESS 121 Advanced Reading and Study Skills Improvement (1). Designed for all college students who desire individualized help in improving reading

and study skills. Emphasis is placed on course-specific comprehension and study skills. To be taken only in conjunction with a specific University Studies requirement.

ESS 130 College Success Strategies (3). This course explores strategies for academic success and personal management leading to improved academic performance. The course focuses on areas in which students need assistance, awareness, and extra support. Topics discussed include college transitions; characteristics of successful college students; strategic learning; and major and career exploration. ESS 130 is a first year experience course that is required of all students admitted into the Pathways to Success (P2S) Program. Prerequisite: admission into the Pathways to Success Program.

EXERCISE SCIENCE (EXS)

EXS 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

EXS 101 Introduction to Exercise Science (3). An overview of coursework, career options, and professional skills in exercise science and related health fields. The course will introduce the foundational concepts and theories used in exercise science.

EXS 110 Fundamentals of Fitness (1). Course designed to provide students with basic skills in activities like weight training, aerobics, and other lifetime activities. Topics will vary according to needs of students and expertise of faculty. Some travel to various facilities may be required.

EXS 200 Scholarly Writing in Exercise Science (2). Course is designed to enhance the students' scholarly writing ability. Students will locate, read, critique, and compose professional writing samples. The assignments will require students to adhere to writing conventions and style guidelines associated with professional writing in exercise science journals. Prerequisites: ENG 105 and EXS 101; Corequisites: EXS 201 and EXS 351.

EXS 201 Data Evaluation in Exercise Science (1). Course is designed to enhance the students' use of spreadsheets, date management, and statistical analyses; therefore, some computer laboratory time may be required outside of class time. Students will manipulate data to create appropriate tables and figures. The assignments will require students to adhere to writing conventions and style guidelines associated with professional writing in exercise science journals. Prerequisites: ENG 105 and EXS 101; corequisites: EXS 201 and EXS 351.

EXS 250 Anatomical Concepts in Wellness (3). A course designed to familiarize the student with basic anatomical and physiological principles of the human body. This course serves as a foundation for additional exercise science courses. Prerequisite: BIO 101 or equivalent.

EXS 270 Clinical Experience: Observation (1). Course designed to allow students interested in pursuing a career in athletic training to observe in the clinical athletic training sites. Students are required to observe 30 hours during the semester and complete the assigned modules. This course is recommended but not required for admission into the Athletic Training Program. This course is graded pass/fail.

EXS 271 Clinical Experience: Introduction (2). Course designed to introduce the basic concepts of athletic training and allow time for practicing the basic clinical competencies required for athletic training certification. The student will be required to attend clinical experience as assigned by the clinical coordinator. This course is a prerequisite to further courses within the curriculum. Prerequisite: Admittance to the Athletic Training Program.

EXS 275 Exercise Instruction (3). Course designed to develop knowledge and skills required to conduct and/or supervise exercise. Students will become familiar with a variety of exercise formats intended to enhance cardiorespiratory fitness, muscle strength and endurance, and musculoskeletal flexibility. Students develop the ability to select appropriate exercises, identify improper form/technique, recommend/demonstrate appropriate exercise progression, and modify exercises based on skill and/or to minimize injury. Field trips may be required. Prerequisite: EXS 101 or instructor permission.

EXS 295 Acute Care of the Physically Active (2). A course designed for exercise and allied health science students working with physically active persons to respond to emergency situations. Students will learn to provide first aid and perform cardiopulmonary resuscitation (CPR) at the professional rescuer level. American Red Cross CPR for the Professional Rescuer, Responding to Emergencies First Aid, and other various certifications may be earned.

EXS 301 Care and Prevention of Injuries (3). Course designed to discuss the most recent and relevant information on the prevention and treatment of injuries and conditions found in the physically active population. Prerequisites: BIO 227 and 228 with a minimum grade of *C*.

EXS 304 Evidence-based Practice in Musculoskeletal Evaluation (3). Course designed to introduce students to the use of evidence in orthopedic clinical-decision making and skills required of clinicians during musculoskeletal evaluations. The skills taught in the course align with those of the clinical health professions involved in orthopedic evaluations. Prerequisite: EXS 101. Pre- or corequisite: EXS 301.

EXS 305 Bracing, Splinting and Taping (1). A lab course designed for athletic trainers and others working with physically active persons. Students will learn how to properly fit braces, manufacture splints, and use prophylactic taping techniques on patients with musculoskeletal injuries.

EXS 320 Evaluation of Non-Orthopedic Conditions (3). Course designed to prepare the student to use the proper terminology when communicating to other healthcare professionals, locate anatomical landmarks, and perform general evaluation techniques employed by health care workers. This course specifically covers evaluation and proper management of non-orthopedic conditions, including: thoracic and abdominal injuries, general medical conditions, psychosocial conditions, and dermatological conditions. Prerequisites: EXS 301. A cumulative 2.50 GPA and advisor approval is required prior to enrollment in this course. Additional criteria apply for the Pre-Health Professional track.

EXS 333 Theories and Techniques in Strength and Conditioning (3). Designed to acquaint the students with comprehensive information on scientific principles, concepts, and theories of strength training and conditioning as well as the practical applications to sports medicine, health promotion, and wellness. The course also prepares the student for the Certified Strength and Conditioning Specialist examination. Prerequisites: BIO 229 and 230 with a minimum grade of *C* and EXS 370 as a pre- or corequisite.

EXS 350 Exercise Physiology (3). Students will become acquainted with general concepts in exercise physiology. Some topics to be included are cardiovascular function, neural control, musculoskeletal responses and respiratory function. Prerequisites: BIO 229 and 230 with a minimum grade of *C* or permission of instructor. (Same as BIO 450).

EXS 351 Exercise Physiology Laboratory (1). Course designed as a supplement to EXS 350 to provide additional opportunity to apply knowledge of course material. Field trips may be required. Prerequisites: BIO 229 and 230 with a minimum grade of *C* or permission of instructor; Corequisite: EXS 350 or BIO 450.

EXS 353 Exercise Testing and Prescription (3). Course is designed to provide a comprehensive overview of the knowledge and skills related to exercise testing and prescription. Students will learn the theoretical and practical knowledge necessary to select, conduct and interpret a wide variety of screenings and exercise tests commonly used in fitness and wellness settings. Additionally, students will be able to design, based on test results, appropriate exercise programs for apparently healthy adults, as well as those with special considerations. This course will emphasize case-study and inquiry-based learning approaches in the application of evidence-based recommendations and guidelines for exercise prescription. Prerequisite: EXS 200, 201, 350, 351, and 2.75 cumulative GPA.

EXS 354 Exercise Testing and Prescription Laboratory (1). Lab course designed as a supplement to EXS 353 to provide students with hands-on experiences with protocols and techniques for assessing, evaluating, and interpreting various physiological parameters such as health screenings, body composition, aerobic fitness, musculoskeletal fitness, range of motion, balance and functional ability. Documentation of a current CPR certification is required on the first day of class. Prerequisites: EXS 350 and 351. Pre- or corequisite: EXS 353.

EXS 356 Health Promotion Programming (3). Provides practical application of the skills required to plan, implement, and assess a health promotion program for populations varied in age and setting. Students will complete one cycle of the process, applying theories, skills, and strategies discussed in class to provide a health promotion event within the local community. Prerequisite: EXS 101 or HEA 110, HEA 191, HEA 200, or permission of instructor. (Same as HEA 356.)

EXS 370 Kinesiology (3). A study of basic kinesiology with respect to human performance in physical activity and rehabilitation. Prerequisites: BIO 227 and 228 with a minimum grade of *C*.

EXS 375 Biomechanics in Sport and Exercise (3). A study of basic biomechanics with respect to human performance including linear and angular kinematics, linear and angular kinetics, as well as, qualitative analysis of human movement. Prerequisite: MAT 145 or higher.

EXS 380 Sport Medicine Pharmacology (2). Course designed to familiarize students in allied health sciences with major therapeutic pharmacological substances and their effects on physically active individuals. This course will assist students who are preparing for certification in athletic training or certification through the American College of Sport Medicine. In addition, it will provide a basic foundation for pre-professional allied health students required to eventually complete a pharmacology course in their respective graduate programs. Prerequisites: BIO 229, 230 and a 2.5 cumulative GPA.

EXS 385 Sport and Exercise Psychology (3). Course is an introduction to the fields of sport and exercise psychology and sport sociology. The students will learn basic principles and applications of sport and exercise psychology, as well as the psychological factors which influence and impact sport performance, exercise adherence, and rehabilitation compliance. Prerequisite: PSY 180.

EXS 390 Therapeutic Modalities (3). Course designed to provide a comprehensive understanding of therapeutic modalities in the treatment of various illnesses, musculoskeletal conditions and injuries. The course content will teach the student to plan, implement, document, and evaluate therapeutic modalities within the rehabilitation process. Prerequisite: EXS 301 and a cumulative 2.50 GPA. Additional criteria apply for Pre-Health Professional track.

EXS 400 Research Design and Statistics for Allied Health (3). This course is designed to integrate and utilize statistical analysis techniques, including descriptive and inferential statistics. Students will understand and be able to develop research designs applicable to allied health professions. Prerequisite: STA 135.

EXS 402 Evaluation of the Lower Extremity (3). Course designed to prepare the student to perform general orthopedic evaluation techniques. The course specifically covers evaluation techniques on the foot, ankle, lower leg, knee, upper leg, hip, pelvic girdle, low back, gait, and postural assessment. Prerequisites: EXS 304 and a cumulative 2.50 GPA. Additional criteria apply for Pre-Health Professional track.

EXS 403 Evaluation of the Upper Extremity (3). Course designed to prepare the student to perform general orthopedic evaluation techniques. The course specifically covers evaluation techniques on the head, neck, shoulder girdle, upper arm, elbow, forearm, wrist, hand, and thorax. Prerequisites: EXS 304 and a cumulative 2.50 GPA. Additional criteria apply for Pre-Health Professional track.

EXS 415 Exercise Testing and Prescription for Clinical Populations (3). Course is designed to provide a comprehensive overview of disease pathophysiology, disease management, recommendations for exercise testing and prescription, and the benefits of exercise training, emphasizing the role of exercise in inpatient and outpatient rehabilitation, community-based programs, and secondary prevention. This course will emphasize case-study and inquiry approaches in the application of evidence-based recommendations and guidelines in the management of persons with chronic diseases and disabilities in a clinical setting. Prerequisites: EXS 353 and 354, 2.75 cumulative GPA.

EXS 420 Rehabilitation Techniques (2). Course designed to provide a comprehensive understanding of rehabilitation techniques in the treatment of various illnesses, musculoskeletal conditions, and injuries. Course content will teach the student to plan, implement, document, and evaluate therapeutic exercise programs. Prerequisites: EXS 301 and a cumulative 2.50 GPA. Additional criteria apply for Pre-Health Professional track.

EXS 421 Rehabilitation Techniques Lab (1). Course designed as a supplement to EXS 420 to provide additional opportunity to apply knowledge of course material. Prerequisites: EXS 301, 420, and a cumulative 2.50 GPA. Additional criteria apply for Pre-Health Professional track.

EXS 433 Advanced Practices in Strength and Conditioning (3). Designed to advance the exercise science major with comprehensive information on research-based scientific principles, concepts, and theories of strength training and conditioning, as well as, the professional applications to elite and collegiate athletics. Prerequisites: EXS 333. EXS 353 preferred.

EXS 435 Neuroanatomy and Physiology for Applied Health Sciences (3). A study of the organization of tissues and gross structural elements of the human nervous system and current knowledge of the physiology of neural transmission. The course will cover the neural substrates for cognition, communication, and movement and will explore clinically relevant pathology related to function. Prerequisites: cumulative GPA of 2.5 and admission to the Communications Disorders program. For all others, advisor approval.

EXS 445 Senior Seminar I (1). Course serves as a preparatory course for students attempting a certification exam through the American College of Sports Medicine or other related professional organization. Satisfactory completion of this course is dependent on obtaining at least a 75% on a comprehensive major field test. Prerequisite: students must be enrolled in final semester of EXS core coursework and have a 2.75 cumulative GPA.

EXS 446 Senior Seminar II (1). This course serves as a preparatory course for students wishing to take the Certified Strength and Conditioning Specialist certification exam through the National Strength and Conditioning Association. Prerequisites: senior status and EXS 333.

EXS 460 Practicum (1-3). Students will develop valuable instructional, supervisory and leadership skills related to the hands-on performance of health screenings, exercise testing, and data collection under the supervision of faculty. Students will prepare laboratory materials for exercise science laboratory courses, asses student learning, and/or assist with research projects. This experience provides additional skills for students pursuing health science graduate program degrees. Prerequisites: senior status, EXS 353 and 354, and a cumulative GPA of 3.0.

EXS 465 Advanced Exercise Physiology (3). A continuation of advanced concepts presented in EXS 350. Some exercise physiology topics to be included are metabolic demands, nutritional needs, performance enhancement issues, gender differences, endocrine, aging, and immune system changes. Laboratory activities will be integrated where appropriate. Outside activities related to specific topics will be included. A research paper will be required. Prerequisites: EXS 350 and a cumulative GPA of 2.5.

EXS 469 Professional Experience I (3). Placement in wellness centers, industry, hospitals physicians' offices, and rehabilitation clinics for practical experience prior to graduation. This course is to be taken after the majority of other coursework has been completed. Prerequisites: 2.75 cumulative GPA, CPR certification, and consent of instructor. Additional criteria apply for students in the pre-health professional track.

EXS 470 Professional Experience II (3). Placement in wellness centers, industry, hospitals, physicians' offices, and rehabilitation clinics for practical experience prior to graduation. This course is to be taken the last semester before graduation or the following summer. May be taken concurrently with EXS 469. Prerequisites: 2.75 cumulative GPA, CPR certification, and permission of instructor. Additional criteria apply for students in the pre-health professional track.

EXS 471 Organizational Management in Health Science (3). Course designed to familiarize the student with administrative knowledge and skills associated with the daily operation of various applied health science employment settings. Course content includes program management and culture, leadership, conflict resolution and communication, human resources management, financial planning, facility design, business planning, public relations and marketing,

legal and ethical issues, and work-life balances. Prerequisites: A cumulative 2.75 GPA, completion of at least 75 credit hours, and advisor approval are required prior to enrollment.

EXS 480 Special Problems in Exercise Science (1-3). Course may be repeated for a maximum of six hours when topic differs. Prerequisite: permission of instructor.

FAMILY AND CONSUMER STUDIES (FCS)

FCS 110 Introduction to Early Childhood Education (3). Course will serve as a practical and basic introduction to the early childhood profession. It satisfies the requirements for the Kentucky Commonwealth Child Care Credential and serves as a foundation for initial skills and knowledge for early childhood professionals. Field experiences are required.

FCS 111 The Family and Its Environment (3). An introduction to the changing structure and dynamics of families in our diverse society. Identification of changes and choices available to family members and critical issues facing families. Some topics that may be included are: changing gender role expectations, family policy, communication in families, family violence, divorce and effects on family, aging families, parent-child relationships, cultural and racial diversity, remarriage and blended families, and myths and facts about families. Field experience required.

FCS 241 Family Economics (3). The class is designed to introduce the student to the principles of money management. Class members will learn the basic buying skills needed when shopping for transportation, clothing, food, housing, recreation and insurance. In addition, the fundamental concepts of credit, borrowing, taxes, investments and estate planning will be studied.

FCS 250 Early Childhood Development (3). In-depth study of early childhood, infancy through age eight, including concepts, principles, and development theories. Students will observe, record and analyze the social, emotional, physical, and cognitive development of the typical and atypical child at multiple developmental stages in the social and cultural context. Field experience is required.

FCS 330 Housing and Family (3). Study of the impact of housing on families and individuals in communities; focus on housing norms, policies, economic factors and human needs as guides for decisions related to shelter and residential communities. Application of design principles, better living design/universal design concepts, material selection, building codes/regulations, cost and ecological considerations will guide development of scaled drawing skills to address the needs of families across the lifespan. Field experience is required.

FCS 342 Consumer Decision Making (3). A decision making model is used to study consumer decision making throughout the life cycle. Goal setting, consumer redress, money management, financial planning and buymanship are explored. Emphasis is placed on consumer responsibility in relation to environmental and energy concerns. Global interdependence issues are also included.

FCS 359 Methods of Teaching Family and Consumer Sciences (3). Development of planning and organizational teaching skills, use of resource materials and simulated teaching experiences. Principles of learning, curriculum planning, styles of management. Field experiences required.

FCS 413 Marriage and Family Relationships (3). Exploration of personal values and personal development as they relate to traditional and nontraditional marriage, and a study of family life styles in contemporary society.

FCS 442 Family Resource Management (3). A study of the theory underlying family resource management practices. The course provides an opportunity for students to apply their skills in managing time, energy, money and human capital in individual and family settings. Field experience is required.

FCS 469 Curriculum in Family and Consumer Sciences (3). Study of scope of family and consumer sciences education including foundations, legislation, current curriculum perspectives, programs of study and related program formats, including experiences with Family, Career, and Community Leaders of America (FCCLA). Focus on curriculum development and problem-based learning opportunities. Field experiences required. Prerequisites: FCS 359 and admission to Teacher Education.

FCS 601 Problems in Family and Consumer Studies (1-3). This course is designed to permit special study in selected areas of family and consumer studies. May be repeated for a maximum of six credits.

FCS 611 Readings in Family and Consumer Studies Topics (1-3). Directed readings of individualized professional family and consumer studies topics. Critique of readings and oral presentation.

FCS 625 Advanced Child Development Programs (3). In-depth study of theories of child development and an examination of current problems and critical issues.

FCS 627 Parenting (3). Principles and theoretical perspectives on the act of parenting. Emphasis on parent-child relationships, establishing and maintaining a nurturing relationship between parents and children, and parent-child communication. Current issues affecting parenting are also studied.

FINANCE (FIN)

FIN 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

FIN 230 Personal Financial Planning (3). The course prepares the student to manage his or her own personal financial affairs in a competent manner as well as providing a foundation for later study and work in the financial planning field. Designed to meet the needs of both business and non-business majors. Cannot receive credit for both FIN 230 and ECO 190.

FIN 330 Principles of Finance (3). A comprehensive study of the field of finance, covering institutions, financial markets, investments, financial theory and techniques relating to financial decisions in business. Prerequisites: ACC 200 and junior standing or conditional or full admission to upper-level business courses.

FIN 331 Principles of Insurance (3). Designed to give the student a basic understanding of the principles and practices of insurance. Topics included are insurance in general, life insurance, disability insurance, fire insurance, transportation insurance, legal liability and property damage insurance, insurance against dishonesty, and failure of others. Prerequisite: junior standing.

FIN 332 Financial Management (3). A study of the financial management of business firms, with emphasis on the development of analytical and decision-making techniques. Major subject areas include financial planning; capital budgeting; evaluation of alternative sources of short-term, intermediate and long-term funds; and acquisitions. Prerequisites: junior standing and FIN 330.

FIN 333 Principles of Investment (3). A study of marketable securities that can be purchased and sold by investors on a daily basis. Such investments as bonds, common stocks, options and futures are included. Prerequisites: junior standing and FIN 330.

FIN 334 Banking and Financial Institutions (3). Issues concerning commercial banks and other financial institutions are studied. Topics include the history of banks, bank financial statements, regulatory agencies, laws and regulations, credit analysis, investment policies, equity reserves, mortgage markets, and capital accounts. Prerequisites: junior standing and FIN 330.

FIN 336 Employee Benefits and Retirement (3). Course introduces and explores the concepts involved in developing retirement and employee benefit plans from both the employer and employee perspectives. The legislation that impacts plan design and the tax advantages and disadvantages of various qualified and non-qualified plans including IRAs and pension and profit sharing plans will be discussed. Also addressed are federal Social Security, Medicare, and business applications. Prerequisites: FIN 330 and junior standing.

FIN 338 Estate Planning (3). This course introduces and explores the concepts involved in estate planning. It examines estate planning from a professional financial planning viewpoint. The legislation that impacts plan design and the tax advantages and disadvantages of various estate planning options will be discussed. Prerequisites: FIN 330 and junior standing.

FIN 344 Principles of Lending and Financial Statements (3). A comprehensive study of the field of commercial and consumer lending to include financial statement analysis, credit analysis, loan products, loan structuring, loan documents, and techniques relating to the bank lending function. Prerequisite: FIN 334.

FIN 350 Introduction to Counter Threat Financing Methodologies (3). Course will introduce students to the use of financial intelligence and investigative methods to target, disrupt, and dismantle organizations involved in terrorism, organized crime, and the use of money as a weapon. The course will explore domestic and international financial policy as it relates to the United States intelligence community and federal investigative agencies. The course will examine the partnership between national governments and the private sector through organizations like the United Nations, the Financial Action Task Force, the World Bank, etc. Students completing this course will have a solid and basic understanding of current initiatives within the U.S. and internationally to combat the threat of illicit financing methods. Prerequisite: FIN 330.

FIN 354 Bank Compliance Issues (3). A comprehensive study of the field of deposit and lending compliance to include statutory and law analysis, the difference between regulation and guidance, and an overview of the different regulators examining institutions. Prerequisite: FIN 334.

FIN 420 Behavioral Finance (3). A study of the foundations of behavioral aspects of economics and finance with a focus on how individual behavior can effect decision making processes and influence financial markets. Prerequisite: FIN 330.

FIN 421 Financial Models (3). Applications of financial models on the microcomputer, leading to the solution of financial problems. Emphasis is placed on building and using models developed (1) in electronic worksheets, and (2) with database software. Prerequisite: FIN 330.

FIN 432 Corporate Finance (3). A study of important issues in corporate finance with a focus on the long-term decision-making aspects of corporations and the methods that determine such decisions. The main topics include capital structure, capital budgeting, and payout policy. Prerequisite: FIN 332.

FIN 461 International Financial Management (3). A study of the contemporary corporation in a multinational setting. An in-depth analysis of risks and opportunities available for the global corporation. Prerequisite: FIN 330.

FIN 480 Senior Seminar in Finance (3). This is the finance capstone course that also serves as a designated communications course. Finance 480 uses case studies to give students an opportunity to incorporate various financial concepts and techniques in financial decision making. Students are required to work in teams to prepare and present case reports to the class. Prerequisites: FIN 332 and senior standing.

FIN 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

FIN 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

FIN 505 Internship in Finance (1-3). Open to junior and senior finance majors. These students, upon approval of the finance faculty, are placed with cooperating firms to receive on-the-job training in finance. Work experience supervised by faculty; written reports are required. Graded pass/fail. Prerequisite: permission of department chair.

FIN 520 Risk Management (3). A study of appropriate risk management techniques for the contemporary financial and nonfinancial corporation. Although a wide variety of techniques are covered, the focus is upon use of hedging strategies to reduce risk. Prerequisite: FIN 330.

FIN 522 Portfolio Management and Theory (3). An introduction to portfolio management. Emphasis on modern techniques of security selection which are directed toward risk diversification and portfolio balance. Students manage a real portfolio by basing buy/sell decisions on current market data. Computer programs are used in the portfolio selection and evaluation process. Prerequisite: FIN 330.

FIN 537 Commercial Banking (3). An applied approach to studying the issues concerning today's banks from a management perspective. Topics and activities include a bank simulation, credit analysis case studies, safety and soundness issues, competition in the banking industry, regulatory agencies, laws and regulations, and current topics in the banking industry. Prerequisite: FIN 334.

FIN 595 Special Problems (1-3). Research by students in fields of special interest. Includes project research studies and intensive reading programs, accompanied by conferences with professors in fields involved. Prerequisite: permission of instructor.

FIN 602 Corporate Finance (3). Practical application of the finance function in a company with specific emphasis on maximizing the value of the firm for its shareholders. Financial decision-making integrated with the theory of capital markets. Particular attention is given to the areas of investment, capital structure, short-term financing, and working capital management. Prerequisite: FIN 330 with a minimum grade of *C*.

FIN 610 Economic Development Finance (3). Course will introduce students to the financial concepts, tools, programs, and practices needed by economic development professionals. Prerequisite: Admission to the M.S. Economic Development program.

FIN 612 Capital Investment Analysis (3). An in-depth examination of long-term investment and financing decisions. The material to be covered will include financial analysis and forecasting, the theories and techniques employed in capital investment analyses and capital structure decisions, and the sources and uses of long-term financing. Prerequisite: FIN 330 or equivalent.

FIN 620 Risk Management (3). A study of appropriate risk management techniques for the contemporary financial and nonfinancial corporation. Although a wide variety of techniques are covered, the focus is upon use of hedging strategies to reduce risk. Prerequisite: FIN 330.

FIN 621 Financial Models (3). Applications of financial models on the microcomputer, leading to the solution of financial problems. Emphasis is placed on (1) building and using models developed in electronic worksheets, and (2) construction of financial systems using database software. Prerequisite: FIN 330 or equivalent.

FIN 622 Portfolio Management and Theory (3). An introduction to portfolio management. Emphasis on modern techniques of security selection which are directed toward risk diversification and portfolio balance. Students manage a real portfolio by basing buy/sell decisions on current market data. Computer programs are used in the portfolio selection and evaluation process. Prerequisite: FIN 330.

FIN 632 Investment Management (3). Study and analysis of financial investments. Emphasis is upon analysis of common stock and bonds with lesser emphasis on derivative securities as potential investments. Students manage a real portfolio by basing buy/sell decisions on current market data. Not available to students who have taken FIN 533. Prerequisite: FIN 330 with a minimum grade of *C*.

FIN 633 Analytical Methods in Finance (3). Practical analysis of financial problems in case-oriented format. Financial models will be used to place the data in analytical form to aid the analysis. Emphasis will be placed upon developing logical approaches and methods for problem-solving. Prerequisite: FIN 330 with a minimum grade of *C*, FIN 602, or permission of instructor.

FIN 634 Financial Markets and Institutions (3). A global perspective of the operation and functions of financial institutions and markets. Major subject areas include various financial markets, financial institutions, regulations, ethics, and future trends. Prerequisite: FIN 602 or equivalent.

FIN 637 Commercial Banking (3). Problems of commercial banking from the point of view of bank management are studied. Topics covered are asset reserves, credit analysis, investment policies, equity reserves and capital account. Prerequisite: FIN 330.

FIN 650 Derivative Securities (3). A study in the understanding of current derivative securities and the markets in which they are traded; the design and testing of innovative derivative securities. Prerequisites: FIN 330 or equivalent and MAT 220 or equivalent.

FIN 661 International Financial Management (3). Applies theories of managerial and international finance to the problems of international financial management. Topics include investment analysis, financing decisions, identifying, measuring and managing foreign exchange and interest rate risk, financing of trade, and financial control of international operations. Prerequisite: FIN 330.

FIN 695 Special Problems (1-3). Research by graduate students in fields of special interests. Includes project research studies and intensive reading programs, accompanied by conferences with professors in field involved. Prerequisites: 12 hours of graduate credit in business and permission of instructor.

FIN 698 Thesis (3).

FIN 699 Thesis (3).

FRENCH (FRE)

FRE 101 Fundamental Communication in French (3). Basic French in which students learn to describe themselves to someone from another culture; to express preferences, abilities, needs, and obligations; to ask for information; to describe people, places, and things in their world; and to report their typical activities to a French speaker.

FRE 102 Social Interactions in French (3). Expanding upon skills built in FRE 101, students move toward increasing linguistic and social awareness of French-speaking cultures. Students learn to use past tenses to talk about typical activities or to tell a story; to expand their basic vocabulary and ability to communicate in simple French; and to demonstrate basic understanding of aspects of French or Francophone culture that may differ from their own. Prerequisite: FRE 101 or equivalent.

FRE 105 Introduction to French Culture (3). A survey of contemporary French character and society. Using a historical perspective, attitudes, achievements, institutions and life styles of the French people are explored. Designed to satisfy the University Studies humanities requirement. Taught in English.

FRE 110 Basic Conversational French (3). A conversation-oriented introduction to pronunciation, essential structures, and vocabulary. Designed to enable students to communicate in simple French in everyday situations in French-speaking countries. Pronunciation, listening comprehension, speaking and simple reading and writing of material related to conversational situations are included. No continuation offered. Not applicable toward French major or minor. Only taught abroad.

FRE 201 Intercultural Communications in French (3). Students strengthen their basic language skills while continuing to broaden cultural awareness of French-speaking societies. Students relate experiences, produce brief reports on course topics, and express opinions concerning a variety of themes. Students learn to communicate on a more complex level in French. Taught in French. Prerequisite: FRE 102 or equivalent.

FRE 202 Practical Applications in French (3). Students advance their speaking, writing, reading, and listening language skills in this interactive course focused on the practical application of the language in contemporary French-speaking countries. Activities include role-play, projects, reports, and discussions of texts. Taught in French. Prerequisite: FRE 201 or equivalent.

FRE 203 French for the Working World (3). A continuation from FRE 201, this course is a practical application of French for the working world together with grammar review and with emphasis on communication skills on the formal level. Includes further practice in listening, conversation, reading and writing. Students may be required to attend and write a report on two approved cultural events or complete alternative cultural assignments. Taught in French. Students may receive credit for FRE 202 or 203, but not both. FRE 203 counts toward the minor and the major. Prerequisite: French 201 or equivalent.

FRE 210 Intermediate French Conversation (3). A course designed to develop the vocabulary and oral communication skills of the student with a background of one year of college French or equivalent. Emphasis will be placed on bringing the student into contact with French native speakers and various aspects of their culture. May count as an elective for French major or minor. Only taught abroad. Prerequisite: FRE 102 or equivalent.

FRE 301 Social Issues in French Texts (3). An exploration of social issues through the reading, discussion, and written analysis of authentic texts in French-speaking cultures in Europe, Canada, Africa, and the Caribbean. While examining these issues, the student will also learn and practice the rudiments of literary interpretation. Prerequisite: FRE 202 or permission of instructor.

FRE 302 Conversation and Composition (3). Additional practice in speaking and writing based on a variety of topics and materials. Prerequisite: FRE 301 or consent of the instructor.

FRE 305 Advanced Studies in French Culture (3). A survey of contemporary French character and society using a historical and socio-cultural perspective. Attitudes, achievements, institutions and lifestyles of the French people are explored. The course will introduce cross-cultural theory and address topics such as geography, history, art, architecture, education, government, economics, social systems and socio-political issues of France. Students will be able to explore specific topics according to their interests. Taught in English. Prerequisite: FRE 202 or permission of instructor.

FRE 306 Introduction to French Literature (3). An introduction to literary analysis, designed to develop skills in reading, oral expression and expository writing. A variety of genres will be presented: short story, poetry, the novel, and theater. Prerequisite: FRE 301 or 331 or permission of instructor.

FRE 310 Conversation and Composition Abroad (3). Intensive practice in speaking and writing based on the student's interaction with native speakers and the international setting. Only taught abroad. Counts toward the major and minor approved electives. Prerequisite: Two years of college French or equivalent.

FRE 314 Advanced French Culture Abroad (3). French culture taught in French and only taught in study-abroad programs in countries where French is a vernacular language. The course may include carefully planned excursions to a number of specific cultural sites in conjunction with reading about the sites and the intellectual history and milieu behind their conception. The student will explore the history, art, architecture, literature, politics, and music of the host country. Prerequisite: FRE 202 or equivalent, or consent of instructor.

FRE 315 Global Cinema in French (3). A study of French cinema and cinema in French beyond French borders, examining significant directors and film movements. This class includes a two hour per week film screening in addition to class meetings. This course is conducted in French. Prerequisite FRE 301 or 331.

FRE 323 French Culture and Civilization (3). A survey of the contributions of France to world culture including the historical development of France from prehistoric times through the French Revolution. Classes conducted in French with extensive use of visual aids. Prerequisite: FRE 301 or 331 or permission of instructor.

FRE 324 Contemporary French Culture and Civilization (3). A survey of attitudes, achievements, and behavioral characteristics of the French people from 1800 to the present. Classes conducted in French with extensive use of audio and visual aids. Prerequisite: FRE 301 or consent of the instructor.

FRE 330 French Literary Texts in Context (3). Will be taught on summer abroad programs in French-speaking countries only. It is an introductory course in French and/or Francophone literature taught in French. Authentic texts might include poetry, short story, drama or excerpts from long works and might be from any literary period. An effort will be made to take advantage of residence in French-speaking countries through visits to sites that are related to the literature. Prerequisite: FRE 202 or 203, or permission of instructor.

FRE 331 Advanced Language Practice (3). Course will offer students the opportunity to expand their cultural and linguistic knowledge of French-speaking cultures through a central conceptual framework, such as an international conference, an apartment building, a hotel, or a business. Students will engage in extensive role-play and creative exercises to establish contexts, choose fictive identities, and improvise a series of encounters. Prerequisite: FRE 202 or permission of instructor.

FRE 332 Phonetics and Literature (3). In-depth study of French sounds, intonation patterns, articulation of words, and rhythm of sentences. Practice with the phonetic alphabet and discovery of French literary texts. Prerequisite: FRE 301 or 331.

FRE 401 Survey of French Literature I (3). Representative masterpieces of the novel, poetry and theatre from the Middle Ages to the eighteenth century. Prerequisite: FRE 301 or permission of instructor.

FRE 402 Survey of French Literature II (3). Representative masterpieces of the novel, poetry, and theatre for the nineteenth and twentieth centuries. Prerequisite: FRE 301 or 331 or permission of instructor.

FRE 419 European Cinema (3). Survey of European (including British) film by French, English, German, and Spanish directors in the original languages with English subtitles except for the English language films. Selected films will be organized around social themes, which will then be viewed from different national perspectives. The common discussion section on one day will be conducted in English to be accessible to students of all languages; the second discussion section will be conducted in French. Students are required to attend film viewings in a separate lab section. Prerequisite: FRE 301 or 331, or permission of instructor.

FRE 421 Topics in French Literature (3). Course content will vary according to the needs of the French program. May be repeated to a maximum of nine credit hours. Prerequisite: FRE 301 or 331 or permission of instructor.

FRE 430 Advanced Conversation and Composition (3). For the advanced student who has completed a 300-level conversation and composition course or who has had extensive experience with French language. Prerequisite: FRE 301 or 331 or permission of instructor.

FRE 441 Topics in French Cultural Studies (3). Course content will include a variety of factors that contribute to and reflect the cultural life, social themes, and national perspectives of French society. The course content will include literature and may include media and/or film. Students will write a research paper. May be repeated for a maximum of six credit hours. Prerequisite: FRE 301 or 331 or permission of instructor.

FRE 450 Literary Masterpieces in French (3). A general survey of the literary periods, major authors, and initial acquaintance with their work. May be repeated for a maximum of six credit hours. Prerequisite: FRE 301 or 331 or permission of instructor.

FRE 451 Directed Study (1-3). Independent work in the area of language, culture or literature, designed to meet the needs and interests of individual students. Prerequisite: FRE 301 or 331 or permission of instructor.

FRE 460 Studies in a Genre (3). The course will explore a particular genre, e.g., the novel, novella, drama, poetry, short story, and the theory behind the respective genre and an examination of a variety of works within that genre. May be repeated as a second course for up to six credit hours provided that the second course covers a different genre. Prerequisite: FRE 301 or 331 or permission of instructor.

FRE 501 Middle Ages Literature (3). A study of representative works of French literature dating from 1095 to 1600. Prerequisites: junior standing or above, FRE 301 or 331 or permission of instructor.

FRE 503 Seventeenth- and Eighteenth-Century Literature (3). A study of representative literary works from the period 1600 to 1795. Prerequisites: junior standing or above, FRE 301 or 331 or permission of instructor.

FRE 505 Nineteenth-Century Literature (3). A study of representative literary works published between 1800 and 1899. Prerequisites: junior standing or above, FRE 301 or 331 or permission of instructor.

FRE 507 Twentieth-Century Literature (3). A study of representative literary works published since 1900. Prerequisites: junior standing or above, FRE 301 or 331 or permission of instructor.

FRE 521 Topics in French Literature (3). Course content at the discretion of the instructor. Prerequisites: junior standing or above, FRE 301 or 331 or permission of instructor.

FRE 531 Advanced Grammar (3). A comparative study of the grammatical structures of French and English. Prerequisites: junior standing or above, FRE 301 or 331 or permission of instructor.

FRE 532 Phonetics (3). Introduction to linguistic terminology and principles of phonology with intensive individual diagnosis and practice of the French phonological system. Includes study and practice of the International Phonetic Alphabet. Prerequisites: junior standing or above, FRE 301 or 331 or permission of instructor.

FRE 551 Directed Study I (1-3). Independent work in areas of language, culture or literature, designed to meet needs and interests of individual students. Prerequisites: junior standing or above, FRE 301 or 331 or permission of instructor.

FRE 552 Directed Study II (1-3). Prerequisites: junior standing or above, FRE 301 or 331 or permission of instructor.

FRE 555 Study Abroad (3-9). Approved programs of travel and study in French-speaking countries. Repeatable up to nine hours. Prerequisites: junior standing or above, FRE 301 or 331 or permission of instructor.

FRE 621 Topics in French Literature (3). Course content at the discretion of the instructor. May be repeated for up to six hours of credit. Prerequisite: FRE 301 or 331 or permission of instructor.

FRE 651 Directed Study I (1-3). Independent work in areas of language, culture or literature, designed to meet needs and interests of individual students. May be repeated for up to six hours of credit. Prerequisite: FRE 301 or 331 or permission of instructor.

FRE 652 Directed Study II (1-3). Prerequisite: FRE 301 or 331 or permission of instructor.

FRE 655 Study Abroad (3-9). Approved programs of travel and study in French-speaking countries. Repeatable up to nine hours. Prerequisite: FRE 301 or 331 or permission of instructor.

FRESHMAN TRANSITIONS (FTR)

FTR 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

FRESHMAN YEAR EXPERIENCE (FYE)

FYE 098 New Student Orientation (1). Course designed to assist students admitted with conditions in the academic and social transitions associated with college life. The development of specific success skills such as time management, note-taking, study strategies, and academic and career guidance activities will be included in the class.

FYE 100 Transitions II (1). Course designed to assist students in the academic and social transitions associated with college life. The development of specific success skills such as time management, note-taking and study strategies, and career and academic guidance activities will be included in this class. Credit earned in this course may not be counted toward graduation requirements. Prerequisite: first semester, conditional admission status students with a declared major who are concurrently enrolled in a departmental 100T class or special population students by permission of instructor.

GRAPHIC COMMUNICATIONS MEDIA (GCM)

GCM 151 Introduction to Graphic Communications (3). Reviews the graphic reproduction systems of mass-communication including print manufacturing, digital imaging, computer animation, video capturing, customer service, business operations, and global media marketing. Lecture and laboratory.

GCM 152 Introduction to Digital Imaging (3). An introduction to production skills and critical awareness of digital media practices which include Internet production, video, gaming, still imaging, and 3D modeling. There is a strong emphasis on cross platform, digital communication, teamwork, and leadership skills. The course is designed to give direction to students who are computer literate, abut need information on the various opportunities available in the imaging world. Current computer programs are utilized. Lecture and laboratory.

GCM 153 Electronic Imaging (3). This course deals with the technology of electronic imaging relating to the field of graphic communications. The course covers image generation and electronic printing and publishing. Lecture and Laboratory.

GCM 250 Fundamentals of Photography and Photojournalism (3). Camera techniques and film selection. Experience with various cameras, photographic techniques, developing and printing procedures. Lecture and laboratory. Prerequisite: permission of instructor.

GCM 252 Digital Image Conversion (3). Introduction to converting continuous tone and line illustration to digital and film formats. Covers materials, equipment, camera/scanner operation, problem-solving, pre-flighting and imposition techniques. Lecture and laboratory. Prerequisite: GCM 151.

GCM 340 Introduction to Gravure (3). This course covers the magazine and packaging industry as they relate to high volume printing. Included in the course are: pre-flighting, customer service, press production, problem-solving techniques, and distribution systems. Prerequisite: GCM 151.

GCM 342 Finishing and Distribution (3). Introduction to post-press and finishing operations and distribution practices common to the packaging and printing industries. Course covers historical as well as modern aspects of finishing, embossing, foil stamping, die-cutting, and material fulfillment. Prerequisite: GCM 151.

GCM 350 Basic Color Photography (3). A study of color photographic materials and processes including color transparencies, negative analysis, internegatives, transparency duplicates, and color prints. Lecture and laboratory. Prerequisite: GCM 250.

GCM 351 Graphic Communication Processes (3). A study of printing and manufacturing reproduction processes. Includes: 1) traditional and modern image transfer, 2) finishing, 3) distribution, and 4) materials. Prerequisite: GCM 151.

GCM 354 Principles of Estimating (3). Analysis of printing cost procedures using regional costing data and norms. Also, determining cost of materials, equipment and human activity will be determined. Prerequisite: nine hours in graphic communications including GCM 153.

GCM 357 Industrial Photography (3). A study of photography as it is utilized by industry in problem-solving, security, and scientific and technical applications. Lecture and laboratory. Prerequisite: GCM 250.

GCM 358 Commercial Photography (3). A study of the making of photographs in the studio and on location; investigation of the photographic medium as a means of communicating ideas. Lecture and laboratory. Prerequisite: GCM 250.

GCM 359 Publication Photography (3). A study of the make-up of yearbooks and various other publications requiring photography, and the problems of the photographer in preparing materials for printing. Lecture and laboratory. Prerequisite: GCM 250.

GCM 360 Portraiture Photography (3). Formal and contemporary portraiture. Includes studio and informal techniques, printing and finishing instruction. Prerequisite: GCM 250.

GCM 365 Customer Experience in Graphic Arts (3). This course explores all aspects of customer service including, scheduling, human resources, manufacturing, finance, computer systems, and quality control. Prerequisite: GCM 151.

GCM 427 Professional Photographic Practices (3). The course introduces students to the business and marketing practices common to photography. Emphasis is placed on developing professional objectives based upon careful consideration of the financial, legal, organizational, promotional, interpersonal and ethical practices particular to photography. Prerequisite: permission of instructor.

GCM 440 Digital Photography (3). This course deals with desktop electronic imaging and digital photography. Explored is the use of photography and production photographs with a variety of computer hardware and software programs. Lecture and laboratory.

GCM 441 Desktop Multimedia (3). Desktop digital imaging and multimedia presentations are developed with a variety of hard and software. The course is designed to allow the student to cross-platform images from diverse electronic technologies. Lecture and laboratory. Prerequisite: GCM 153.

GCM 442 Digital Interactive Technology (3). This course introduces and explores digital interactive technology as an aspect of electronic imaging. It examines the use of digital technology in the production of interactive presentations; it includes a variety of currently used computer hardware and software. Lecture and laboratory. Prerequisite: GCM 153.

GCM 454 Color Management and Quality Control (3). Materials and procedures of color management and quality control procedures. Included are ICC profiles, spectrophotometry, densitometry, masking, color proofing, quality control devices, and color scanning. Lecture and laboratory. Prerequisites: GCM 151 and 153.

GCM 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

GCM 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses.

GCM 558 Trends in Graphic Communications (3). A study of management trends, technical advances, and problems as they pertain to the future of the communications industry. The course will include report writing, verbal presentations and a field experience. Prerequisite: senior standing and 30 hours of GCM courses or substitutes approved by instructor.

GENDER AND DIVERSITY STUDIES (GDS)

GDS 201 Introduction to Gender and Diversity Studies (3). This course will provide students with an interdisciplinary examination of the issues concerned with multiculturalism, economic and social class, and gender. Students will gain a broad historical perspective of how these factors have had an impact on the formation of America as a country and as a nation in the international context.

GDS 316 Women and Gender in World History (3). Introduction to the histories of women and gender in diverse societies. Topics include the origins of patriarchal institutions; women's cultures; feminist philosophies and movements; the role of family, work, society, and culture in creation gender and sexual distinctions; and theories and methods in the study of women and gender. (Same as HIS 316.)

GDS 351 Topics in Gender and Diversity (3). Changing topics in the study of gender and diversity, to be determined by the instructor. May be repeated for a maximum of six credit hours. Prerequisite: GDS 201.

GDS 356 The Art of Non-Western Cultures (3). Study of the arts of Asia, Oceania, Africa and the Pre-Western Americas. (Same as ANT, RGS 356.)

GDS 412 Directed Study in Gender and Diversity Studies (3). An independent study course in an area of multicultural, class and/or gender studies. Students must submit a study plan, along with the name of the faculty member with whom they have arranged to work, to the GDS committee for approval prior to registration. May be repeated for a maximum of six credit hours. Prerequisite: GDS 201.

GDS 600 Gender Theory and Research (3). Foundation course for graduate work in gender studies. Advanced survey of theories of gender and sexuality. Introduction to qualitative and quantitative research methods in gender studies. Field work may be required.

GDS 670 Lesbian, Gay, Bisexual and Transgender Studies (3). Survey of issues, theories, and interdisciplinary approaches in lesbian, gay, bisexual, and transgender studies.

GDS 680 Gender, Sexuality, and the Law (3). This course considers gender and sexuality in law and society, the role of law in subordinating women and sexual minorities, the use of law to address gender and sexual inequities, and the application of the gender studies methods to legal issues. The focus is on the broader relationship between law and society; no prior technical legal knowledge is required or assumed. Prerequisite: GDS 600 or permission of the instructor.

GDS 690 Seminar in Gender Studies (3-6). A seminar focusing on a topic, theme, or body of work in gender studies. May be repeated for a maximum of six credit hours if topics vary. Prerequisite: GDS 600 or permission of the instructor.

GDS 699 Scholarly Writing in Gender Studies (3). Capstone course consisting of advanced, original, independent research into a particular issue in gender studies resulting in potentially publishable essay. Prerequisites: GDS 600 and nine additional hours of coursework toward the Certificate in Gender Studies, or permission of instructor.

GERMAN (GER)

GER 101 Fundamental Communication in German (3). Basic German in which students learn to describe themselves to someone from another culture; to express preferences, abilities, needs, and obligations; to ask for information; to describe people, places, and things in their world; and to report their typical activities to a German speaker.

GER 102 Social Interactions in German (3). Expanding upon skills built in GER 101, students move toward increasing linguistic and social awareness of German-speaking cultures. Students learn to use past tenses to talk about typical activities or to tell a story; to expand their basic vocabulary and ability to communicate in simple German; and to demonstrate basic understanding of aspects of German culture that may differ from their own. Prerequisite: GER 101 or equivalent.

GER 105 Introduction to German Culture (3). A survey of the contemporary culture of Germany, Austria and Switzerland with emphasis on the values, behavioral characteristics, social and political systems and achievements of the German-speaking people. Conducted in English. No prerequisite.

GER 110 Basic Conversational German (3). A conversation-oriented introduction to pronunciation, essential structures, and vocabulary. Designed to enable students to communicate in simple German in everyday situations in German-speaking countries. Pronunciation, listening comprehension, speaking and simple reading and writing of material related to conversational situations are included. No continuation offered. Not applicable toward German major or minor. Only taught abroad. No prerequisite.

GER 201 Intercultural Communications in German (3). Students strengthen their basic language skills while continuing to broaden cultural awareness of German-speaking societies. Students relate experiences, produce brief reports on course topics, and express opinions concerning a variety of themes. Students learn to communicate on a more complex level in German. Taught in German. Prerequisite: GER 102 or equivalent.

GER 202 Practical Applications in German (3). Students advance their speaking, writing, reading, and listening language skills in this interactive course focused on the practical application of the language in contemporary German-speaking countries. Activities include role-play, projects, reports, and discussions of texts. Taught in German. Prerequisite: GER 201 or equivalent.

GER 203 German for the Working World (3). A continuation from GER 201, this course is a practical application of German for the working world together with grammar review and with emphasis on communication skills on the formal level. Includes further practice in listening, conversation, reading and writing. Students may be required to attend and write a report on two approved cultural events or complete alternative cultural assignments. Taught in German. Students may receive credit for GER 202 or 203, but not both. GER 203 counts toward the minor and the major. Prerequisite: German 201 or equivalent.

GER 210 Intermediate Conversational German (3). A course designed to develop the vocabulary and oral communication skills of the student with a background of one year of college German or equivalent. Emphasis will be placed on bringing the student into contact with German native speakers and various aspects of their culture. May count as an elective for the major or minor. Only taught abroad. Prerequisite: GER 102 or equivalent.

GER 301 Social Issues in German Texts (3). Intensive practice in speaking and writing based on a variety of topics and materials. Prerequisite: GER 202 or equivalent.

GER 302 Conversation and Composition (3). An exploration of social issues through the reading, discussion, and written analysis of authentic texts in German-speaking cultures. While examining these issues, the student will also learn and practice the rudiments of literary interpretation. Prerequisite: GER 301 or permission of instructor.

GER 306 Introduction to German Literature (3). An introduction to literary analysis, designed to develop skills in reading, oral expression and expository writing. A variety of genres will be presented. Prerequisite: GER 301 or 331 or permission of instructor.

GER 310 Conversation and Composition Abroad (3). Intensive practice in speaking and writing based on the student's interaction with native speakers and the international setting. Only taught abroad. Counts toward the major and minor approved electives. Prerequisite: Two years of college German or equivalent.

GER 314 German Cultural Heritage Abroad (3). This course taught in German and taught abroad, focuses on culture in German-Speaking countries. The course entails carefully planned excursions to a number of specific cultural sites in conjunction with readings about the sites and the intellectual history and milieu behind their conception. The student will explore the history, art, architecture, literature, politics, and music of the host country. This will only be taught on study-abroad programs in German-speaking countries. Prerequisite: Permission of instructor.

GER 323 German Culture and Civilization (3). A survey of the contribution of German-speaking people to world culture in art, music, science, education, philosophy and religion. Classes conducted in German. Prerequisite: GER 301 or 331 or permission of instructor.

GER 324 Contemporary German Culture and Civilization (3). A survey of the present-day culture of the German-speaking countries, including Austria, the Federal Republic of Germany, and Switzerland. Course includes the study of German dialects, geography, social and political systems and religious orientation. Classes conducted in German. Prerequisite: GER 301 or 331 or permission of instructor.

GER 330 German Literary Texts in Context (3). Will be taught in study abroad programs in German-speaking countries. It is an introductory course in German literature taught in German. Authentic texts might include poetry, short story, drama or excerpts from long works and might be from any literary period. An effort will be made to take advantage of residence in German-speaking countries through visits to sites that are related to the literature. Prerequisite: GER 202 or 203, or permission of instructor.

GER 331 Advanced Language Practice (3). Course will offer students the opportunity to expand their cultural and linguistic knowledge of German-speaking cultures through a central conceptual framework, such as an international

conference, an apartment building, a hotel, or a business. Students will engage in extensive role-play and creative exercises to establish contexts, choose fictive identities, and improvise a series of encounters. Prerequisite: GER 202 or permission of instructor.

GER 332 Phonetics (3). Contrastive study of German and English phonology with individual practice designed to improve pronunciation. Prerequisite: GER 202 or permission of instructor.

GER 401 Survey of German Literature I (3). Historical interpretation of representative literary works from the Medieval periods to the Enlightenment. Prerequisite: GER 301 or 331 or permission of instructor.

GER 402 Survey of German Literature II (3). Historical interpretation of representative literary works from Classicism to the present. Prerequisite: GER 301 or 331 or permission of instructor.

GER 419 European Cinema (3). Survey of European (including British) film by French, English, German, and Spanish directors in the original languages with English subtitles except for the English language films. Selected films will be organized around social themes, which will then be viewed from different national perspectives. The common discussion section on one day will be conducted in English to be accessible to students of all languages; the second discussion section will be conducted in German. Students are required to attend film viewings in a separate lab section. Prerequisite: GER 301 or GER 331 or permission of instructor.

GER 421 Topics in German Literature (3). Course content will vary according to the needs of the German program. May be repeated to a maximum of nine credit hours. Prerequisite: GER 301 or 331 or permission of instructor.

GER 441 Topics in German Cultural Studies (3). Course content will include a variety of factors that contribute to and reflect the cultural life, social themes, and national perspectives of German society. The course content will include literature and may include media and/or film. Students will write a research paper. May be repeated for a maximum of six credit hours. Prerequisite: GER 301 or 331 or permission of instructor.

GER 450 Literary Masterpieces in German (3). A general survey of the literary periods, major authors, and initial acquaintance with their work. May be repeated for a maximum of six credit hours. Prerequisite: GER 301 or 331 or permission of instructor.

GER 451 Directed Study (1-3). Independent work in the area of language, culture or literature, designed to meet the needs and interests of individual students. Prerequisite: permission of instructor.

GER 460 Studies in a Genre (3). The course will explore a particular genre, e.g., the novel, novella, drama, poetry, short story, and the theory behind the respective genre and an examination of a variety of works within that genre. May be repeated as a second course for up to six credit hours provided that the second course covers a different genre. Prerequisite: GER 301 or 331 or permission of instructor.

GER 501 Literature Before 1600 (3). A study of major works chosen to present prominent themes and important literary developments within the period. Prerequisites: junior standing or above, GER 301 or 331 or permission of instructor.

GER 503 Seventeenth- and Eighteenth-Century Literature (3). A study of major works chosen to present prominent themes and important literary developments within the period. Representative authors such as Goethe, Schiller, Novalis and Kleist will be treated. Prerequisites: junior standing or above, GER 301 or 331 or permission of instructor.

GER 505 Nineteenth-Century German Literature (3). A study of literary developments during the era of the industrial revolution and political reform in Germany. Works by Buchner, Heine and representative authors of Poetic Realism and Naturalism will be treated with secondary emphasis placed on the emergence of the *Biedermeier* tradition. Prerequisites: junior standing or above, GER 301 or 331 or permission of instructor.

GER 507 Twentieth-Century Literature (3). A study of the literature and the policies affecting literature during the Weimar Republic, the Third Reich, Post-War Literature and the *Gruppe 47*, and contemporary developments. Prerequisites: junior standing or above, GER 301 or 331 or permission of instructor.

GER 521 Topics in German Literature (3). An in-depth course treating a topic in German literature. Selected according to the needs and interests of the students. Prerequisites: junior standing or above, GER 301 or 331 or permission of instructor.

GER 531 Advanced Grammar (3). A specialized study contrasting German and English grammatical structures and usage. Prerequisites: junior standing or above, GER 301 or 331 or permission of instructor.

GER 532 Phonetics (3). Contrastive study of German and English phonology with individual practice designed to improve pronunciation. Prerequisites: junior standing or above, GER 301 or 331 or permission of instructor.

GER 551 Directed Study I (1-3). Independent work in areas of language, culture or literature, designed to meet needs and interests of individual students. Prerequisites: junior standing or above, GER 301 or 331 or permission of instructor.

GER 552 Directed Study II (1-3). Prerequisites: junior standing or above, GER 301 or 331 or permission of instructor.

GER 555 Study Abroad (3-9). Credit given for approved projects of study in a German-speaking country. Repeatable up to nine hours. Prerequisites: junior standing or above, GER 301 or 331 or permission of instructor.

GER 621 Topics in German Literature (3). An in-depth course treating a topic in German literature. Selected according to the needs and interests of the students. May be repeated for up to six hours of credit. Prerequisite: GER 301 or 331 or permission of instructor.

GER 651 Directed Study I (1-3). Independent work in areas of language, culture or literature, designed to meet needs and interests of individual students. May be repeated for up to six hours of credit. Prerequisite: GER 301 or 331 or permission of instructor.

GER 652 Directed Study II (1-3). Prerequisite: GER 301 or 331 or permission of instructor.

GER 655 Study Abroad (3-9). Credit given for approved projects of study in a German-speaking country. Repeatable up to nine hours. Prerequisite: GER 301 or 331 or permission of instructor.

GLOBAL LANGUAGES AND THEATRE ARTS (GLT)

GLT (MLA/THD) 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

GLT (MLA) 101 Elementary Modern Language I (3). A thorough study of the basic structure and sounds of a particular language which is not regularly offered at Murray State University. Equal emphasis will be placed on the four skills of speaking, writing, listening and reading. The languages taught under this title will vary.

GLT (MLA) 102 Elementary Modern Language II (3). A continuation of GLT 101. Prerequisite: GLT 101 or equivalent.

GLT (MLA) 104 A Cultural Introduction to Languages (3). A general introduction to the origin, development, nature, and importance of English, French, German, and Spanish. A broad study of the culture of the people and the lands where these languages are spoken.

GLT (MLA) 105 Introduction to Contemporary Culture (3). A survey of the contemporary culture of a selected country or geographic region with emphasis on values, behavioral characteristics, social and political systems and achievements of that culture. Conducted in English. No prerequisite.

GLT (MLA) 110 Basic Conversational Language (3). A conversation-oriented introduction to the sound system and basic structural patterns of a modern language. Pronunciation, listening comprehension, speaking, reading and writing of material related to conversational situations are included. Not applicable toward a major or minor in foreign language. No prerequisite. Only taught abroad.

GLT (MLA) 201 Intermediate Modern Language I (3). A continuation of GLT 102. Prerequisite: GLT 102 or permission of instructor.

GLT (MLA) 202 Intermediate Modern Language II (3). A continuation of GLT 201. Prerequisite: GLT 201 or permission of instructor.

GLT (MLA) 210 Intermediate Modern Language Conversation (3). A course to develop the vocabulary and oral communication skills of the student with a background of one year's study of the same foreign language in college or its equivalent. Prerequisites: 101 and 102 of the same language.

GLT (MLA) 314 Cultural Heritage Abroad (3). Course taught in English and taught abroad, focuses on culture in a particular country or region. The course entails carefully planned excursions to a number of specific cultural sites in conjunction with readings about the sites and the intellectual history and milieu behind their conception. The student will explore the history, art, architecture, literature, politics, and music of the host country. This will only be taught abroad. May be repeated for up to six hours credit if the courses are taken in two different cultures. Prerequisite: consent of instructor.

GLT (MLA) 392 Professional Engagement (1). A practical course for global language majors. Each student will work 25 hours on an approved project utilizing skills related to language studies. Graded pass/fail. May be repeated once with a different project. Prerequisites: junior standing or above, 301 or 331, (in any of the languages offered by the Department of Global Languages and Theatre Arts) and permission by the chair.

GLT (MLA) 400 Senior Seminar (3). In this course, students complete a comprehensive departmental portfolio, present for evaluation the senior research project, and explore professional matters relating to the language major including career opportunities. Students will also evaluate their academic and extracurricular experiences in the Department of Global Languages and Theatre Arts, as well as at MSU. Prerequisites: Global language major with completion of one of the following FRE 301, 302, 331; GER 301, 331; JPN 301; or SPA 301, 302; junior or senior standing; pass the 300-level proficiency exam, one 400-level course or higher with a research element in-residence; or instructor's consent.

GLT 401 Principles of Translation and Interpretation (3). An overview of the basic concepts, scope, principles and methodology of written translation, and simultaneous and consecutive interpretation. Prerequisite(s): Global language major with completion of one of the following sequences: JPN 301, 302, 331; or SPA 301, 302, 331; or permission of instructor.

GLT (MLA) 510 Applied Linguistics for Second Language Teaching (3). An overview of the basic concepts, scope, and methodology of the science of language in its historical and descriptive aspects, including topics and issues in current linguistic studies. The primary systems of language, psycholinguistics and comparative phonology are treated in depth. Prerequisites: ENG 310 and junior standing or above.

GLT (MLA) 514 Methods of Teaching Foreign Languages (3). Designed to prepare students for the teaching of foreign languages in the public school. Current teaching philosophies, techniques and materials, curriculum innovation and extracurricular activities discussed. Limited observation and performance in a language classroom. Prerequisites: EDU 303 and junior standing or above.

GLT (MLA) 520 Computer Assisted Language Learning (3). An introduction to computer assisted language learning (CALL), an overview of its specialized vocabulary and a review of research regarding its effectiveness. Prerequisite: junior standing or above.

GLT (MLA) 523 Testing and Evaluation in Second Language Teaching (3). A review of a number of current methods for classroom/standardized language testing and evaluation. Prerequisite: junior standing or above.

GLT (MLA) 533 Language and Culture (3). A study of the relationship among language, society and the individual's concept of reality. The course examines a variety of anthropological and ethnographic concepts and findings as they relate to language and language learning in its broadest context. The course will also examine socio- and comparative linguistics, the relationship between culture and language, and the implications for second language teaching. Prerequisite: junior standing or above.

GLT (MLA) 551 Directed Study in Modern Language I (1-3). Independent work in areas of language, culture or literature designed to meet the needs and interests of individual students. May be repeated up to a maximum of six credit hours. Prerequisite: two years in college of the same foreign language or the equivalent. junior standing or above.

GLT (MLA) 614 Methods of Teaching Foreign Languages (3). Designed to prepare students for the teaching of foreign languages in the public school. Current teaching philosophies, techniques and materials, curriculum innovation, and extracurricular activities discussed. Limited observation and performance in a language classroom. Prerequisite: EDU 303.

GLT (MLA) 651 Directed Study in Modern Language I (1-3). Independent work in areas of language, culture, or literature designed to meet the needs and interests of individual students. Prerequisite: two years in college of the same foreign language or the equivalent.

GIFTED AND TALENTED EDUCATION (GTE)

GTE 655 Creativity in Teaching (3). A comprehensive course designed to help participants: (1) explore and enhance their own creative powers; (2) learn how to teach creative problem-solving techniques and creative habits of mind to others; and (3) become aware of the variety of theoretical frameworks, research results and measurements which are available in the area of creativity.

GTE 691 Nature and Needs of the Gifted Student (3). A course to provide opportunities for experienced teachers and teacher trainees to develop knowledge and awareness of the characteristics and needs of gifted children and youth, and provides the individual student with opportunities to apply general educational principles for the gifted and talented to total educational concerns.

GTE 692 Methods and Materials for Teaching Gifted Students (3). This course will focus upon the development of instructional strategies and curriculum materials for use with youngsters with high ability and/or potential. Prerequisite: EDU 691 or permission of instructor.

GTE 693 Educational Programs for Gifted Students (3). A course designed to give experience and develop skills in effective planning, organization and execution of educational programs for gifted students. Prerequisite: EDU 691 and 692, or permission of instructor.

GTE 694 Supervised Practicum in Gifted Education (3). A course designed to provide field experience so the teacher may apply principles and educational procedures for teaching gifted students. This course requires a portfolio score of 82 or above. Repeatable to six hours. Prerequisites: EDU 691 and 692; and either EDU 655, 693, or 695.

GTE 695 Multicultural Gifted Education (3). This course is designed for teachers and counselors to learn practical strategies bridging the fields of gifted education and multicultural education. Theory and practice will be considered to enable educators to help gifted students reach their full potential in multicultural settings. Prerequisite: EDU 691 and 692.

GTE 696 The Social-Emotional Development of Gifted Students (3). Course focuses on the social-emotional development of gifted students. Topics include, but not limited to, various social-emotional characteristics, potential problems and challenges, a verity of special needs, and support and guidance from school and family. It is expected that this course will help students expand their knowledge and understanding of social-emotional issues that gifted students may experience and help them initiate and develop classroom, school, district, family, and community support systems.

GERONTOLOGY (GTY)

GTY 207 Inclusive Recreation (3). A survey of the characteristics and recreational needs of the various types of exceptional children and adults. (Same as REC 207.)

GTY 264 Psychology of Aging (3). The study of the biological, cognitive, affective and social aspects of the aging process. The normal and pathological conditions of aging are emphasized. The interaction of the aged and society is also considered. Prerequisite: PSY 180. (Same as PSY 264.)

GTY 265 Psychology of Death (3). A study of the place of death in the process of human development. Two viewpoints will be stressed: death of self and death of others. Emphasis will be given to the cultural, social, biological and affective aspects related to the final stage of life. Customs, medical practices, financial concerns, legal matters and scientific issues will be considered. Prerequisite: PSY 180. (Same as PSY 265.)

GTY 303 Community Leisure Organizations (3). Study of administrative and leadership procedures related to leisure organizations in the community. (Same as REC 303.)

GTY 305 Services to Older Americans (3). An examination and study of the social problems experienced by older Americans and the modes of social intervention employed by society through the aging network to assist the aging and aged. Prerequisite: junior standing. (Same as SWK 305.)

GTY 330 Death and Dying: Issues for Caregivers (3). Course addresses concepts of cultural, social, and biological aspects for caregivers as they interact with persons in the final stages of life. Methods of assessment, attitudinal change, and skill development that enhance successful communication with families and patients will be included. Field trips will be required. (Same as HEA 330.)

GTY 340 Medical Sociology (3). An examination of sociological perspectives on health and illness. Particular emphasis will be placed upon health disparities, the social demography of illness, access to and delivery of health care, structure and organization of health care institutions, and societal responses to problems of illness and disease. (Same as SOC 340.)

GTY 341 Social Gerontology (3). An introduction to the sociocultural dimensions of the problems of the process of aging and its impact on individuals and society. Prerequisite: SOC 133 or permission of instructor.

GTY 342 Sociology of Retirement (3). Examination of retirement as a process, an event, and a role. Aspects of retirement as a social institution are reviewed with emphasis upon the implications for the social system. Prerequisite: GTY/SOC 341 or permission of instructor. (Same as SOC 342.)

GTY 400 Independent Studies (3). This course will allow different instructors in the gerontology minor to teach special topics not covered by classes regularly offered. Independent projects will cover a variety of issues, topics and class assignments.

GTY 520 Leisure and Aging (3). Introduction to the physiological, sexual and recreational aspects of aging in American society; exploration of the role of recreation with the aging; emphasis on planning leisure programs with the elderly. (Same as EXS/HEA/REC 520.)

GTY 521 Issues in Social Gerontology (3). A study of theory and research on aging, policies and programs related to nutrition, retirement, health and housing of elderly. Prerequisite: SOC/GTY 341 or permission of instructor.

GTY 596 The Minority Elderly (3). This course focuses on the minority elderly including racial, ethnic and lower income groups. Applicable concepts and theories in social gerontology will also be covered. Prerequisite: nine hours of anthropology, gerontology or sociology, or permission of instructor. (Same as ANT 596.)

GUIDANCE (GUI)

GUI 097 Self-Realization and Career Investigation (3). A course developed especially for Student Support Services students as a prerequisite to GUI 100. The course is designed to enhance students' abilities to examine and identify their values. Decision-making skills which are essential to value clarification, occupation, and course work choices are confirmed through role playing and class discussion. Computer software will be used for the purpose of career investigation. Prerequisite: permission of instructor. Credit earned in this course may not be counted toward graduation requirements.

GUI 100 Self-Development and Career Exploration (1-3). A study of decision-making as it relates to the student's life experiences. In-class activities teach the concepts of decision-making, time management, career planning, assertiveness and communication skills. Credit for general elective.

GUI 119 Solutions for Future Success (1). Course designed specifically for participants in Student Support Services to assist students in acclimating to college life. The development of specific success skills with an emphasis on self-assessment, wellness, campus resources and involvement, as well as utilization of on-line resources.

GUI 121 Advanced Strategies for Academic Success (1). Course designed specifically for participants in Student Support Services to assist students development advanced strategies for academic success.

GUI 122 Attitude, Motivation and Personal Development (1). Course developed especially for Student Support Services participants. The course is designed to enhance students' abilities to examine and identify attitude, beliefs, and values as they pertain to motivation and personal development.

GUI 120 Strategies for Academic Success (1). A course designed to assist students in the academic study strategies associated with college life. The development of specific success skills such as attitude, concentration, motivation, self-discipline, self-testing, selecting main ideas, using support materials, time management and test taking strategies will be included in this class. Prerequisites: Must be a Student Support Services participant. Instructor permission required.

GUI 188 Cooperative Education/Internship (1-3). A meaningful, planned and evaluated work experience related to career exploration and educational objectives of the student for which he/she may receive both academic credit and financial remuneration. GUI co-op courses may be repeated to a maximum of four credits and cannot count as an elective toward a major, minor or area. Graded pass/fail. Prerequisites: freshman/sophomore status with permission of instructor and approval of co-op coordinator.

GUI 251 Seminar in Leadership Development and Experiential Activities I (1-3). This course is designed to introduce the dynamics and concepts of leadership and its application. The concepts to be applied will be taught in the class and followed through in university activities. Prerequisite: permission of instructor. May be repeated once for credit. Graded pass/fail. *Note: A maximum of six hours of credit may be earned or scheduled from any combination of GUI 251, 252, and 450.*

GUI 252 Seminar in Leadership Development and Experiential Activities II (1-3). Continuation of GUI 251. May be repeated once for credit. *Note: A maximum of six hours of credit may be earned or scheduled from any combination of GUI 251, 252, and 450.*

GUI 288 Cooperative Education/Internship (1-3). A meaningful, planned and evaluated work experience related to career exploration and educational objectives of the student for which he/she may receive both academic credit and financial remuneration. GUI co-op courses may be repeated to a maximum of four credits and cannot count as an elective toward a major, minor, or area. Graded pass/fail. Prerequisite: permission of instructor.

GUI 321 Career Preparation and Professional Development (1). Course developed especially for participants in Student Support Services to assist them in examining values, strengths, and weaknesses, as they pertain to choosing a career. Emphasis will be place on career investigation, job-seeking strategies, and developing a professional image.

GUI 450 Seminar in Personnel Services (3). This seminar will serve as an observation, discussion, participation and evaluation laboratory for individuals who are working in the areas of personnel services. May be repeated once for credit. Prerequisite: permission of instructor. *Note: A maximum of six hours of credit may be earned or scheduled from any combination of GUI 251, 252, and 450.*

HEALTH CARE ADMINISTRATION (HCA)

HCA 301 Overview of the Health Care Delivery System (3). This course is designed to provide the student with a basic understanding of the American health care system by focusing on the people, places and processes of health care delivery. The course surveys important trends in health care delivery and utilization and develops a model of the care seeking process. The major health care resources (personnel, facilities and programs, and the government) and processes (financing, planning and quality assurance) are discussed in detail. (Same as HIA 301.)

HCA 395 Cultural Diversity for Health Care Organizations (3). Course provides an overview of how to define and assess an organization's culture. The course will focus on cultural diversity and how this impacts health care organizations. Emphasis is placed upon developing cultural goals and an overall cultural diversity strategy. The course will focus on some successful healthcare cultures and how each of these cultures provides unique benchmarks.

HCA 405 Hospital and Health Services Administration (3). Prepares administrators and practitioners to manage health care organizations by introducing concepts and skills essential to effective health care administration.

HCA 410 Health Care Planning (3). A course designed to provide health care administrators and practitioners an understanding of the critical issues and techniques used in successful planning efforts, including a comparison of public sector program planning and private sector strategic planning.

HCA 415 Financial Aspects of Health Service Organizations (3). A course designed to provide health care administrators and practitioners a basic understanding of health care financial management principles and their application to the practical aspects of managerial decision-making in health care facilities.

HCA 450 Human Resource Management in Healthcare (3). Concepts in human services management as applied to health services organizations are presented. Topics include the relationship between human resources management and general management, the nature of work and human resources, compensation and benefits, personnel planning, recruitment and selection, training and development, and employee appraisal and discipline. Labor relations topics focus on the history of the labor movement; legal regulations related to labor; union structure and formation; the analysis of union contracts; the collective bargaining process; grievance and arbitration; and the problems of managing with and without a contract. Prerequisite: HCA 405 or consent of instructor.

HCA 480 Special Problems in Healthcare Administration (1-3). This course is variable credit hours from 1 credit hour to 3 credit hours. This course provides an opportunity for students to engage in research at the undergraduate level. Research projects will be individually arranged with faculty members who agree to direct the research. This course may be repeated up to six credit hours. Prerequisite: Permission of instructor.

HUMAN DEVELOPMENT AND LEADERSHIP (HDL)

HDL 592 Group Processes (3). A study of the history and characteristics of group processes and structure as well as issues in leadership style and development of a model in small group interaction. May not be used toward school counseling certification.

HDL 625 Legal and Ethical Issues (3). Course will present the legal ramifications of work place compliance laws. Plus the ethical aspects of being in a leadership role in today's complex society. An in-depth examination of current contemporary issues in this area will highlight the course.

HDL 631 Educational Data Management Techniques (3). A study of educational data management techniques using the R programming environment for statistical computing and graphics.

HDL 632 Advanced Statistical Analyses of Educational Data (3). A study of advances statistical techniques (such as regression, power analysis, and bootstrapping) to analyze educational data using the R programming environment for statistical computing and graphics. Prerequisites: HDL 631.

HDL 633 Educational Data Mining (3). A study of educational data mining techniques using the R programming environment for statistical computing and graphics. Prerequisites: HDL 631.

HDL 634 Observational and Interview Data Assessment (3). A study of techniques for the collection and assessment of observation and interview data in educational and clinical settings.

HDL 655 Social Intelligence: Interpersonal Processes (3). Course is an option in of the core of Human Development and Leadership. It helps students to examine and explore the critical area of Social Intelligence, particularly interpersonal processes and effective social competencies.

HDL 660 Developing Human Potential Seminar (3). A course designed to familiarize students with those factors which prevent individuals from reaching their full personal, social and professional potential. Emphasis will be on developing student ability to recognize these factors and the skills for positively effecting individual potential.

HDL 670 Multicultural and Diversity Issues in Leadership (3). The purpose of this course is to focus on the role that cultural environment and diversity plays in the lives of people and the implications of those roles for leaders. There will be an overview of the different micro-cultures to which individuals belong, customs and traditions, diversity issues, with application to self and the role of leader. It is expected that the student will expand his/her multicultural and diversity perspectives and gain greater knowledge of the understanding and practice of intercultural leadership.

HDL 675 Assessment of Human Potential (3). Course focuses on the understanding and utilization of assessment related to personal and professional growth and development.

HDL 681 Leading and Developing Others (3). Course offers an in-depth examination of the complexities of leading others in a dynamic and ever-changing workplace. The applied nature of the course allows students to develop skills related to coaching and mentoring, as well as relational competencies associated with giving appropriate feedback, building leadership capacity in others and creating a workplace culture conducive for growth and development.

HDL 682 Leading Organizations: Processes of Critical Thinking & Problem Solving (3). Course presents approaches for leaders to facilitate change and transformation in organizations and communities. Processes for strategic planning, critical thinking, problem solving and decision-making are examined.

HDL 683 Assessment and Application of Leadership Research (3). This Capstone course offering provides students with an opportunity to explore advanced organizational research methodologies and information-gathering processes that are essential for leaders in the workplace. The course is designed to provide techniques and skills that students can utilize to advance their research project from ADM 630. Prerequisite: ADM 630.

HDL 684 Contemporary Issues in Leadership Development Seminar (3). The purpose of course is to investigate current trends and issues impacting leadership development. Special topics explored in course include contemporary practices in leadership effectiveness and efficiency, trends in leadership self-care and wellness initiatives and life-work integration. Additionally, topics include an overview of how to plan, design, and facilitate effective professional development and learning experiences for a multi-generational and global workforce.

HDL 692 Individual, Group and Team Dynamics (3). A study of the history and characteristics of group and team dynamics and structure focusing on development of a model for individual and small group and team development. Strategies will include theory and the effective utilization of individual, group, and teams for interventions, development, and facilitation of growth needs for diverse populations. May not be used toward school counseling certification.

HEALTH
(HEA)

HEA 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

HEA 101 Strategies for Success in College and Life (3). Course is designed to help high school students investigate some effective ways to approach college and life's challenges. It will teach the students practical strategies, hints, and tips that can lead to success. Topics include preparation, organization, work ethics, self-evaluation, and rethinking options. While enrolled in the class, students will be required to make one visit to a college/university of their choice.

HEA 190 Personal Health Issues (2). Course designed to educate students about wellness through the acquisition of knowledge, attitudes, and behaviors. The major health-related problems in society are addressed, as well as an understanding of individual developmental patterns and health needs. Broad ranges of factors affecting wellness, including identification of risks and health promotion behaviors, are covered. Topics include, but are not limited to, substance use and abuse, nutrition, sexually transmitted diseases, health risk factors, mental and emotional health, and exercise.

HEA 191 Personal Health (3). This course is designed to educate students about wellness through the acquisition of knowledge, attitudes and behaviors. The major health-related problems in society are addressed, as well as an understanding of individual developmental patterns and health needs. Personal fitness is assessed and activities that promote lifelong fitness are practiced. A broad range of factors affecting wellness, including identification of risk and health promotion behaviors, are covered. Topics include, but are not limited to, substance use and abuse, nutrition, sexually transmitted diseases, health risk factors, mental and emotional health, exercise.

HEA 195 First Aid and Safety (2). The purpose of this course is to give the student knowledge of the practice of first aid including the performance of cardiopulmonary resuscitation. Emergency Cardiac Care and First Aid certifications may be earned.

HEA 201 Introduction to Public and Community Health (3). Course is designed to address aspects of public and community health, survey career opportunities for health professionals, and explore the public, community, and health care delivery systems. Legal, ethical, and philosophical foundations of public and community health will be explored. Topics include health though the lifespan, promoting public and community health, environmental health, and health resources and services.

HEA 260 Introduction to Medical Ethics (3). Course will provide an introduction to basic ethical theory and various approaches to clinical ethical decision-making. This course will cover topics such as truth-telling, informed consent, disability and bioethics, conscientious objection, right-to-die, and responsible conduct of research. Clinical problems related to the practice of health professions will be examined contextually, with attention to institutional, cultural, discursive, and moral issues that undergird controversies in clinical ethics. The course aims to consider the defense of general views on the moral values involved in bioethics, as well as the complicated issues of applying this general knowledge to particular situations.

HEA 300 International Experience in Wellness (3). A study abroad experience highlighting selected historical and modern contributions to health and wellness in a particular country and culture. Prerequisite: consent of instructor.

HEA 301 Chronic and Communicable Diseases (3). Provides an overview of chronic and communicable diseases. Students will examine the processes used in modern society to assist in the identification, prevention, and control of disease. Emphasis will be placed on information and concepts required as foundation knowledge for community health professionals. Prerequisites: BIO 101 and HEA 191 or permission of instructor and overall GPA of 2.0.

HEA 302 Consumer Health (3). Course is designed to address the principles of consumer concepts, marketing, economic protections and source of information in selecting health products and services. Analysis of major consumer health issues and the social and psychological factors that influence consumer choices. Prerequisite: HEA 191 and 201, or permission of instructor and overall GPA of 2.0.

HEA 303 Health Behavior (3). Study of the major theories of health behavior and strategies used to implement health interventions. Students will examine the social, cultural, and environmental influences on behavior and the links between behavior and health. Emphasis will be placed on strategies for putting theory into practice via basic health counseling. Prerequisites: HEA 191 and PSY 180, or permission of instructor and overall GPA of 2.0.

HEA 304 Mental Health: A Public Health Perspective (3). Course is an introductory study of a broad range of common health behavior pathologies with emphasis on how these maladaptive behaviors interfere with one's health and how these behaviors can be an asset or hindrance to health behavior change. This will include the evolution of the biopsychosocial model (multidimensional integrative model), assessment and classification of psychological disorders, different theoretical perspectives on psychological disorders, research methods utilized in the study of psychological disorders, etiology of various psychological disorders, current approaches to treatment of these psychological disorders, treatment options under the United States health care system, mental health programming, cultural competency, and the public health side of mental health. Prerequisite: HEA 303 or permission of the instructor.

HEA 310 Biostatistics in Public Health (3). This course will cover principles of biostatistics in the context of public health application. It will include the basic and advanced statistical techniques for analyzing and investigating public health issues including disparities. A statistical package, like SPSS, will be used. Prerequisites: HEA 201 and MAT 140 or permission of instructor.

HEA 311 Epidemiology (3). Course will introduce and outline the science of epidemiology as it relates and contributes to the fields of public health, medicine, and the social sciences. Additionally, this course will focus on the epidemiology methods used to investigate health outcomes in different situations and populations through identifying causative and associative factors of disease and exposure. Prerequisites: HEA 201 and 310, PSY 300 or STA 135, MAT 140, and overall GPA of 2.0; or permission of instructor.

HEA 330 Death and Dying: Issues for Caregivers (3). This course addresses concepts of cultural, social, and biological aspects for caregivers as they interact with persons in the final stages of life. Methods of assessment, attitudinal change, and skill development that enhance successful communication with families and patients will be included. Field trips will be required. Prerequisites: HEA 110 or 191 or permission of instructor. (Same as GTY 330.)

HEA 338 Oral Health: A Public Health Perspective I (3). Course exposes students to the community-based role of the dental hygienist and the skills required to plan, implement, and assess an oral health promotion program focusing on access to care issues for underserved populations varied in age and setting. This course will prepare the student to complete one cycle of the health promotion program process applying theories, skills, and strategies discussed in class to provide a health promotion event within the local community. Prerequisite(s): HEA 303 or permission of the instructor.

HEA 350 Foundations of Community Health Education (3). Examines the concepts that form the foundation of standards-based comprehensive community health education and promotion. Reviews the National Health Education Standards, Unified Code of Ethics for Health Professionals, and the areas of responsibility for entry-level health educators as identified by the National Commission for Health Education Credentialing (NCHEC). Students will gain experience in designing health instruction for a variety of populations. Assessment plans, including rubrics, will be introduced as a mode for determining the success of health promotion programs. This course is part of the Service Learning Scholars program. Prerequisites: HEA 201 or permission of instructor and overall GPA of 2.0.

HEA 356 Health Promotion Programing (3). Provides practical application of the skills required to plan, implement, and assess a health promotion program for populations varied in age and setting. Students will complete one cycle of the process, applying theories, skills, and strategies discussed in class to provide a health promotion event within the local community. Prerequisite: HEA 303 or instructor permission. This course is part of the Service Learning Scholars program. (Same as EXS 356.)

HEA 360 Health Education Services (3). This course is designed to prepare the health education student with the skills necessary to coordinate and provide resources for health education programming and presentation. The purpose is to assist the student in assessing the available health-related services at the local, state and national levels, determining the resources and materials available for use in health education programs, and enhancing coordination and collaboration among personnel in health services and health education programs. Prerequisites: HEA 110, HEA 191, HEA 200 or permission of instructor.

HEA 386 Health and Disability (3). This course will address the evolving view of disability in the field of public and community health. Students will be introduced to a broad range of topics to increase their understanding of the contemporary experience of disability in America, such as the medical, psychosocial, vocational, political, and cultural aspects of disability. This course will examine how the intersection of education, employment, and/or environment impacts the health and wellbeing of people with disabilities and acquaint students with an array of service modalities used to address health and adjustment of people with disabilities. Prerequisite: HEA 201 or permission of instructor.

HEA 412 Environmental Health: A Public Health Perspective (3). Course examines factors in the environment that impact human health. This course is designed to explore ways in which humankind may control the environment in order to minimize deleterious effects on health and quality of life. Topics such as how certain environmental health conditions could be an asset or barrier to health, health behavior change, and community participation; environmental health advocacy, justice, and programming; the public health side of environmental health; and environmental epidemiology will be discussed. Prerequisite: HEA 201 or permission of the instructor.

HEA 415 Communication Techniques for Health Care Providers (3). Course explores various effective communication techniques for health professionals. Prerequisite: permission of instructor.

HEA 438 Oral Health: A Public Health Perspective II (3). Course exposes students to the community-based role of the dental hygienist and provides practical application of the skills required to plan, implement, and assess an oral health promotion program focusing on access to care issues for underserved populations varied in age and setting. This course will prepare the student to complete one cycle of the health promotion program process applying theories, skills, and strategies discussed in class to provide an oral health promotion even within the local community. Prerequisite: HEA 338 or permission of the instructor.

HEA 448 Health Policy (3). Course provides a systematic and critical review of health policy development, implementation, and evaluation. This course provides a comprehensive analysis of health policies and their impact on health care. This will include the policy process of health care in the United States, the impact of these policies at all levels of government, and the role of providers, industry, labor, and consumer in health policy. Prerequisites: HEA 201, HEA 302, and HCA/HIA 301; or permission of instructor.

HEA 460 Human Sexuality (3). This course is designed to acquaint students with issues of human sexuality. Topics include gender, sexual anatomy and physiology, love, sexual arousal and response, sexual behaviors and relationships, conception, pregnancy, contraception, sexually transmitted diseases including HIV/AIDS, and sexual victimization. The purpose is to examine human sexuality from biological, psychological, behavioral, clinical, and cultural perspectives. Prerequisites: HEA 303 and HEA 350 or permission of instructor and overall GPA of 2.5.

HEA 470 Education for Drug Abuse Prevention (3). This course seeks to develop the student's concept of drug education through in-depth exploration, research and discussion of problems related to alcohol, tobacco and other drugs. Special emphasis on the effects of abuse for the individual and on the effects of abuse for the individual and society. Prerequisites: HEA 303 and HEA 350 or permission of instructor and overall GPA of 2.5.

HEA 475 Health Assessment and Evaluation (3). Course presents concepts, procedures, and methods for the identification of population-based needs for public and community health interventions, development of programs to meet those needs, and evaluation of the effectiveness of these interventions. The course integrates several knowledge and skill areas including research methods, epidemiology, biostatistics, proposal writing, budget planning, project management, and program evaluation. Prerequisite: HEA 356 or permission of instructor.

HEA 480 Special Problems in Public and Community Health (1-3). Course provides an opportunity for students to engage in research at the undergraduate level. Research projects will be individually arranged with faculty members who agree to direct the research. This course may be repeated for a maximum of six credit hours. Prerequisite: permission of instructor.

HEA 490 Senior Seminar in Public and Community Health (1). This seminar course is for public and community health students with a primary focus on preparation of seniors for a variety of employment environments and professional development. Recommended for students enrolled in their next to last undergraduate semester. This course will help prepare students to participate in HEA 499. Prerequisite: senior standing or permission of instructor.

HEA 499 Professional Experience in Public and Community Health (3-6). A course designed for the public and community health major to serve with a community health organization or agency under the direction of faculty and field supervisors. This course is designed to be taken when the majority of other coursework has been completed and just prior to graduation. A minimum of 320 service hours are required. May be repeated for a maximum of six credit hours. Prerequisite: HEA 490, senior standing, permission of instructor, and overall GPA of 2.50.

HEA 520 Leisure and Aging (3). Introduction to the physiological, sexual and recreational aspects of aging in American society; exploration of the role of recreation with the aging; emphasis on planning leisure programs with the elderly. Prerequisites: senior standing, permission of instructor, and overall GPA of 2.5. (Same as EXS/GTY/REC 520.)

HEA 575 Human Sexuality II (3). This course is an advanced study of issues of sexuality including sexual exploitation, sexual victimization, sexual abuse, sexual harassment, altered body image and sexual function, family structures, the law and sexuality issues, and new research in sexual health. Prerequisite: HEA 460, senior standing, permission of instructor, and overall GPA of 2.5.

HEA 600 International Experience in Wellness (3). Course is designed to provide students with a faculty-led study abroad program that focuses on multicultural aspects of physical activity, health, wellness, and health-related services. Prerequisite: permission of instructor.

HEA 603 Health Behavior (3). Study of the major theories of health behavior and strategies used to implement health interventions. Students will examine the social, cultural, and environmental influences on behavior and the links between behavior and health. Emphasis will be placed on strategies for putting theory into practice via health counseling**.**

HEA 610 Biostatistics in Public Health (3). Course will cover principles of biostatistics in the context of public health applications. It will include the basic and advanced statistical techniques for analyzing and investigating public health issues including disparities. A statistical package, like SPSS, will be used.

HEA 611 Epidemiology (3). Course will introduce and outline the science of epidemiology as it relates and contributes to the fields of public health, medicine, and the social sciences. Additionally, this course will focus on the epidemiology methods used to investigate health outcomes in different situations and populations through identifying causative and associative fators of disease and exposure. Prerequisite: HIA 610 or permission of instructor.

HEA 612 Environmental Health: A Public Health Perspective (3). Course examines factors in the environment that impact human health. This course is designed to explore ways in which humankind may control the environment in order to minimize deleterious effects on health and quality of life. Topics such as how certain environmental health conditions could be an asset or barrier to health, health behavior change, community participation; environmental health advocacy, justice, and programming; the public health side of environmental health; and environmental epidemiology will be discussed. Prerequisites: HEA 611 and HEA 648, or permission of the instructor.

HEA 675 Health Assessment and Evaluation (3). Course presents concepts, procedures, and methods for the identification of population-based needs for public and community health interventions, development of programs to meet those needs, and evaluation of the effectiveness of these interventions. The course will integrate several knowledge and skill areas including research methods, epidemiology, biostatistics, proposal writing, budget planning, project management, and program evaluation period. Prerequisite: HEA 611 or permission of the instructor.

HEA 648 Health Policy (3). Course provides a systematic and critical review of health policy development, implementation, and evaluation. This course provides a comprehensive analysis of health policies and their impact on health care. This will include the policy process of healthcare in the United States, the impact of these policies at all levels of government, and the role of providers, industry, labor, and consumer in health policy. Prerequisite: permission of instructor.

HEALTHCARE INFORMATION ADMINISTRATION (HIA)

HIA 301 Overview of the Healthcare Delivery System (3). Course provides an overview of historical and contemporary topics associated with health care systems and their components. The course examines the complex components of the nation's health care system and their interactions including, organizational structure, financing, the impact of technology, utilization determinants and the involvement of federal agencies as well as private sectors. (Same as HCA 301.)

HIA 302 Legal Aspects of Health Information Administration (3). Course examines the legal dimensions of administration of quality health care. The course will explore legal issues that impact health care institutions, patients, and health care employees as well as current trends associated with changes in the law, technology, and populations. Prerequisites: BIO 220, CIS 317, and TSM 351.

HIA 303 Healthcare Coding and Classification (3). Course provides the student an introduction to the skills of medical coding and classification of disease, injuries, encounters, and procedures using standard applications of medical coding guidelines to support reimbursement of health care services. Prerequisite: BIO 220.

HIA 305 Health Administration and Management (3). Prepares administrators and practitioners to manage health care organizations by introducing concepts and skills essential to effective health care administration. Prerequisite: HIA 301 or permission of instructor.

HIA 310 Healthcare Planning (3). A course designed to provide health care administrators and practitioners an understanding of the critical issues and techniques used in successful planning efforts, including a comparison of public sector program planning and private sector strategic planning. Prerequisite: HIA 305 or permission of instructor.

HIA 401 Healthcare Quality Management (3). Course will explore the essential principles and techniques of quality improvement applied to patient care and the management of services in health care organizations will be emphasized. Prerequisites: HEA 310, PSY 300 or STA 135, HIA 301, and overall GPA of 2.5; or permission of instructor.

HIA 402 Medical Coding and Reimbursement Systems (3). Course provides the student with knowledge and skills needed to work in the health information field. Emphasis will be on a comprehensive overview of insurance, billing, medical coding, electronic records, and reimbursement systems. Students will learn about claim submissions, Health Insurance Portability and Accountability Act of 1996 (HIPPA) regulations, review of medical records, verification of patient benefits, secondary claims, posting payments, and appealing insurance decisions. Prerequisite: BIO 220 and HIA 303.

HIA 410 Healthcare Data Structures and Management (3). Course provides the student with the knowledge of standards and best practices needed to perform effective project management, information technology management, and change management for implementing digital medical records. The core management processes that take place within each knowledge area are reviewed. These areas include the initiating, planning, executing, controlling, and closing stages of a healthcare technology project. Prerequisites: HIA 401 and overall GPA of 2.5; or permission of instructor.

HIA 415 Financial Aspects of Health Service Organizations (3). A course designed to provide health care administrators and practitioners a basic understanding of health care financial management principles and their application to the practical aspects of managerial decision-making in health care facilities. Prerequisite: HIA 305 or permission of instructor.

HIA 480 Special Problems in Health Information Administration (1-3). Course provides an opportunity for students to engage in research at the undergraduate level. Research projects will be individually arranged with faculty members who agree to direct the research. This course may be repeated for a maximum of six credit hours. Prerequisite: permission of the instructor.

HIA 601 Overview of the Healthcare Delivery System (3). Course provides an overview of historical and contemporary topics associated with health care systems and their components. The course examines the complex components of the nation's health care system and their interactions including organizational structure, financing, the impact of technology, utilization determinants and the involvement of federal agencies as well as private sectors.

HIA 605 Health Administration and Management (3). Prepares administrators and practitioners to manage health care organizations by introducing concepts and skills essential to effective health care administration. Prerequisite: HIA 601 or permission of instructor.

HIA 610 Healthcare Planning (3). A course designed to provide health care administrators and practitioners an understanding of the critical issues and techniques used in successful planning efforts, including a comparison of public sector program planning and private sector strategic planning. Prerequisite: HIA 605 or permission of instructor.

HIA 615 Financial Aspects of Health Service Organizations (3). A course designed to provide health care administrators and practitioners a basic understanding of health care financial management principles and their application to the practical aspects of managerial decision-making in health care facilities. Prerequisite: HIA 605 or permission of instructor.

HIA 701 Healthcare Quality Management (3). Course will explore the essential principles and techniques of quality improvement applied to patient care and the management of services in health care organizations will be emphasized. Prerequisite: HIA 601 or permission of instructor.

HISTORY (HIS)

HIS 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Introductory seminar for all first semester history majors. Graded pass/fail.

HIS 105 History of Fashion (3). This introductory seminar examines major trends in fashion, with an emphasis on fashion as a historically and culturally constructed system that both reflected and shaped political, economic, social, and cultural systems.

HIS 106 Revolutions and World History (3). An introductory seminar on the history of revolutions. The course explores the concept of revolution and various contexts in which revolutions have taken place, and it examines examples such as the American, French, Haitian, Russian, Chinese, Mexican, and Iranian revolutions. This course helps students grapple with the difficult moral and ethical issues raised by revolutionary upheaval and its consequences for different groups in society.

HIS 108 The Holocaust (3). An introductory seminar focusing on the history of the Holocaust. This course explores the various genocidal projects implemented by Nazi Germany from 1933 to 1945. It also deals with issues of memory and with the legacies of the Holocaust for world history and seeks to engage students in the difficult moral and ethical questions raised by the Holocaust.

HIS 110 Special Topics in History for Study Abroad (3). Designed for students enrolled in a study abroad program, HIS 110 is an academic course involving both traditional classroom learning and experiential learning opportunities in an international setting. This course will cover a particular historical topic, period, personality or problem. Specific subject matter will vary according to student and faculty interest and in relation to study abroad locations and opportunities. Does not count toward history major or minor.

HIS 120 Exploring Chinese Cities: Heritage and Modern Life (3). This introductory seminar examines major themes of tradition, modernity, and globalization in the history of four Chinese cities: Beijing, Shanghai, Xi'an, and Qingdao. It also explores tourist attractions and day-to-day life in these Chinese urban centers.

HIS 130 Sports and Society in Modern America (3). Course will offer a survey of development of sports in American society since 1945. It will focus on the major spectator sports and emphasize international, professional, collegiate, and youth sports around the themes of race, gender, economics, and culture.

HIS 176 History of the United States Constitution (3). This course will analyze the historical development of the U.S. Constitution from its inception in the late seventeenth century to the present day.

HIS 201 Modern Europe (3). A study of major political, economic, social and intellectual forces in European history, tracing their development through the past five centuries. This course is designed both to provide history majors and minors with background for work in upper-level courses and to acquaint students in other fields of study with the persons, forces and values that have created modern Western civilization.

HIS 202 Understanding Global History (3). A study of major themes and methods of exploring global history. The course focuses on approaches to understanding the world and is designed to provide background for upper-level courses as well as to acquaint students with the forces and ideas that have shaped global history.

HIS 221 American Experience to 1865 (3). A thematic approach to the history of the U.S. to 1865, designed as a University Studies social science elective. Three basic themes will be included: the transplantation of European and African cultures to America and their interaction with the cultures of native American Indians; the emergence of distinctive American values and institutions and the establishment of the American nation; and the stresses that culminated in the Civil War.

HIS 222 American Experience Since 1865 (3). A thematic approach to the history of the U.S. since 1865, designed as a University Studies social science elective. Students will examine three themes: the forces that transformed America from a predominantly rural, agricultural society to a predominantly urban, industrial one; the rising political consciousness of various American groups and the expanding regulatory role of the federal government; and the emergence of America as a world power.

HIS 300 Introduction to Historical Studies (3). Introduction to the methods by which historians study the past and present their conclusions to the public. Students will be expected to write a research paper in which the emphasis will be placed on developing research skills, organizing the results in a coherent form, and developing an effective writing style. Required for history majors as a prerequisite for 400-level courses and recommended for anyone interested in developing research and writing skills. Prerequisites: ENG 101 and 102 or ENG 105 or 150; two of the following or transfer equivalents: HIS 201, 221, or 222.

HIS 301 Ancient History to the Fall of Rome (3). A study of the Near East, Greece and Rome with particular emphasis on the influences of these civilizations on modern Western civilization. Particular attention will be paid to the development of democratic and republican forms of government.

HIS 302 Medieval Europe (3). A survey of the major events in Western history from the Fall of Rome to the Renaissance, with special emphasis on those political, economic, social and cultural-intellectual forces and institutions that helped form the modern world outlook. (Same as RGS 302.)

HIS 304 The History of Ireland (3). A systematic investigation of the history of Ireland from first human habitation, with an emphasis on the period since 1500. The course will look at the development of, and interactions among, the various cultural/religious traditions of Ireland and the long struggle of the Irish people to attain self-government.

HIS 305 The Irish Diaspora (3). A systematic study of the dispersal of Irish people around the world, focusing on their interaction with the various host cultures they have encountered both as settlers and in other roles. Particular attention will be given to the Irish on the European continent and in Britain, the United States, Canada, Australia, South Africa, and South America, especially Argentina.

HIS 306 Europe in Renaissance and Reformation (3). A survey of the development of Western Europe, emphasizing the Protestant and Catholic Reformations, the Crisis of the seventeenth century, the Scientific Revolution, the English Revolutions of the seventeenth century, and France under Louis XIII and XIV. (Same as RGS 306.)

HIS 307 Imperial Russia (3). An exploration of Russia's history beginning with the establishment of an empire in the sixteenth century, to the reigns of Peter the Great and Catherine the Great, and the revolutions of 1917. Six themes will be stressed: the state's exercise of power, dissent and rebellion, social/gender relationships, intellectual thought, cultural production, and daily life.

HIS 308 Modern Russia (3). Course focuses on revolutionary and Soviet eras (1905-1991), as well as the years since the collapse of the USSR. Political, social, and cultural history are stressed.

HIS 309 Survey of World Religions (3). A study of the historical development of Christianity, Islam, Buddhism, and other world religions, with special attention to their similarities and differences. (Same as RGS 309.)

HIS 310 History at the Movies (3). This course, which treats films as cultural products and historical documents, explores the ways in which films represent the historical past, examines changes in popular understandings of the past, and considers debates over cinematic versions of history. Topics will vary depending on instructor.

HIS 311 Modern France (3). A study of political traditions which have divided French people, challenges posed to the Third Republic, and the transformation of French society since World War II.

HIS 312 Modern Germany (3). A study of the political, social-economic, and cultural history of Germany from the late eighteenth century to the present, with particular attention to how the history of Germany was connected to the affected broader European and global history.

HIS 313 Tudor and Stuart England (3). A study of the molding of the English monarchy and of the eclipse of its authority by the social and political groups which came to dominate Parliament by the seventeenth century.

HIS 315 Women in American History (3). This course will examine the position and contributions of women in American society from the colonial period to the present from the perspective of the major trends in American history. It will focus on significant women in each period, while emphasizing several particular themes.

HIS 316 Women and Gender in World History (3). Introduction to the histories of women and gender in diverse societies. Topics include the origins of patriarchal institutions; women's cultures; feminist philosophies and movements; the role of family, work, society, and culture in creation gender and sexual distinctions; and theories and methods in the study of women and gender. (Same as GDS 316.)

HIS 317 Modern Greece and Italy (3). A study of major themes and methods of exploring modern Greek and Italian history. This course focuses on the tremendous changes that occurred in these societies during the modern period and it examines the commonalities and connections between recent Greek and Italian history.

HIS 319 Europe Since 1945 (3). An advanced survey of the history, politics, and culture of post-WWII Europe. Particular attention will be given to the Cold War, the rise of the European welfare state, the formation of the European Union, and the challenges faced by an increasingly cosmopolitan Europe in the twenty-first century.

HIS 320 African-American History (3). A survey of the history of black Americans from their African heritage to the present. Special attention will be devoted to the African background, the experiences of slavery, and the various forms of black resistance to discrimination.

HIS 321 United States Social and Cultural History Since 1865 (3). The development of American society and thought since the end of the Civil War. Emphasis is placed upon the forces that have shaped the daily lives of the American people: racial and ethnic diversity, industrialization and urbanization, immigration, mass media, religious traditions, and modern transportation.

HIS 322 History of Religion in the United States (3). The historical development of organized religion in America, with special attention to the relationships between religion and other features of American society. (Same as RGS 322.)

HIS 323 The Great American West (3). A survey of the westward movement from the Mississippi River to the Pacific Ocean, beginning with the Lewis and Clark expedition in 1804 and ending with the closing of the frontier in 1890. Emphasis is placed on the political and economic development of the Trans-Mississippi region; attention will also be devoted to biography, social, institutions, and folkways.

HIS 324 Science in the Modern World (3). A survey of the development of science in the Western world from Newton to the present.

HIS 325 Disease in History (3). This course investigates the impact of disease on human society from ancient times to the 20th century. We explore how societies of the past have responded to both epidemic and endemic diseases, including plague, cholera, leprosy, influenza, syphilis, smallpox, and HIV. We also examine the history of germ theory, the development of biological weapons, and future threats to human health.

HIS 326 History of American Roots Music (3). Course is designed to provide undergraduates with an introduction to the historical development influences, and impact of American Roots Music. This course focuses upon early oral traditions and development of diverse recognized American musical forms, and the history of the evolution of American music as a mega-media industry and global force for social and political change.

HIS 327 America's Eastern Frontier to 1830 (3). A survey course that examines the European invasion during the contact era from the Atlantic Tidewater to the Mississippi River, the conquest and consolidation of the pre-colonial America to nationhood, and ends with Indian removal in 1830. Emphasis is place upon the frontier experience, cultural, social, and ethnic issues, population movements, the expansion of American ideals and institutions, and the history of American Indians.

HIS 329 The North American Indians (3). A history of the Indians of North America from the earliest times until the late nineteenth century. This course focuses on the cultures, customs and traditions of the various Indian civilizations of the United States.

HIS 330 Sports in America (3). This course will offer a survey of the institutional development of American sports from the colonial period to the present. It will focus on the major spectator sports and emphasize the role of professional sports as an institution of social mobility, the development of race relations, the bureaucratization and professionalization of sports as an entertainment industry, and the struggle of athletes for collective bargaining rights.

HIS 331 A Global History of Piracy (3). Course is designed to provide undergraduates with an introduction to the history of the universal phenomenon of piracy and its economics and global impact upon empires from piracy's beginnings to the present day. Particular emphasis will be given to how pirates shaped colonial economies, societies, and cultures of the U.S., Caribbean, Far East, Mediterranean, and Africa. World religions, cultural diversity, gender, and consolidation of empire are also discussed.

HIS 332 Colonial America to 1763 (3). An explanation of the transplantation of European and African culture to the United States, the adaptation of these cultures to the New World environment, their impact upon eastern Indian cultures and the rise of distinctly American institutions and ideas. The course will emphasize the evolution of English colonial policies and the comparison of New England, Middle Atlantic and Southern colonial experiences.

HIS 333 Military History of the United States (3). A consideration of American military history from colonial militias through the role of the military in Vietnam. Topics covered include the causes of war, methods of recruitment, military policies, and the effect of the industrial revolution and technology on war. (Same as MIL 333.)

HIS 334 Food and Agriculture in the United States (3). An exploration of the historical development of food and agriculture in the United States, from the colonial period to the present. Emphasis will be on agricultural production, labor conditions, technological changes, and environmental transformations, alongside developments in regional and national cuisines.

HIS 335 America in Revolution (3). Spanning the revolutionary and early national periods of American history, this course focuses upon the United States' transformation from colonies to a nation. It emphasizes the American struggle for independence, economic as well as political, and the clash of values, interests and ambitions that produced the American system of government.

HIS 340 Modern East Asia (3). This course is designed to provide undergraduates with an introduction to the history of the major countries of the Far East. The development of modern China and Japan will be examined, with special attention given to their varying responses to both western intrusion and internal social problems, from the seventeenth century to the present.

HIS 341 Civil War and Reconstruction (3). Covers the period from the beginning of the Civil War to the presidential election of 1877. If the course has a distinguishing emphasis, it is on political history, but the course gives due attention to military, economic and social history.

HIS 350 History of Latin America (3). A survey of Latin American history from pre-colonial times to the present. Special attention will be given to the early Indian Civilizations, Spanish colonization, the struggles for independence and the problems of Latin American nations in the modern world.

HIS 351 Global History of Childhood (3). Course is an examination of the historical experience of children and the evolution of the idea of childhood over time that will focus on how conceptions of childhood shaped that experience and led to current understandings of childhood. Topics include family life, child labor, education, material conditions, and health with an emphasis on the ways in which ideas about childhood and the experience of children are shaped by gender, race, class, and geographic location.

HIS 352 20th Century World (3). A history of the 20th century world from the age of High Imperialism to the end of the Cold War, the subsequent globalization (economic, political technological, environmental) and conflicts emerging from resistance to that process.

HIS 354 Ancient Near East (3). A survey of Near Eastern history from prehistoric times to the end of the Persian Empire. Included are the emergence and development of civilizations in Mesopotamia, Asia Minor, Syria, and the Levant; the origins and influence of Near Eastern religions including polytheistic cults, Judaism, and Zoroastrianism; and the development of societies from city-states to large territorial empires. Special attention will be given to the art, literature, philosophy, and material culture of the civilizations within the region. (Same as RGS 354.)

HIS 355 A Global History of Islam to 1800 (3). Course explores the emergence and expansion of Islam from the seventh to the eighteenth century. Topics will include the rise of Islam within its Middle Eastern context, the development of the caliphate, the question of succession, Middle Eastern experience of the Crusades, and the diverse expressions of Islam as it expanded throughout Asia, Africa, Europe, and the Americas. Islam will be studied as a global religion, examining the major movements and trends within Islamic theology, sciences, philosophy, art, and architecture. (Same as RGS 355.)

HIS 356 Modern Middle East (3). History of the Middle East from 1700 to present, emphasizing political, social, and economic development of the region. Topics include the decentralization of empires, European imperialism, nationalism, constitutionalism, secularism, and state building. (Same as POL 356.)

HIS 357 Modern Iraq and Iran (3). Course compares the histories of Iran and Iraq from 1500 to the present. The two neighbor states share a majority Shi'I

Muslim population, but have also developed bitter rivalries. Topics include economic, social, and political developments of the two nations.

HIS 359 Early India (3). The course examines the formation of India's traditions, cultures, and identities from c. 2500 B.C.E. to c. 1500 C.E. and analyzes the various approaches and perspectives that have contributed to our knowledge of this ancient past. An interdisciplinary approach is emphasized to better appreciate the rich diversity in art, literature, religions, and languages that accompanies the political, economical, and social changes of this period in India's distinctive regions and locales. Prerequisite: CIV 201 or 202.

HIS 360 Modern India (3). Course surveys the historical development of the peoples, nations and cultures of the Indian subcontinent since the seventeenth century. The course begins with the Mughal period, then examines British colonial rule, independence movements and Partition, and concludes with an analysis of the problems of post colonial nation-state building. The major themes and topics considered include representations of tradition and modernity in identity, culture and community, tensions between political and economic centralization and regionalism, and continuity and change in the organization of state, society and economy in imperial, colonial and postcolonial India. Prerequisite: CIV 201 or CIV 202.

HIS 361 Teaching History (3). Teacher candidates will apply content knowledge, educational philosophies, learning theories, differentiated instruction, classroom management strategies, effective assessment practices, instructional technology, co-teaching strategies, student advocacy, and content-area literacy in 8-12 social studies/history classes. Emphasis will be placed on roles of teachers, students, parents, school, and community as educational partners. Candidates will design and implement culturally relevant, developmentally-appropriate instruction for all students in social studies/history content settings. Clinical experiences required. Prerequisites: EDU 380 or equivalent with a grade of *B* or higher and admission to Teacher Education.

HIS 362 Ancient Egypt (3). A survey of Egyptian history from prehistoric times to the Late Period. Included are developments during the pre- and proto-dynastic periods, the formation and general history of the Old, Middle, and New Kingdoms, and the collapse of Egyptian society leading to the Persian conquest. Topics covered will include Egyptian religious beliefs, organization, daily life, and contributions to world culture. (Same as RGS 362.)

HIS 363 Ancient Greece (3). A survey of Greek history from prehistoric times to Alexander the Great. Included are developments during the Bronze Age Minoan and Cycladic cultures; Mycenaean civilization; the origin and formation of the Greek city-state; and the history of individual city-states such as Athens and Sparta. Special attention will be given to Greek art, literature, and philosophy, as well as the impact of Greek culture on later civilizations. (Same as RGS 363.)

HIS 364 Ancient Rome (3). A survey of Roman history from prehistoric times to the Third Century Crisis. Included are the origins of the city of Rome; the Roman monarchy; the origin and formation of the Roman Republic; Republican society and philosophy; the transition from Republic to Empire; and the impact of Rome on the territories and peoples it conquered. Special attention will be given to Roman artistic, literary, and philosophical influences, as well as the impact of Roman culture on later civilizations. (Same as RGS 364.)

HIS 370 History of Africa (3). A survey of the main trends in African history from the origins of man through the successes of African nationalism in the mid-twentieth century. Emphasis will be placed on the development of African civilizations, their interaction with Islamic and European civilizations, and the adaptations resulting from those contacts.

HIS 380 Introduction to Public History (3). An introduction to the various areas in which historians work outside academe, including museums, historic preservation programs, archives and special collections libraries, and oral history programs, among others.

HIS 381 Environmental History of the Americas (3). This course examines American environmental history from a global perspective. It emphasizes patterns of environmental practices in Native American, European, and African contexts as a basis for studying the ecological history of the Americas in the modern period, and engages in a comparative analysis of how colonialism an imperial expansion affected ecological practices in the United States and Latin America. Field trip may be required.

HIS 382 Ecological History (3). This interdisciplinary course emphasizes the historical relationship between humans and the physical environment in world history and explores theoretical questions about the meaning of "nature" and the place of humans in the "natural world." Field trip may be required.

HIS 385 The Atlantic World (3). Course surveys the history of the "Atlantic World", defined as a zone of interaction between peoples in Europe, Africa, and the Americas. It explores transatlantic connections from 1450 through the nineteenth century and questions whether the cultural, social, ecological, economic, and political links across the ocean during this period integrated a fundamentally Atlantic World. While focused on the Atlantic, this course considers parallel developments in the histories of colonization and empire in the Indian Ocean and Pacific regions.

HIS 390 Special Topics (3). A course designed as an elective for the general student; it will cover a particular topic, period, personality or problem of the past. Specific subject matter varies from semester to semester, according to student and faculty interest. Open to history majors and minors with approval of the instructor. May be repeated for a maximum of nine credit hours with permission.

HIS 400 Professional Engagement Senior Seminar (3). An applied learning capstone course for history majors based on research, writing, oral forum presentation and evaluation of a senior research project, in which the student will work at least twenty-five hours on an approved project utilizing skills related to the study of history. Required for all history majors. Prerequisites: HIS 300 and senior standing or permission of the instructor or department chair.

HIS 401 The French Revolution (3). This course has three main areas of emphasis: eighteenth-century French society and culture, the causes of the French Revolution, and the career of Napoleon Bonaparte. The course's main theme is that the Revolution was a watershed in history.

HIS 402 Nineteenth-Century Europe (3). A social, political and cultural history of Europe's great age, the period from the French Revolution and Napoleon to the outbreak of the First World War.

HIS 403 Europe Since 1914 (3). Readings on topics in twentieth-century Europe since 1914. Students should have a basic understanding of European history. Prerequisite: HIS 201 or 202.

HIS 407 Modern Imperialism and Colonialism (3). Advanced survey of the history, politics, economics, and culture of global empires since the fifteenth century. Particular emphasis will be given to the European colonial empires in the Americas, Asia, and Africa. States such as the Ottoman, Qing, and Japanese empires will also be discussed. The course explores how modern empires were built and maintained, the ways in which colonized people sought to deal with empire, the effects of imperialism on home countries, and the reasons that empires collapsed.

HIS 410 Modern Britain and Empire (3). A study of Britain since the Stuarts, including its age of greatness in the nineteenth century and its decline in the twentieth century. Political and cultural history are emphasized.

HIS 413 Revolutionary Russia (3). A study of the Russia revolutionary era, from the late tsarist to the early Soviet era. The course examines the sources, process, and consequences of revolution, stressing political, economic, social, and cultural transformation. Differing historical interpretations of Russia's revolutions will also be considered.

HIS 414 Europe During World War I and World War II (3). An introductory survey of European history from 1914 to about 1945. It will describe and analyze the events leading to both World Wars as well as some of the consequences of those wars, delineating the major military figures and the military history of the World Wars.

HIS 415 Women in History (3). An examination of the position and contributions of women in history. Topics will vary.

HIS 418 World War II in Asia and the Pacific (3). The course will examine the origins of the course of the war that began in Manchuria in 1931, expanded to China south of the Great Wall in July of 1937, from there to Pearl Harbor, Southeast and South Asia and the Pacific Islands by late 1941, and ended at Hiroshima and Nagasaki.

HIS 419 The Third Reich (3). An advanced survey of the history, politics, and culture of the Third Reich in Germany (1933-1945). This course will cover the rise, fall, and aftermath of the Nazi regime with a particular emphasis on the Holocaust and the Second World War. Prerequisites: HIS 300 or permission of instructor.

HIS 421 United States Social and Cultural History to 1865 (3). The development of American society and thought from the colonial period to the end of the Civil War. Special emphasis is placed upon the forces that have shaped the daily lives of the American people: immigration, religious traditions, the frontier, economic change, ethnic diversity, slavery, and war.

HIS 424 United States Foreign Relations Since 1898 (3). An analysis of the United States' relations with other nations since 1898. Special emphasis is placed on the role of "ideals and self-interest" in foreign relations.

HIS 433 Jacksonian America and Sectional Conflict (3). Covers the period from 1815 to the presidential election of 1860 and the break-up of the union. Emphasis is on the political, social and economic conditions as they related to the sectional controversy that raged during this part of the nineteenth century. Some specific topics include the rise of the common man, the Jacksonian era, slavery, and the abolitionist movement.

HIS 435 Transformation of America 1877-1929 (3). A study of the transformation of the United States from an agricultural to a modern industrial nation. Topics included within this broad theme are the rise of big business and labor unions, urbanization, immigration, the closing of the frontier, reform movements, the struggles of blacks and women for equal rights, national politics, and cultural changes.

HIS 436 Recent America (3). A study of the Great Depression, the New Deal, World War II, and the subsequent forces that have shaped contemporary American life. Emphasis is placed on the role of the United States in international relations, the civil rights movement, and domestic economic developments.

HIS 441 History of the Old South (3). A survey of southern history from colonial times through the Civil War. Emphasis is placed on examining slavery, social life, the emergence of southern nationalism, and the South during the Civil War.

HIS 442 History of the New South (3). A survey of southern history from the end of the Civil War to the present. Emphasis is placed on the enduring characteristics of the South as well as the process of change since World War II.

HIS 446 (346) History of Kentucky (3). The process of political, economic and social evolution in Kentucky is traced from early settlement to the modern era. Geographical influences upon the patterns of Kentucky development, Kentucky's changing role within an expanding union, and the Commonwealth's participation in national movements and events are stressed.

HIS 449 Islam in the Modern and Post-Modern World (3). The course will examine major trends and movements within Islam from the eighteenth century until today, including Salafism, Wahhabism, post-colonialism, nationalism, feminism, terrorism, and jihadism. In addition to considering developments in the Middle East and North Africa, this course will explore expressions of Islam around the globe, particularly in South Asia, Africa, Europe, and North America. (Same as RGS 449.)

HIS 450 Modern Africa (3). A study of Africa since about 1880, including the transformation of African societies in contact with other cultures, the growth of nationalism and nationalist movements, and the questions of African unity and neocolonialism. (Same as POL 450.)

HIS 451 Africa, Slavery and the Diaspora (3). An advanced survey of the history of slavery in Africa and the African diaspora. This course closely examines the period from 1400 to 1800, as well as slavery in Africa in the nineteenth and twentieth centuries. Particular emphasis will be given to the effects of slavery on the social and political fabric of Africa and the world beyond.

HIS 456 The Arab-Israeli Conflict (3). Study of the historical background to the conflict between the state of Israel and the Arab states. Examines the origins of Zionism and of Arab nationalism in the 19th century, the phases of Jewish settlement in Palestine, the consequences of the First World War for Zionist and Arab nationalist movements, the British Mandate in Palestine, the Israeli war for independence in 1948, Nasserism, the Suez War, the Six-Day War, the invasion of Lebanon, the Intifada, and the possibilities for peace.

HIS 459 Genocide in World History (3). An advanced survey of the causes, course, and consequences of genocide throughout world history from the ancient world to the present. This course will explore case studies from different areas of the world across time. Special attention will also be given to the issues of memory, recollection, and justice. Prerequisites: HIS 300 or permission of instructor. (Same as RGS 459.)

HIS 461 Early Christianity (3). A seminar examining the religious, philosophical, and historical background to the earliest developments of Christianity during its first few generations of existence to the late second century AD. Topics include an analysis of Second Temple Judaism, the origins and composition of the canonical and apocryphal Gospels, an analysis of significant historical events affecting the development of Christianity, and an overview of literature from authors in the study of history, religion, and theology. While not required, experience in HIS/RGS 354, 363, or 364 is recommended.

HIS 463 History of Greek Theatre (3). A seminar examining the origin, development, and later influences of Greek theatre. Particular attention will be paid to the religious, poetic, and literary origins of Greek drama, as well as the relation between the genres of Tragedy and Old Comedy and their separate developments into the genre of New Comedy. The course will likewise examine the impact of Greek theatre on later dramatic genres and present-day media. While not required, experience in HIS/RGS 363 is recommended.

HIS 464 Caesar Augustus and the Roman Empire (3). A seminar examining the collapse of the Roman Republic and subsequent revolution under the reign of Emperor Caesar Augustus. Topics include an analysis of the last generation of the Republic and Triumviral period, the nature and presentation of Augustus' Principate, the changing nature of the Empire throughout Augustus' reign, and the later impact of the Roman Empire as a model for both democratic empires and totalitarian states. While not required, HIS/RGS 364 is recommended.

HIS 465 The Ancient Celts and the Classical World (3). A seminar examining the sources of Iron Age Celtic history. Discussion will included an overview of current developments in Iron Age European archaeology and subsequent models of Celtic society and its interaction with the Mediterranean world. Analysis of Greek and Roman sources will likewise discuss aspects of Celtic society, as well as the place of the Celts in classical sources and classical genres.

HIS 472 Modern China (3). A study of the political, economic, social and intellectual forces in modern China from 1850 to the present. This course is designed to provide the student with an in-depth knowledge of the major civilization of East Asia.

HIS 474 China in Revolution (3). A study of the last decade and collapse of the Qing dynasty and China's subsequent search for unity and political form, beginning with the Republic, proclaimed in 1912, and ending with the Tiananmen massacre of 1989.

HIS 475 Modern Japan (3). The cultural and political history of Japan from its unification under the Tokugawa Shogunate to the present. Major topics examined include the Japanese success in meeting the challenge of Western imperialism in the nineteenth century, Japan's own venture into imperialism on the Asian mainland in the twentieth century, and the Japanese economic phoenix in the postwar era.

HIS 476 The World Since 1945 (3). A survey of new directions in modern history, particularly the rise of the USA and the USSR as world powers and the end of the colonial empires of Asia and Africa. This course will discuss the Cold War through international relations, the escalation of wars in Southeast Asia, Africa, Latin America, and the Middle East, as well as rival strategies for economic and cultural development in the post-war world.

HIS 478 Comparative Civilizations after 1500 (3). Comparative analysis of civilizations after 1500. The course will introduce comparative methodology and analyze values and institutions across cultural boundaries. Particular attention will be given to comparative change within Asian, African, and Western civilizations during the era of Western expansion. Prerequisites: CIV 201 and 202 or equivalent world history survey.

HIS 479 Comparative History Topics (3). This course is designed to provide upper-class students with specialized studies of topics (such as racism, industrialism, nationalism and revolution) that cross national, class and chronological boundaries. Topics offered will vary with interests of students and instructors. May be repeated for a maximum of nine credit hours with permission of chair and instructor.

HIS 481 Revolutionary Mexico 1810 to the Present (3). An in-depth examination of Mexico's history since 1810. Emphasis will be given to economic development and diplomacy during the Diaz regime, the role of culture and North American influence in Mexico's development, and the coming of the 1910 revolution and the one-party state.

HIS 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

HIS 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

HIS 490 History Study Abroad (1-3). Course will offer students a direct experience of history through a study abroad program linked to a standard, semester-long Corequisite upper or lower level history course. Course will give students opportunities to travel abroad in a structured program to historic sites and museums related to the subject matter of the Corequisite course. May be repeated for up to six hours. The instructor reserves the right to admit students who have completed the Corequisite course as well as MSU faculty/staff. Corequisite: HIS 490 must be taken with a semester-long history course designated for that purpose. Prerequisite: HIS 300 or permission of instructor.

HIS 491 Domestic Travel History (1-3). Offers students a direct experience of history through a focused travel program linked to standard on-campus history course. This is intended to supplement normal classroom learning activities by giving students opportunities to visit historic sites and museums related to the topic or time period of the course. May be repeated for up to six hours. Corequisite: Must be taken with a semester-long history course designated for that purpose. Prerequisite: HIS 300 or permission of instructor.

HIS 492 Historic Preservation (3). This course will provide a general overview of the different aspects of historic preservation, including downtown revitalization, neighborhood organization, historic house management, preservation legislation, preservation education and historic architecture. Much of the class is taught in a laboratory atmosphere, with students making on-site visits to a variety of historic preservation projects. Emphasis is given to the study of the development of American architectural styles, so that students can recognize historic houses and place them in a wider context.

HIS 493 Archival Principles and Practices (3). An in-depth introduction to the care of historical materials, including archives, manuscripts, photographs and ephemeral items.

HIS 494 Historic Interpretation Internship (3). This course will provide on-the-job training in historical interpretation for museums, public or private agencies and historic sites. Each student will be placed in an internship (generally for 12 weeks in the summer) in which he or she will work in an interpretative capacity and conduct a major research project related to the historic interpretation programs of the agency. The student will present the results of this research in a formal paper to a designated advisor in the Department of History. This course will count as a part of the major, but no student will be permitted to repeat the course for credit.

HIS 495 Special Topics II (3). A course designed as an elective for the upper level undergraduate student; it will cover a particular topic, period, personality or problem of the past. Specific subject matter varies from semester to semester, according to student and faculty interest. Repeatable with permission for total of six hours. Prerequisites: HIS 300 or permission of instructor.

HIS 498 Museum Studies (3). This course will provide a broad introduction to the field of museum work. Topics included will be the history and philosophy of museums; the social, economic and political trends that shape museums; the staffing, management and financing of museums; and the multiple functions of museums—collection and care of objects, exhibition design and interpretation, educational programs, research activities and public relations. (Same as ARC 498.)

HIS 499 Directed Studies (3). Individualized instruction for the exceptional student. May be repeated for a maximum of nine credit hours. Prerequisite: permission of department chair.

HIS 600 Development of Historical Thinking (3). A reading seminar introducing students to historical problems, interpretations, and methodologies, as well as a study of the history of historical scholarship. Students generally must complete a study of a significant historian or historical problem in European, American or non-Western history. Required of first-year history graduate students.

HIS 601 The French Revolution (3). This course has three main areas of emphasis: eighteenth-century French society and culture, the causes of the French Revolution, and the career of Napoleon Bonaparte. The main theme of the course is that the French Revolution represented a watershed in history.

HIS 602 Reading in European History (3). A systematic reading of major works on selected topics in European history from 1500 to the present. May be taken more than once for credit; consult the department chair.

HIS 603 Europe Since 1914 (3). Readings on topics in twentieth-century Europe since 1914. Historical debates, methodology, and historiography are stressed.

HIS 604 Nineteenth-Century Europe (3). A treatment of the social, political, intellectual, and cultural history of Europe's great age, the period from the French Revolution and Napoleon to the outbreak of the First World War.

HIS 605 Seminar in European History (3). A critical examination of a major topic or selected topics in European history since 1500, using primary sources. Topics vary and the course may be taken more than once for credit; consult the department chair.

HIS 606 Europe Since 1945 (3). Survey of the history, politics, and culture of post-WWII Europe. Particular attention will be given to the Cold War, the rise of the European Union, and the challenges faced by an increasingly cosmopolitan Europe in the twenty-first century.

HIS 607 Modern Imperialism and Colonialism (3). Course is a graduate level survey of the history, politics, economics, and culture of global empires since the fifteenth century. Particular emphasis will be given to the European colonial empires in the Americas, Asia, and Africa. States such as the Ottoman, Qing, and Japanese empires will also be discussed. The course explores how modern empires were built and maintained, the ways in which colonized people sought to deal with empire, the effects of imperialism on home countries, and the reasons that empires collapsed.

HIS 610 Modern Britain and Empire (3). A study of Britain since the Stuarts, including its age of greatness in the nineteenth century and its decline in the twentieth century. Political and cultural history are emphasized at an advanced, graduate level.

HIS 612 Modern Germany (3). An advanced level study of the political, socioeconomic, and cultural history of Germany from eighteenth century to the present, with particular attention to how the history of Germany was connected to a broader European and global history.

HIS 614 Europe from WWI through WWII (3). Course provides a survey of European history form about 1914 to about 1945. It will describe and analyze the events leading to both World Wars as well as some of the consequences of those wars, delineating the major military figures and the military history of the World Wars.

HIS 618 World War II in Asia and the Pacific (3). The course will examine the origins and course of the war that began in Manchuria in 1931, expanded to China south of the Great Wall in July of 1937, from there to Pearl Harbor,

South east and South Asia and the Pacific Islands by late 1941, and ended at Hiroshima and Nagasaki.

HIS 619 The Third Reich (3). An advanced survey of the history, politics, and culture of the Third Reich in Germany (1933-1945). This course will cover the rise, fall, and aftermath of the Nazi regime with a particular emphasis on the Holocaust and the Second World War.

HIS 621 Studies in U.S. Social History to 1865 (3). This course is a systematic exploration of the social history of the United States from the first settlement by Europeans through the Civil War.

HIS 622 Readings in United States History (3). A systematic reading of major works on selected topics in United States history from colonial times to the present. May be taken more than once for credit; consult the department chair.

HIS 624 United States Foreign Relations Since 1898 (3). An analysis of U.S. relations with other nations since 1898, placing special emphasis on the interplay of ideals and self-interest in foreign relations.

HIS 625 Studies in U.S. Social History Since 1865 (3). A systematic, exploration of the social history of the United States from the end of the Civil War to the present.

HIS 630 Studies in American Colonial History (3). A systematic exploration of the United States from the first European settlement to the beginning of the American Revolution.

HIS 631 Seminar in United States History to 1865 (3). A critical examination of a major problem in United States history to 1865 using primary sources. Topics vary and the course may be taken more than once for credit; consult the department chair.

HIS 632 Studies in the Era of the American Revolution (3). A systematic exploration of the events that led to the independence of the United States and the establishment of the Constitution.

HIS 633 Seminar in United States History Since 1865 (3). A critical examination of a major problem in United States history since 1865, using primary sources. Topics vary and the course may be taken more than once for credit; consult the department chair.

HIS 634 Civil War and Reconstruction (3). This offering covers the period from 1815 to the presidential election of 1877, with emphasis on political, military, social, and economic conditions as they related to the sectional controversy raging during this part of the nineteenth century.

HIS 635 The Transformation of America 1877 to 1929 (3). An advanced study of the transformation of the United States from an agricultural to a modern industrial nation. Topics included within this broad theme are the rise of big business and labor unions, urbanization, immigration, the closing of the frontier, reform movements, the struggles of blacks and women for equal rights, national politics, and cultural changes.

HIS 636 Recent America (3). A study of the Great Depression, the New Deal, World War II, and the subsequent forces that have shaped contemporary American life. Emphasis is placed on the role of the United States in international relations, the civil rights movement, and domestic economic developments.

HIS 637 Jacksonian America and Sectional Conflict (3). This course covers the period from 1815 to the presidential election of 1860 and the break-up of the Union. Emphasis is on the political, social, and economic conditions as they related to the sectional controversy that raged during this part of the nineteenth century. Some specific topics include the rise of the common man, the Jacksonian era, slavery, and the abolitionist movement.

HIS 641 History of the Old South (3). This course is an advanced survey of southern history from colonial times through the Civil War. Emphasis will be placed on examining, among other topics, the development and changing characteristics of slavery, southern economic organization in relation to the international colonial system, women in southern society, the South and the Revolutionary War, the South and the development of the U.S. Constitution, the emergence of southern nationalism, and the coming of the Civil War.

HIS 642 History of the New South (3). A survey of southern history from the end of the Civil War to the present, emphasizing the economic, political, social, and cultural aspects of southern history. A major theme will be the juxtaposition of the enduring characteristics of the South with the process of change since World War II.

HIS 646 History of Kentucky (3). The process of political, economic and social evolution in Kentucky is traced from early settlement to the modern area in this graduate course. Geographical influences upon the patterns of Kentucky development, Kentucky's changing role within an expanding union, and the Commonwealth's participation in national movements and events are stressed.

HIS 649 Islam in the Modern World (3). Beginning with the 18th century, the course will cover Islamic reform movements, then look at Muslim responses to Western and modern influence in the Islamic world. Finally, the course will examine the rise of radical and moderate trends in Islam. The geographical reach of this course is Eurasia and Africa. Special attention will be paid to political Islam and Islamic terrorist organizations.

HIS 650 Modern Africa (3). This course considers the causes for European colonization of Africa, the ways in which African resistance and collaboration with Europeans set the stage for the formation of new economies, societies, and policies in Africa, and the process of decolonialization, with an emphasis upon how that process shaped modern African states.

HIS 651 Africa, Slavery and the Diaspora (3). Survey of the history of slavery in Africa and the African diaspora. The course closely examines the period from 1400 to 1800, as well as slavery in Africa in the nineteenth and twentieth centuries. Particular emphasis will be given to the effects of slavery on the social and political fabric of Africa and the world beyond.

HIS 656 The Arab-Israeli Conflict (3). A study of the historical background to the conflict between the state of Israel and the Arab states. This course will examine the origins of Zionism and of Arab nationalism in the 19th century, the phases of Jewish settlement in Palestine, the consequences of the First World War for Zionist and Arab nationalist movements, the British Mandate in Palestine, the Israeli war for independence in 1948, Nasserism, the Suez War, the Six-Day War, the invasion of Lebanon, the *Intifada*, and the possibilities for peace.

HIS 659 Genocide in World History (3). A graduate survey of the causes, course, and consequences of genocide throughout world history from the ancient world to the present. This course will explore case studies from different areas of the world across time. Special attention will also be given to the issues of memory, reconciliation, and justice.

HIS 660 History of Race Relations in the U.S. (3). An examination of the social, political, and economic influences upon race relations in the United States from the colonial era to the present. Emphasis will be placed on the sources of change in race relations, the various forms of racial discrimination, and the responses to discrimination in American history.

HIS 663 Readings in Global History (3). A systematic reading of major works on selected topics in the history of Africa, Asia, or Latin America. May be taken more than once for credit; consult the department chair.

HIS 664 Public History: Professional Practice (3). An overview of the field of public history that focuses on the historical development of the field and of Americans' thinking about their history, current professional practice in the various areas of public history, including professional ethics, and the particular skills involved in each of these areas.

HIS 665 Oral History: Project Development (3). A detailed, advanced consideration of the planning, development, and operation of oral history projects for colleges, libraries, museums, corporations, professional organizations, and public schools.

HIS 666 Administration of Historical Organizations (3). A comprehensive consideration of the issues involved in the administration and management of historical organizations, including museums, archives and special collections libraries, historic preservation organizations, and local historical societies.

HIS 668 Museum Studies: Professional Practice (3). Introduces students to the development of the museum as a cultural institution in the United States and to professional practice regarding the care of collections, the development of exhibits, and other aspects of the profession. Also addresses professional ethical standards in the museum profession. Field trips and a semester project will give students an opportunity to apply what they study.

HIS 669 Historic Preservation: Professional Practice (3). An in-depth exploration of the field of historic preservation, with an emphasis on current professional practice and the application of historical research methods and analytical skills to the field.

HIS 674 China in Revolution (3). A study of the last decade and collapse of the Qing dynasty and China's subsequent search for unity and political form, beginning with the Republic, proclaimed in 1912, and ending with the Tiananmen massacre of 1989 and market reforms.

HIS 675 Modern Japan (3). The cultural and political history of Japan from its unification under the Tokugawa Shogunate to the present are covered at an advanced level. Major topics examined include the Japanese success in meeting the challenge of Western imperialism in the nineteenth century, Japan's own venture into imperialism on the Asian mainland in the twentieth century, and the Japanese economic phoenix in the postwar era.

HIS 676 The World Since 1945 (3). A survey of new directions in modern history, particularly the rise of the USA and the USSR as world powers and the end of the colonial empires of Asia and Africa. The course will discuss the Cold War through international relations, the escalation of wars in Southeast Asia, Africa, Latin America, and the Middle East, as well as rival strategies for economic and cultural development in the post-war world.

HIS 681 Revolutionary Mexico, 1810-Present (3). An in-depth examination of Mexico's history from 1810 to the present, with emphasis on economic development and diplomacy in the era of Porfiro Diaz (1876-1911), the role of culture and North American influence in the Revolution of 1910-1920, the emergence and seventy-five-year rule of the Party of the Institutional Revolution (PRI), and the post-NAFTA resurgence of revolutionary activity.

HIS 690 Directed Study and Research (3). Supervised independent or group study of a topic or topics in European, United States, or non-Western history. May be taken more than once for credit. Prerequisite: permission of department chair.

HIS 691 Directed Studies in Public History (3). Supervised independent or group study in one or more of the following public history fields: historic preservation, historic interpretation, museum studies, and oral history. May be taken more than once for credit.

HIS 692 History Study Abroad (1-3). Offers students a direct experience of history through a study abroad program linked to a standard, semester-long corequisite graduate level history course. This course will give graduate students opportunities to travel abroad in a structured program to historic sites and museums related to the subject matter of the corequisite course. The instructor reserves the right to admit students who have completed the corequisite course as well as MSU faculty/staff. Instructors will also drop students who have dropped the corequisite course. May be repeated for up to six hours. Prerequisite: permission of instructor.

HIS 693 Domestic Travel History (1-3). Will offer students a direct experiences of history through a focused travel program linked to a standard, semester-long graduate-level course. This course will supplement normal classroom learning activities by giving students opportunities to travel to historic sites and museums related to the topic or time period of the corequisite course as well as MSU faculty/staff. To receive credit, the student must remain in the corequisite course for the duration of the semester. Prerequisite: permission of instructor.

HIS 695 Special Topics (3). A course designed as an elective for the graduate student; it will cover a particular topic, period, personality, or problem of the past. Specific subject matter varies from semester to semester, according to student and faculty interest. Repeatable with permission of the chair for a total of six hours.

HIS 698 Thesis (3).

HIS 699 Thesis (3).

HONORS COURSES (HON)

Note: Courses with an HON prefix are open only to Honors College students.

HON 100T Transitions for Undeclared Incoming Honors Students (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. A one-hour semester course designed for incoming Honors College students with an undeclared major. Graded pass/fail. Prerequisite: Must be admitted to the Honors College.

HON 101 Topics in Business and Public Affairs (3). Introductory course treating topics or issues in one or more of the following areas of study: economics, management, marketing, finance, accounting, or computer science. Prerequisite: admission to the Commonwealth Honors Academy.

HON 102 Topics in Communication (3). Introductory course treating topics or issues in one or more of the following areas of study: organizational communication, radio-television, print journalism, advertising, or public relations. Can not count as a JMC course (minor or major) or as a liberal arts limited elective for JMC students. Prerequisite: admission to the Commonwealth Honors Academy.

HON 106 Topics in Science, Engineering and Technology (3). Introductory course treating topics or issues in any of the following areas of study: biology, physics, chemistry, engineering technology, geosciences, geology or mathematics. Open only to students enrolled in the Commonwealth Honors Academy.

HON 107 Topics in Agriculture and Animal Science (3). An introductory course treating topics or issues in any of the following area of study: agriculture, animal science, or animal health. Prerequisite: admission to the Commonwealth Honors Academy.

HON 109 Interdisciplinary Humanities and Fine Arts (3). Introduction to ways of knowing, issues, and practices in selected humanities and fine arts disciplines, including philosophy, literature, history, art, music, and theater. The course is open only to students in the Commonwealth Honors Academy. The work of the various disciplines (and different sections) will be rotated and organized around a general theme each time the course is offered. Prerequisite: acceptance into the Commonwealth Honors Academy.

HON 110 Special Honors Topics (3). A special topics elective course that will introduce students to concepts, issues, and practices in one of the academic disciplines. Prerequisite: admission to the Commonwealth Honors Academy.

HON 133 Honors Seminar in Sociology (3). Course will introduce students to sociology and the sociological perspective by focusing upon contemporary societies. Through a study of key concepts such as cultures, society, group behavior, population, family, stratification, community, social institutions and change, students will be given the tools by which to understand better their society and others around the world. Open only to students in the Honors College. HON 133 will fulfill the requirements for and can replace SOC 133. SOC 133 will not fulfill the requirements of HON 133.

HON 140 Honors Seminar in American National Government (3). Course is designed to introduce students to the American political system, its constitution, institutions, and process. Fulfills three hours of the University Studies requirement in place of POL 140. A student may not receive credit for both HON 140 and POL 140. Prerequisite: Open only to students in the Honors College.

HON 150 Honors Seminar in Archaeology (3). A survey of archaeology's contribution to humankind's knowledge of prehistoric ad historic development on a worldwide basis with emphasis placed upon discoveries rather than methods or archaeology. Open only to students in the Honors College. HON 150 will fulfill the requirements for and can replace ARC 150. ARC 150 will not fulfill the requirements of HON 150.

HON 161 Honors Seminar in Visual Arts (3). An exploration of the importance of the visual arts in human culture through visual presentations, readings, discussion and participation. Open only to students in the Honors College. A University Studies fine arts elective. A student cannot have credit for both this course and ART 121.

HON 162 Honors Seminar in Music (3). An exploration of the importance of music in human culture through aural presentation, reading, discussion, and participation. Open only to students in the Honors College. A University Studies fine arts elective. A student cannot have credit for both this course and MUS 105.

HON 163 Honors Seminar in Theatre (3). An exploration of the importance of theatre in human culture through reading, attendances at dramatic interpretations, discussion, and participation. Open only to students in the Honors College. A University Studies fine arts elective. A student cannot have credit for both this course and THD 104.

HON 164 Honors Seminar in Arts and Culture Abroad (3). An interdisciplinary exploration, in study-abroad settings, of the visual arts, architecture, music, theatre, and cinema. Classes will consist of lectures, discussions, and presentations based on cultural experiences of the fine arts abroad, with related readings. Research and critical writing will be emphasized. Assignments will include class excursions, museum visits, and attendance at concerts, plays, and films. Prerequisite: Open only to students in the Honors College as a fine arts elective.

HON 165 Honors Seminar in Communications (3). An exploration of interpersonal communication and public address skills necessary for personal and professional success. A University Studies communication and basic skills elective. A student cannot have credit for this course and COM 161 or COM 131. Prerequisite: must be enrolled in the Honors College.

HON 180 Honors Seminar in Psychology (3). A basic survey introducing the student to Psychology as a science that can be applied to practical problems and everyday issues by learning the methods, concepts, and terminology of the discipline.

HON 201 Honors Seminar in World History I (3). An interdisciplinary course involving readings and discussion of environmental, social, economic, and political influences and developments in the major civilizations of the world prior to 1500 A.D. Open only to students in the Honors College. Fulfills three hours of the world civilizations University Studies requirement in place of CIV 101. A student cannot have credit for both this course and CIV 101.

HON 202 Honors Seminar in World History II (3). An interdisciplinary course involving readings and discussion of environmental, social, economic and political influences and developments in the major civilizations of the world since 1500 A.D. Open only to students in the Honors College. Fulfills three hours of the world civilizations University Studies requirement in place of CIV 102. A student cannot have credit for both this course and CIV 102.

HON 203 Honors Seminar in American History (3). Course introduces students to North American history, focusing on cultures and societies from pre-Columbian to present day and the historical events which shaped the United States.

HON 212 Honors Seminar in Ethics (3). Introduction to classic and contemporary problems of personal and social morality and to the systems and methods proposed by the philosophers, past, and present, in response to questions of good and evil. Open only to students in the Honors College. HON 212 will fulfill the requirements for and can replace PHI 202. PHI 202 will not fulfill the requirements of HON 212.

HON 232 Honors Seminar in Economics (3). An introduction to the application of the basic principles of supply and demand to issues in aggregate economics and to the behavior of individual economic agents. Open only to students in the Honors College. A student cannot have credit for this course and both ECO 230 and 231. Prerequisites: MAT 117, 140, 150, or 220; or and ACT math standard score of at least 23; or permission of instructor.

HON 251 Honors Seminar in Literature and Philosophy I (3). An exploration of the roots of modern ethics and values through intensive study, in a lecture/precept setting, of the world's literary and philosophical works from the ancient to the modern eras. Open only to students in the Honors College. Fulfills three hours of the humanities University Studies requirement in place of HUM 211. A student cannot have credit for both this course and HUM 211.

HON 252 Honors Seminar in Literature and Philosophy II (3). An exploration of modern ethics and values through intensive study, in a lecture/precept setting, of the world's literary and philosophical works in the modern to post-modern eras. Open only to students in the Honors College. Fulfills three hours of the humanities University Studies requirement in place of HUM 212. A student cannot have credit for both this course and HUM 212.

HON 261 Honors Seminar in Science I (3). An exploration through readings and discussion of various topics in the history and philosophy of science. Open only to students in the Honors College. Prerequisite: four hours of lab sciences to be approved by the Honors College Director.

HON 262 Honors Seminar in Mathematics (3). An exploration through guided discovery activities and discussion of various topics in the history and methods of mathematics. Open only to students in the Honors College. Prerequisites: Enrollment in the Honors College and the completion of at least one University Studies mathematics course.

HON 270 Honors Seminar in International Relations (3). The nature of international society and the forces affecting the behavior of states in their relations with one another. Open only to students in the Honors College. HON 270 will fulfill the requirements for and can replace POL 250. POL 250 will not fulfill the requirements of HON 270.

HON 272 Honors Seminar in Comparative Politics (3). Course provides the student with comparative and evaluative concepts and approaches necessary to developing an intelligent understanding and appreciation of the world's diverse political systems, focusing particularly on how democracy works. Open only to students in the Honors College. HON 272 will fulfill the requirements for and can replace POL 252. POL 252 will not fulfill the requirements of HON 272.

HON 290 Honors Seminar in Service and the Nonprofit Sector (3). This course is designed to introduce students to notions of service and volunteering, as well as to the broad roles of nonprofit organizations in society. Includes an emphasis on the values embodied in philanthropy and the nonprofit sector, such as service, volunteering, human and cultural diversity, trust, stewardship, and social justice. Provides a direct exposure to the working of a local nonprofit organization or community service organization through service learning projects. Part of the Service Learning Scholars Program. Fulfills three hours of the University Studies requirement in place of NLS 290. Fulfills NLS 300 for students in the Honors College. A student may not receive credit for both HON 290 and NLS 290. Prerequisite: Open only to students in the Honors College.

HON 355 Honors, Independent Study Abroad (3). This course is designed for those students who elect to engage in an individualized study or project which will provide an international experience. It may take the form of an exchange, internship, and/or extended research study. Permission for enrollment and course requirements must be secured from the academic department sponsoring the study and approved by the Honors College.

HON 364 Advanced Honors Seminar in Arts and Culture Abroad (3). An advanced interdisciplinary exploration of the visual arts, architecture, music, theatre, cinema, and folk and popular culture. Offered only in study-abroad programs sponsored by Murray State University. There will be at least 37 contact hours in a formal classroom setting, and additional "lab" requirements that will depend upon cultural offerings in the program locale and in excursion destinations. This course will be cross-listed with HON 164, but substantial additional independent research and critical writing will be required. Prerequisite: junior-level standing, with at least three hours previous credit in the fine arts, and with at least a 3.0 cumulative GPA at the time of application to study-abroad program.

HON 437 Senior Honors Thesis (3). A faculty-supervised thesis and/or project which allows Honors College students with a senior standing to undertake advanced research. A thesis paper and/or written review of the exhibit or performance is required.

HON 440 Honors Professional Engagement Project (3). A faculty-supervised major project related to the student's field that includes research into the issue, a faculty committee-approved plan, the project itself, and a final committee review of the finalized project. A substantial written report on the project is required. Open only to students in the Honors College.

HON 444 Honors Researched internship Analysis (3). A faculty-supervised major project following a substantial internship in the student's field that identifies a professionally significant issue encountered during the internship, includes research into and analytical reflection on the issue, and concludes with a final committee review of the final analysis. A substantial written report on the project is required. Open only to students in the Honors College.

HEALTH AND PHYSICAL EDUCATION (HPE)

HPE 175 Foundations of Health and Physical Education (3). Designed to provide an overview of health and physical education. This will examine the scope, history, philosophy, aims and objectives of health and physical education programs as well as career opportunities in the field. Prerequisite: permission of the program coordinator.

HPE 360 Teaching Strategies in Sex Education (3). This course is designed to address comprehensive sex education in schools, including human sexuality, sexual anatomy, and physiology; sexual arousal and response; sexually transmitted diseases including HIV/AIDS; contraception; conception; pregnancy; gender roles; sexual communication; love and intimacy; behaviors and relationships; and sexual victimization. Prerequisite: permission of the program coordinator.

HPE 370 Teaching Substance Abuse Education (3). This course is designed to address comprehensive drug education programs in school and community settings which include drugs, violence, and wellness; factual account of drugs; alcohol, tobacco, and well-being; prevention and treatment of drug abuse; and instructional strategies. Topics covered in this course will include promotion of responsible and healthful behavior; drug actions and reactions; stimulant, sedative-hypnotic, and narcotic drugs; marijuana, hallucinogens, inhalants, over-the-counter, and prescription drugs; anabolic steroids; alcohol; tobacco; prevention and treatment of drug abuse; drug education curriculum. Prerequisite: HPE 175 and permission of program coordinator.

HPE 409 Evaluation and Assessment in Health and Physical Education (3). Basic statistical techniques and paper/pencil testing methodologies applicable to health and physical education plus other physical and mental testing techniques commonly employed in these fields. Various physical and skill tests will be covered. Field experiences required. Prerequisite: HPE 175.

HPE 450 Teaching Strategies in Health Education (3). This course is designed to address comprehensive school health education. Topics covered include the health status of children, adolescents and young adults; *Healthy People 2020;* school health services; school health education; program goals and objectives; and instructional strategies. Content covered in the school health education program: mental/emotional health; life skills; family and relationship skills; human sexuality; growth and development; nutrition; personal fitness; substance use and abuse; diseases and disorders; consumer health; safety and injury prevention; and community and environmental health. Prerequisite: HPE 175 and permission of program coordinator.

HPE 480 Special Problems in Health and Physical Education (1-3). May be repeated for a maximum of six credit hours with permission of advisor and chair.

HUMANITIES (HUM)

HUM 100T Transitions (1). Course is designed to assist students in their transition to Murray State University and will serve as an introduction to the university. Content includes orientation to the specific area or major(s) and minor(s) within the college; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

HUM 180 Exploring Teaching in the Humanities (3). Course introduces aspiring teacher candidates to explore art, English, history, global languages, and TESOL education as a profession. Students will engage in experiential learning activities including clinical observations and interactions in appropriate school settings in K-12 content area classes. Candidates will actively explore the importance of professional identity, roles, and responsibilities; knowledge, skills, and dispositions: student-centered practices; and students' developmental and cultural needs. Historical and philosophical foundations of education, curriculum and lesson design, contemporary resources, and best practices in teaching. By the end of the course, candidates will be able to decide for themselves if teaching in the humanities and fine arts is their career choice. Clinical experiences required.

HUM 205 The Humanistic Tradition Abroad (3). Study of traditional ideas and values as reflected in various international cultures; specific content will vary. Satisfies University Studies humanities elective requirement. Prerequisite: concurrent enrollment in study abroad program approved by Murray State University.

HUM 211 The Western Humanities Tradition (3). An exploration and analysis of the major ideas and questions in the humanities, as these have been expressed in works from the ancient past to the modern world. A student cannot have credit for both this course and HON 251. Prerequisite: ENG 105 or 150 or equivalent.

HUM 212 The Humanities in the Modern World: Diversity (3). An exploration of humanistic themes as reflected in literary and philosophical works of the modern period. A student cannot have credit for both this course and HON 252. Prerequisite: ENG 105 or 150 or equivalent.

HUM 215 Humanities in the Contemporary World: Border Crossings (3). A study of one or several contemporary global issues through poetry, fiction, drama, film, non-fiction, and other artistic expressions from a variety of world cultures. Prerequisite: ENG 105 or 150 or equivalent.

HUM 380 Inclusive Teaching of Diverse Learners in Humanities (3). Course will examine the design, implementation, and assessment of humanities instruction with the diverse learner in mind. Teacher candidates will synthesize knowledge of learning theories, technology, and evidence-based practices, including classroom management, to develop units of study and lesson plans for K-12 humanities classrooms. The course will introduce candidates to federal laws and guidelines addressing diverse students (e.g. special education, ELL, gifted and talented) and the application to K-12 humanities classrooms. Clinical experiences required. Prerequisites: HUM 180 or EDU 180 and EDU 280 with a grade of B or higher.

INTERDISCIPLINARY COURSES (IDC)

IDC 100T Transitions—Undeclared Majors (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

IDC 150 Issues in Sustainability Studies (1). Course helps students increase awareness of timely issues and topics regarding sustainability. Class meetings will include guest speakers from the university and local region, and topics may be local, national, and/or global relevance.

IDC 199 Residential College Seminar (1). A course to provide the student with an opportunity to explore a stimulating topic in a small group setting within a residential college. Seminar topics will vary. May be repeated for up to three hours of credit.

IDC 300 Graduate Record Examination (GRE) Preparation (1). Preparation for the Graduate Record Exam (GRE) through practice exams, readings, lecture, and writing exercises. Fall class open only to those majoring in science, technology, engineering, and mathematics (STEM) majors. Spring class open only to McNair Scholars.

INFORMATION STUDIES (INF)

INF 101 Research in the Information Age (3). A course designed to explore the phenomena, activities, and issues surrounding the development, gathering, organization, and use of information and resources in a global community.

Designed to acquaint students with best practices in information-seeking behavior for various situational, civic, and scholarly purposes, with specific attention given to the ethics of using and creating information.

INF 250 Advanced Information Gathering: Resources and Strategies (3). Advanced information gathering techniques to teach students to report, gather, process, and transform information. The course will involve seeking sources in libraries, public records, books, magazines, journals, corporate reports, online databases, personal interviews, and internet resources. Field trip will be required. Prerequisite: INF 101.

INF 260 Censorship, Propaganda, and Privacy (3). Course is a critical analysis of historical, national, and international instances and accusations of propaganda, censorship, and privacy violations. The course will examine definitions, motives, and consequences of each in a democratic society, Attention will be given to current and potential public policy on information technology access, net neutrality, corporate and government privacy concerns, and other topics as relevant. Prerequisite: INF 101.

INF 270 Intellectual Property in the Information Age (3). This course will serve as an exploration into the purpose and history of intellectual property protections throughout the world, and in particular the benefits and weaknesses of United States copyright law on the creation and diffusion of creative and scientific works in the information age. This course will primarily focus on public policy implications and will explore cases and controversies of interest for continuing the creation of information. Prerequisite: INF 101.

INF 280 Introduction to Information for Health Practitioners and Consumers (1). An eight-week online course designed for the health sciences disciplines and professions to explore methods of information retrieval in online health science databases and grey literature, finding and evaluating consumer health medicine for various literacy levels, and learning the process of evidence-based practice (EBP) including question building, searching, and critical appraisal of studies.

INF 310 Medical Information for Practitioners and Consumers (3). A course designed for those with a practitioner or consumer interest in the health sciences to explore methods of information retrieval in online health science databases and grey literature, finding and evaluating consumer health medicine for various literacy levels, and learning the process of Evidence-based medicine (EBM) including question building, searching, and critical appraisal of studies. Prerequisite: INF 101 or permission of instructor.

INF 320 Examination of Scientific Communication (3). This course is designed to critically examine the current status, new trends, and evolving models in scientific scholarly communication. It is also designed to discuss the importance of communicating science to the general public; in particular, the course will cover how the ever-evolving cyberspace complicates scientific communication, the importance of rethinking the interface between the science community and the public, and the role of science journalism. Prerequisite: INF 101.

INF 330 History of Libraries and the Written Word (3). This course is designed to give students a firm understanding of the evolution of the written word and the role of libraries. This class will explore libraries and the written word throughout different eras in history and then intensely focus on the development of the library institution in the United States through the 20th century. This will help frame conversations about the future of libraries and the written word facing the advent of the Internet, global technology, and the digital revolution. Prerequisite: INF 101.

INF 340 Children's and Young Adult Literature and Storytelling (3). A course designed for anyone who embraces children's and young adult literature and storytelling as an essential part of information delivery in the 21st century. This course will provide an overview of the main authors, illustrators, theories, and awards of children's and young adult literature and elements and role of storytelling in the genre. Students will gain experience in various techniques and digital tools for story creation. Prerequisite: INF 101.

INF 350 Topical Seminar in Information Studies (3). A course designed as an elective for the upper level undergraduate student pursuing a minor in Information Studies. The course will cover selected topics and problems related to information studies. Specific subject matter may vary from semester to semester, according to student and faculty interest. May be repeated for a maximum of six credit hours provided topics vary. Prerequisite: INF 101.

INF 400 Directed Study (3). Independent work in the area of information studies to meet the needs and interest of individual students. May be repeated for a maximum of six credit hours provided topics vary. Prerequisite: permission of instructor.

INTERNATIONAL STUDIES (INT)

INT 100T International Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Course to provide international students with information and experiences necessary for successful adjustment to life in the U.S. and at Murray State University. The course will include MSU facilities, American culture and educational systems, health care, culture shock, government regulations, international student organizations, and the Murray community. Similar to Transitions required of all American students. Required of all matriculating international students. Graded pass/fail.

INT 310 International Student Exchange (3-15). Individual study abroad through a Murray State sponsored program as administered by the Institute for International Studies; pre-approval within specific disciplines required; pass/fail. Prerequisite: consent of academic advisor and pre-approval by instructors prior to registration; undergraduate level.

INT 600 Seminar in Global Studies (1-3). Course is a seminar focusing on selected topics and taught outside the United States. Topics and content will vary with instructor and course location. It may be repeated for credit. Prerequisite: permission of instructor.

INT 610 International Student Exchange (3-15). Individual study abroad through a Murray State sponsored program as administered by the Institute for International Studies; pre-approval within specific disciplines required; pass/fail. Prerequisites: consent of academic advisor and pre-approval by instructor prior to registration.

INSTITUTE OF ENGINEERING (IOE)

IOE 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Meetings with advisors, departmental personnel, service areas, and campus field trips comprise the main involvement. Availability of the University resources is stressed with emphasis on personal needs. Graded pass/fail.

IOE 125 Analytic Methods in Engineering Technology (3). Introduction to problem-solving methods used in engineering technology. Graphing, mathematical modeling and presentation of analysis results. Includes use of spreadsheet, equation solver, and analysis software. Prerequisite: MAT 130 or MAT 150.

IOE 350 Technology Management (3). Course introduces the concept and tools for effectively managing/supervising engineering and technology-based businesses. Emphasis will be placed on managerial topics to include: strategic planning, budgeting, human resource planning, organizational structure, conflict resolution, and the management decision-making process. Prerequisites: ENG 105 and MAT 130 or MAT 140, Institute of Engineering majors only.

IOE 380 Professional Internship I (1-3). Work experience or training in industry. Evaluation of experience made by department. Graded pass/fail. Prerequisite: junior standing or permission of instructor.

IOE 381 Professional Internship II (3). Work experience or training in industry. Evaluation of experience made by department. Graded pass/fail. Prerequisite: junior standing or permission of instructor.

IOE 397 Undergraduate Research (3). Research projects arranged individually with faculty members who agree to direct the research. A written plan of research must be filed with the instructor within two weeks of the beginning of the semester. A written summary of the research performed, data obtained, and conclusions following from the work must be submitted not later than the

final week of classes. May be repeated for a maximum of nine credit hours. Prerequisites: junior standing and permission of the instructor.

IOE 399 Professional Development Seminar I (1). Seminar for students of industry and technology programs, focusing on the job search process, employment opportunities, and related problems. Recommended for students in the sophomore or junior year. Graded pass/fail.

IOE 419 Senior Project (3). A course in which the student assumes the responsibility of design of a technology project utilizing the knowledge gained from previous coursework. Complete documentation of the project is required. Prerequisite: senior standing. (Fall and Spring)

IOE 481 Supervised Work/Observation (1-4). Assignments individually made, with university approval, to afford opportunities for supervised employment in industry. Agreement by both the university and participating employer as to extent and nature of the experience prerequisite to actual assignment, with credit to be determined accordingly.

IOE 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of instructor.

IOE 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of instructor.

IOE 491 Technology Management and Design (3). The capstone course requires analyses and design of manufacturing, civil, environmental, electrical and computer systems. It requires analyses of management philosophies from conceptualization to implementation of engineering projects. Students are teamed based upon academic concentration and teams are coupled with industrial representatives. Each team produces a viable industrial design. Prerequisite: senior standing.

IOE 499 Professional Development Seminar II (1). Seminar for students of industry and technology programs, focusing on the transition to the world of work and related problems. Recommended for students in the senior year. Graded pass/fail. Prerequisite: IOE 399.

IOE 550 Robotic Systems (4). A quantitative analysis of robotic systems that includes kinematics, actuators, drives, adaptive control, off line programming and computer simulation. Emphasizes applications in manufacturing processes. Three hours lecture and three hours laboratory. Prerequisites: EMT 261, 262, 361, and TSM 210.

IOE 551 Introduction to Electrohydraulic Motion Control (3). An introduction to the integration of the basic principles of hydraulics, electronics, controls and system dynamics as they pertain to electrohydraulic motion control.

IOE 571 Problems in Industrial and Engineering Technology (3). Individual study and research pertaining to special problems in industrial and engineering technology. Prerequisite: permission of instructor

IOE 575 Workshop in Industrial and Engineering Technology (1-4). Workshops on topics pertinent to industrial and engineering technology. May be repeated for a maximum of nine credit hours.

IOE 576 Industrial Relations (3). Industrial relations responsibilities, procedures, and applications in job evaluation, wage surveys, union negotiations, hiring employee counseling, and affirmative action awareness. Prerequisite: junior standing.

IOE 582 Production Systems and Computer Integrated Manufacturing (4). Includes a survey of various topics in production, automation and related systems such as flow-line production, numerical control, industrial robots, computer-aided manufacturing, process monitoring, flexible manufacturing systems and computer-integrated manufacturing. Three hours lecture and two hours lab. Prerequisites: EMT 261, 262 and TSM 110.

IOE 584 Engineering Economic Analysis (3). Economic evaluation and financial analysis of engineering alternatives to optimize the engineering decision process.

IOE 587 Quality Control (3). Examines the various aspects of quality control from the viewpoint that product and service quality requires managerial, technological and statistical concepts throughout all the major functions in an organization. Prerequisite: CIS 243 or STA 135.

IOE 591 Materials Management (3). The design of an organizational and managerial system to balance the conflicting interests in the company in the considerations of quality, quantity, delivery and cost of materials with the aim of optimizing the return of the materials investment.

IOE 619 Industrial Energy Management (3). A study of energy utilization in manufacturing environments. Through applied engineering principles and case histories, energy conversion systems are analyzed and designed. Remediation and conservation principles are discussed as are energy policies and utility rate structuring and negotiation..

IOE 644 Graduate Cooperative Education (3). May be repeated for a maximum of six credits. Graded pass/fail. Prerequisite: permission of instructor.

IOE 650 Robotic Systems (4). A quantitative analysis of robotic systems that includes kinematics, actuators, drives, adaptive control, off line programming and computer simulation. Emphasizes applications in manufacturing processes. Three hours lecture and three hours laboratory. Prerequisites: EMT 261, 361, ENT 111, 365.

IOE 651 Introduction to Electrohydraulic Motion Control (3). An introduction to the integration of the basic principles of hydraulics, electronics, controls and system dynamics as they pertain to electrohydraulic motion control.

IOE 671 Problems in Industrial and Engineering Technology (3). Individual study and research pertaining to special problems in industrial and engineering technology. Prerequisite: permission of instructor.

IOE 675 Workshop in Industrial and Engineering Technology (1-4). Workshops on topics pertinent to industrial and engineering technology. May be repeated for additional credit.

IOE 676 Industrial Relations (3). Industrial relations responsibilities, procedures, and applications in job evaluation, wage surveys, union negotiations, hiring employee counseling, and affirmative action awareness.

IOE 678 Seminar in Industrial and Engineering Technology (3). The identification and study of current problems, issues and trends in the field of industrial and engineering technology with special emphasis on the philosophical and psychological assumptions underlying these areas.

IOE 679 Technical Writings (3). Laboratory experimentation and research, analysis of technical data and the preparation and application of technical reports in industrial-technical fields.

IOE 682 Production Systems and Computer Integrated Manufacturing (4). Includes a survey of various topics in production, automation and related systems such as flow-line production, numerical control, industrial robots, computer-aided manufacturing, process monitoring, flexible manufacturing systems, and computer-integrated manufacturing. Three hours lecture and two hours lab. Prerequisites: ENT 111, EMT 261, 361.

IOE 684 Engineering Economic Analysis (3). Economic evaluation and financial analysis of engineering alternatives to optimize the engineering decision process.

IOE 687 Quality Control (3). Examines the various aspects of quality control from the viewpoint that product and service quality requires managerial, technological, and statistical concepts throughout all the major functions in an organization.

IOE 691 Industrial Operations (3). Quantitative analysis for planning, organizing, and controlling a production/operations system.

IOE 692 Plant Layout and Material Handling (3). A study of the arrangement of physical facilities and material handling to optimize the interrelationships among operating personnel, material flow, information flow, and the methods required in achieving enterprise objectives efficiently, economically, and safely.

IOE 693 Systems Management Technology (3). A course dealing with the practical applications of systems management theory to business and industrial situations.

IOE 694 Research in Industry, Training and Technical Education (3). A study of techniques and procedures used in designing, conducting, interpreting and evaluating research in industrial, training, and technical education settings. Applications, advantages and limitations of various research methods are studied and explored.

IOE 695 Industrial Supervision (3). An in-depth study of the qualities necessary in order for a frontline supervisor to be a vigorous leader, an effective leader, a source of technical know-how and a deft mediator between policy-setting management and the rank-and-file worker.

IOE 696 Teamwork and the Management of Technology (3). A study of how teamwork is used to effectively increase productivity, quality and profits simultaneously in a manufacturing environment. Analysis of historical and current literature shows the evolution from Scientific Management to TQM and ISO-9000 and the advantages of team problem-solving for complex design/production problems. The fundamentals for an effective teamwork environment redeveloped through a wide variety of books and articles. Methods for implementation of a teamwork system are presented, discussed, and evaluated.

IOE 697 Research in Industrial and Engineering Technology (3). Independent study under the guidance of a supervising faculty member in a problem area of industrial education as selected by the student. Prerequisite: permission of instructor.

IOE 698 Thesis (3).

IOE 699 Thesis (3).

INDUSTRIAL TECHNOLOGY AND DESIGN (ITD)

ITD 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Meetings with advisors, department personnel, service areas, and campus field trips comprise the main involvement. Availability of university resources is stressed with emphasis on personal basis. Graded pass/fail.

ITD 101 Introduction to Design and Graphic Communications (4). An introduction to the fundamental theory and practice of technical design communication, engineering sketching and CAD drafting conventions. Techniques are presented with emphasis on both theory and practical applications. The course includes an introduction to product design, the engineering design process, orthographic projection of product geometry and dimensioning/specifications. Lecture and laboratory-six contact hours. Open only to engineering graphics and design majors.

ITD 102 CAD Applications (3). An introductory course with emphasis in multiview projection for mechanical components and the design file creation using 3D parametric modeling. Cannot be taken for credit by ITD/Engineering Graphics and Design majors/minors.

ITD 103 Technical Sketching (2). Techniques of freehand and sketching. Delineation and rendering in two and three dimensional drawings. Lecture and laboratory.

ITD 104 Computer Aided Design (4). An intermediate course in the theory and practical applications of computer aided systems for drafting/design fields. A review of two-dimensional drawing techniques is presented followed by three-dimensional drawing techniques with emphasis on wireframe, surface and solid modeling. An introduction to parametric design is included. This course includes hands-on experience on interactive graphics equipment. Lecture two hours; laboratory four hours. Prerequisite: ITD 101 or ITD 107. (For ITD students only.)

ITD 107 Introduction to Technical Drawing and Computer Aided Drafting (4). A survey course in conventional and computer aided drafting theory and practice. The application of design principles, multi-view drawing techniques and precision use of conventional drafting equipment will be complemented by an introduction to computer aided drawing software, including setting up, drawing, editing, saving and plotting drawings. Lecture and laboratory-six contact hours. Restricted to CET and ITD majors.

ITD 108 Applied Computer-Aided Design (4). An intermediate course in the theory and practical application of computer-aided systems for drafting/design fields. A review of two-dimensional drawing techniques is presented followed by emphasis in the creation of architectural drawings. This course includes hands-on experience with interactive graphics equipment. Prerequisite: ITD 101 or ITD 107.

ITD 120 Processes and Materials (3). Study of manufacturing processes and materials as they apply to contemporary industrial products. May not be taken for credit by ITD majors.

ITD 130 Manufacturing Processes and Materials (3). Study of manufacturing processes and materials as they apply to contemporary industrial and consumer products. For ITD majors only or permission of chair. Lecture and laboratory-five contact hours.

ITD 204 Parametric Modeling and Rendering (4). An intermediate course in the theory and practical application of computer aided design. Emphasis will be on the planning and operational techniques required producing parametric models with corresponding photo-realistic renderings. This course includes hands-on experience on interactive graphics equipment. Two hours lecture and three hours laboratory. Prerequisite: ITD 104. ITD majors only.

ITD 205 Computer Graphics Application (3). A survey course in the current theory and practice of computer-generated graphics. The application of micro and mainframe computers as a tool for figurative and abstract drawing, graphics, graphing and technical drafting.

ITD 221 Design Visualization (3). Application of art elements and principles of design to everyday living. Lecture, two hours; laboratory, two hours.

ITD 240 Woodworking Design and Practices (3). Fundamental instruction in woodworking materials, design, planning procedures, hand tool use, machine tool operations, construction techniques and safety principles and practices. This is a practical course for the beginner and woodworker with intermediate knowledge and skill. Lecture and laboratory.

ITD 241 Woodturning (2). Spindle, face plate, chucking operations and procedures involved in woodturning. Experiences in designing, turning and finishing. For beginning woodturners and those who want to improve their skill. No prerequisite. Lecture and laboratory.

ITD 251 Equipment (3). Selection, use, and care of materials and equipment used in the home, principles of kitchen and laundry planning. Lecture, two hours; laboratory two hours.

ITD 252 Housing and The Family (3). Housing alternatives, constraints, norms, needs, and selection; comparison of economic factors of various types of shelter; procedure for purchasing shelter.

ITD 253 Interior Design Studio I (3). Studio problems in interior design. Programming, basic drawing skills and application of art elements and principles of design in solving interior design problems. Emphasis is on developing basic drawing skills for presenting design solutions. Laboratory, four hours. Prerequisite: ITD 221.

ITD 254 Furniture Construction and Finishes (2). A study of construction and finishing techniques used in the furniture industry. Lecture two hours.

ITD 300 Industrial Product Design (2). Design principles relative to industrial products. Principles of functional, structural and visual design. Lecture and laboratory. Prerequisites: ITD 101 and 130.

ITD 301 Architectural Design Studio I (4). Introductory course with an emphasis on the architectural responses to peoples basic needs for shelter. At the fundamental level, these needs, physical, psychological, sensual, intellectual, cultural and aesthetic are met through physical design. The students will use BIM (Building Information Modeling) computer tools to solve problems at the introductory level addressing design documentation through various lab activities. Lecture and laboratory-six contact hours. Prerequisite: ITD 101 or 107.

ITD 302 Applied Engineering Drawing (4). Applied engineering problem-solving techniques, calculations of coordinate tolerance stacks for product engineering, principles and practices as applied to: mechanical engineering product design, thread specification, piping, weldment and sheet metal developments. This course emphasizes technical/engineering sketching and CAD. Lecture and laboratory-six contact hours. Prerequisite: ITD 101 or 107 and 104; ITD majors only.

ITD 303 Advanced Parametric Modeling (4). An advanced course in the theory and application of computer aided system for parametric drafting and design manufacturing. Two hours lecture and four hours laboratory. Prerequisite: ITD 204. (Spring)

ITD 305 Sketching and Industrial Blueprint Reading (3). Technical sketching fundamentals as applied to the needs of industrial shop personnel and field technicians. Emphasis is placed on the readings and interpreting of selected types of industrial drawings.

ITD 306 Engineering Graphics (4). Orthographic projection with an emphasis on auxiliary projection and descriptive geometry. Descriptive geometry theory and techniques are used to solve applied engineering problems. Lecture and laboratory-six contact hours. Prerequisite: ITD 302. (Spring)

ITD 309 Engineering Models Design and Construction (2). A course in the principles of design and construction of scale model representation of engineering, architectural, and related structures, including materials and processes. Prerequisites: ITD 101 and 130.

ITD 322 Introduction to Plastics (4). Industrial plastics and polymer sciences. Experience with plastic materials and manufacturing methods. Lecture and laboratory. Prerequisites: ITD 101 and 130.

ITD 330 Machine Tool Processes (4). A study in the shaping of metallic products using traditional and computer numerical control processes and equipment. Includes examination of precision measuring methods, cutting tools properties and methods required in achieving an efficient, economical, and safe material removal process. Lecture and laboratory-six contact hours. Prerequisite: ITD 130.

ITD 333 ANSI Fundamentals for Mechanical Product Design (4). Focuses on the intermediate technical fundamentals of ANSI standards applicable to mechanical product design and engineering graphics. Engineering sketching and 3D parametric modeling will be emphasized. Two hours lecture and four hour laboratory. Prerequisites: ITD 204, 302, and 330. (Spring)

ITD 350 Construction Systems (4). A study of the construction industry theory and practice. Emphasis is placed on the structural and mechanical systems in single-family detached dwellings and non-residential light commercial civil construction projects. Lecture and laboratory-six contact hours. Prerequisites: ITD 101 or 107 and 130.

ITD 351 Materials and Textiles for Interiors (3). Consumer-oriented study of textiles emphasizing fibers, yarns, fabric construction and finishes in relation to use, serviceability and care of apparel and household fabrics.

ITD 352 History of Interiors I (3). A survey of architecture and interiors from ancient times to 1800. Emphasis is on furnishings, interior architectural details, accessories, materials, significant designers and architects of the periods, and current sources of reproductions of furniture and accessories.

ITD 353 Interior Design Studio II (3). Study of and practical experience in space planning of residential interiors. Emphasis is on functional, aesthetic and economic considerations, materials and codes; perspectives and color board preparation techniques. Graphic and oral presentations of interior design projects. Laboratory, four hours. Prerequisites: ITD 104. and 253.

ITD 356 Practical Problems in Interior Design (3). Hands-on experience in implementing plans for diverse background treatments for residential and commercial interiors using a variety of materials in a laboratory setting. Design and produce accessory and display items; develop estimates; practice installation techniques. Prerequisites: ITD 221, 251, 253, and 352.

ITD 357 Interior Design Studio III (3). Preparation of portfolio plus self-initiated, large-scale, complex interior design project. Emphasis is on synthesizing all learning to date and critiquing work. Presentation of complete project and portfolio. Lecture and tutorial. Prerequisite: ITD 353.

ITD 368 Computer-Aided Manufacturing and Robotics (4). A study of basics of computer-aided manufacturing; computer numerical control (CNC), computer aided design and machining (CAD/CAM) and robotics applications in manufacturing. Laboratory work in manual and automatic programming and setup of CNC machines and robots. Prerequisites: ITD 101 and 130; junior standing.

ITD 401 Architectural Design Studio II (4). An intermediate course focused on the design of small buildings with emphasis on schematic and presentation drawings and 3D model building. Students will develop intermediate level design documentation to include construction details, notations, and applications. Analysis and synthesis of architectural form generated by program requirements, physical systems, spatial organization, available technologies, and review of historic precedents and aesthetics will also be explored. Lecture and laboratory-six contact hours. Prerequisites: ITD 301. (Fall)

ITD 403 Product and Tooling Design (4). This course utilizes parametric, feature-based, solid modeling software and techniques applied to problem solving and representation of product and tooling components and assemblies. Emphasis is placed on dimensioning, geometric dimensioning and tolerancing, 3-D modeling and design of mechanical devices, and principles of tooling design. Lecture and laboratory-six contact hours. Prerequisites: ITD 304, 330, and 333. (Fall)

ITD 404 Computer-Aided Engineering Design Graphics (4). The utilization of state-of-the-art computer applications focusing on industrial product and tooling design. Design modeling techniques will be addressed that reduce product cost by taking into account quantified design parameters defined as a result of manufacturing processes and geometric tolerancing. Theory and applications of geometric dimensioning and tolerancing for industrial product and tooling design will be applied. Discussions of design criteria and print/design file interpretation. A review of product design communications as applied by product designers, tooling designers, setup and production personnel and quality assurance/verification specialists. Prerequisites: ITD 204 and 333.

ITD 420 Equipment Maintenance and Materials Processing (4). Maintenance and adjustment of industrial machinery and equipment such as (but not limited to) metalworking, woodworking and drafting equipment. Theory and activities in the design, materials, and equipment of durable goods manufacturing industries. Emphasis on modern production materials, robotics, CNC, and production design systems. Prerequisites: ITD 130 and 330.

ITD 431 Advanced Numerical Control and CAD/CAM (4). A study of programming machine tools through the application of computer aided manufacturing (CAM) software. Course will include experiences in 2D and 3D programming systems — drilling, milling and turning operations. Economic analysis of computer aided manufacturing will be reviewed. Six contact hours. Prerequisites: ITD 368 and a CAD class.

ITD 450 Problems in Housing (3). Analysis of family housing needs for contemporary living. Selected topics will be chosen from these major areas: home energy needs and energy conservation, housing and interiors for special needs groups, housing for low-income families, and practical problems in interior design. May be repeated for a maximum of six credits. Prerequisite: senior standing.

ITD 452 History of Interiors II (2). A study of architecture and interiors from 1800 through the present time. Emphasis is on French, English and American styles, significant designers and architects, international movements influenc-

ing designs, product quality and furnishing resources. Laboratory, four hours. Prerequisite: ITD 352.

ITD 453 Interior Design Studio IV (3). Application of elements and principles of design in planning public interiors. Business practices and professional ethics included. Prerequisite: ITD 357.

ITD 454 Studio Problems in Interior Design (3). Studio problems in interior design. Practical problems with historical and contemporary interiors. Issues include environmental concerns, economics, special needs, quality and sources of materials. Experience with renderings, cost estimates and specifications. Graphic and oral presentation of designs. Laboratory, four hours. Prerequisites: ITD 221, 251, 253, 353, and ITD 104.

ITD 455 Interior Design Studio V (3). Analysis of shelter needs for handicapped and elderly persons. Synthesis of needs into design of facilities, both residential and commercial, to meet these needs emphasis on universal design. Specifications for and cost estimates of design features. Prerequisite: ITD 453.

ITD 456 Internship (3). Placement in an appropriate position in an approved firm to provide professional development through observation and supervised performance of assigned tasks. Intention to participate must be made a semester in advance. Placement is based on selection of study by business via resume and interviews and is not guaranteed. Required for certification by the National Kitchen and Bath Association (NKBA). Repeatable for six credit hours. Minimum 300 clock hours of field experience. Prerequisites: GPA 2.5 and approval of faculty advisor.

ITD 458 Professional Support (1). Course provides the student the opportunity to interact with professionals in the interior design field by participating in dialogue with interior designers at seminars, design firms, and professional meetings. Course may be repeated for a maximum of three credit hours.

ITD 459 Professional Practice (1). A review course for the National Council for Interior Design Qualification (NCIDQ) exam to become a professional member of the American Society of Interior Designers (ASID) and the National Kitchen and Bath (NKBA) exams and for becoming a certified kitchen and/or bath designer. Timed problem solving drawing exams and objectives exams over specific sections of knowledge will be administered. This course is intended for seniors in the interior design option.

ITD 490 Computer Aided Engineering Design Graphics (4). The utilization of state-of-the-art computer applications focusing on industrial product and tooling design. Design modeling techniques will be addressed that reduce product cost by taking into account quantified design parameters defined as a result of manufacturing processes and geometric tolerancing. Theory and applications of geometric dimensioning and tolerancing for industrial product and tooling design will be applied. Discussions of design criteria and print/design file interpretation. A review of product design communications as applied by product designers, tooling designers, setup and production personnel and quality assurance/verification specialists. Prerequisites: ITD 120, ITD 303, senior standing or instructors approval.

ITD 492 Plant Layout and Material Handling (3). A study of the arrangement of physical facilities and materials handling to optimize the interrelationships among operating personnel, material flow, information flow, and the methods required in achieving enterprise objectives efficiently, economically, and safely. Prerequisite: junior standing (Spring)

ITD 495 Industrial Supervision (3) An in-depth study of the qualities necessary in order for a frontline supervisor to be a vigorous leader, an effective leader, a source of technical know-how and deft mediator between policy-setting management and the rank-and-file worker. Prerequisite: junior standing. (Fall)

ITD 498 Senior Design (4). Study of product design principles, production methods and simultaneous manufacturing techniques. Laboratory activities are centered around the design and prototyping a product. Lecture and laboratory-six contact hours. Prerequisites: ITD 403.

ITD 503 Architectural Design Studio III (4). An advanced course that will focus in the increasing complexity of preliminary design, schematic design, and design development of an institutional or commercial building. This will be an advanced course concerning design documentation that will include a wide range of construction documentation, industry standard applications, and innovative architectural design practices. Developing the student's ability to research, analyze, and evaluate information as the design evolves will be emphasized through a major BIM project. Lecture and laboratory-six contact hours. Prerequisites: ITD 401.

ITD 504 Advanced Study in Computer Aided Drafting/Design (4). An advanced course in the theory and application of computer aided systems for the drafting and design field. Lecture and laboratory. Prerequisite: ITD 304 or permission of instructor.

ITD 522 Industrial Plastics (4). Materials and processes used in plastics manufacturing industries; includes mold design and construction. Lecture and laboratory.

ITD 531 Numerical Control/Computer NC Machining Systems (4). A study of automatic manufacturing by NC/CNC. Technical, social and economic aspects of NC/CNC machining systems. Laboratory work in manual and computer-assisted numerical control programming. Setup and operation of machines. Six contact hours.

ITD 532 Metallurgy (2). Structure, properties, behavior and use of metals. Laboratory analysis and research. Lecture and laboratory.

ITD 533 Technology and Production Tooling (2). Machine setups, tooling and inspection procedures. Lecture and laboratory. Prerequisite: ITD 531 or 532.

ITD 541 Industrial Wood Fabrication (4). Material, equipment, processes and nomenclature of the woods manufacturing industry; emphasis on design and planning for production. A study of both traditional and innovative wood processing techniques. Prerequisite: ITD 341.

ITD 601 Advanced Engineering Drawing (4). Current and emerging theories and practices in the identification of course content and the teaching of projection theory, two- and three-dimensional representation and problem-solving techniques. Lecture and laboratory. Prerequisite: permission of instructor.

ITD 602 Technical Illustration (4). Illustration drawing, rendering and creative techniques related to illustration.

ITD 603 Architectural Drafting and Design-Light Commercial (4). Theory and practice in instrument and computer aided drafting and design for architectural structures. Topics will include the review and evaluation of existing designs, plans and specifications for nonresidential light commercial structures. Structures in the building code classifications of: assembly, business, and mercantile will be included. Program and design architecture will be included. Lecture and laboratory. Prerequisite: permission of instructor.

ITD 604 Advanced Computer Graphics (3). Computer graphics applications to various industrial fields, problem-solving situations, design, and research. Prerequisite: permission of instructor.

ITD 606 Machine Design and Drawing (4). Functional drawing practices, design considerations, and problem-solving techniques as applied to machine and tooling situations. Prerequisite: permission of instructor.

ITD 621 Plastics Technology (4). Industrial plastics with emphasis on research and experimentation. Prerequisite: permission of instructor.

ITD 630 Technology of Metals Processes (4). Supplementary and comprehensive instruction in the technology related to the processes of forming, shaping, fastening and finishing of metal products. Emphasis on the design, function, and efficiency of the processes involved. Lecture and laboratory.

ITD 631 Research in Metal Technology (3). Experience in research and experimentation related to metals and metal working processes. Research activities center around group and individual laboratory experiences. Prerequisite: permission of instructor.

ITD 641 Research in Wood Technology (3). Experimentation and research in adhesives, finishes, abrasives, woods and wood products; properties and application to school and industrial usage. Lecture and laboratory.

ITD 651 Advanced Study in Manufacturing (3). The materials, processes, equipment, products, and occupations relating to the manufacturing industry will be studied. The selection, design, and production of typical products will be undertaken, using mass production techniques, drawing upon the experiences gained through courses in the technical specialization component. Lecture and laboratory. Prerequisite: permission of instructor.

JOURNALISM AND MASS COMMUNICATIONS (JMC)

JMC 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

JMC 168 Contemporary Mass Media (3). The mass media, stressing development, nature, controls under which they operate, economic and political foundations, social implications and future roles. Open to non-majors as an elective.

JMC 194 Newswriting (3). Principles of newswriting for print and electronic media. Prerequisites: ENG 101 or ENG 105 or 150 with a grade of *B* or better.

JMC 270 Media Production (3). Introduction to production technology including audio control room operations, audio and video recording, camera operations and editing. Prerequisites: JMC 168 with a grade of *C* or better, ENG 101 or 105 or 150 with a grade of *B* or better.

JMC 304 Multimedia Writing (3). Advanced news story construction for print and electronic media as well as basics of copy preparation for the World Wide Web. Emphasized new style, language usage, and news story construction. Prerequisites: JMC 194 with a grade of *C* or better; and CSC 125 and GCM 153.

JMC 305 News Editing (3). Basics of news editing across multiple platforms, including headline writing, legal and ethical issues, editing for style, and using images. Prerequisite: JMC 194 with a grade of *C* or better.

JMC 322 Mass Media Study Abroad (3). Study of current trends and practices in mass media in foreign nations; specific content will vary. Prerequisites: consent of supervising instructor and department chair; acceptance in a study abroad program approved by Murray State University.

JMC 330 Mass Media Effects (3). A systematic approach to mass media in terms of structure, functions and effects; includes such topics as meaning, perception, selectivity, ethics persuasion, subliminal seduction, violence and erotica, political socialization, learning, agenda-setting, and uses and gratifications. Prerequisite: JMC 168 with a grade of *C* or better.

JMC 336 Writing for Media Production (3). Theory and practice of writing for radio and television. Includes dramatic scripts; radio and TV copy conventions; script outlines and documentaries. Prerequisites: JMC 168 with a grade of *C* or better, ENG 101 or ENG 105 or 150 with a grade of *B* or better; CSC 125 and GCM 153.

JMC 358 Television Studio Production (3). Television studio production technology including camera operation, recording, audio and video control, video switching, electronic graphics, lighting, staging, and production organization, with an emphasis on broadcast-quality results. Prerequisites: JMC 168, 270, and 336 with a grade of *C* or better; ENG 101 or 105 or 150 with a grade of *B* or better.

JMC 369 Audio/Video Post Production (3). A project-based course that emphasizes the integration of nonlinear video editing with graphic production, 3-D compositing, enhanced audio and DVD authoring. Prerequisites: JMC 270 and 336 with a grade of *C* or better.

JMC 384 Sports Media (3). The symbiotic relationship between sports and the media that cover them. Also, the impact these two institutions working in tandem have on American society. Prerequisite: permission of instructor.

JMC 385 Directed Individual Study (1-3). Repeatable up to three hours.

JMC 391 Public Relations Principles (3). A study of the profession of public relations, skills, jobs, case studies, media relations, and writing. Students may not be enrolled in JMC 391 and JMC 412 simultaneously. Online sections are for non-public relations majors only. Prerequisites: ENG 101 or 105 with a grade of *B* or better, JMC 168 or permission of instructor. Business program students: MKT 360.

JMC 394 Introduction to Advertising (3). A survey course on the role and function of advertising in society; emphasis on the basic structure and techniques of advertising, marketing, media roles, creative strategies and the agency system. Prerequisites: ENG 101 or 105 or 150 with a grade of B or better. Business program students: MKT 360.

JMC 396 Publication Design (3). Advanced editing class emphasizing newspaper design, layout and graphics. Prerequisite: JMC 305 with a grade of *C* or better.

JMC 397 In-depth Reporting (3). Techniques of newsgathering, general assignment reporting, and specialized and beat reporting experiences. Emphasizes the acquisition of information through interviews, direct observation, and journalistic research. Prerequisite: JMC 304 with a grade of *C* or better.

JMC 398 Advanced Multimedia Reporting (3). News gathering and reporting for broadcast and online media. Surveys news operations and emphasizes construction of news copy, elementary news packaging techniques, and journalistic ethics. Prerequisites: JMC 194, 270, and 304 with a grade of *C* or better.

JMC 400 International Mass Communications (3). Study of world's communications systems and the roles they play. Analysis of international news flow. The effect of the basic philosophical differences among the media in the developed and developing worlds and the changing communication technologies will be examined. Prerequisite: junior standing or permission of instructor.

JMC 412 Content Creation for Public Relations (3). Emphasis placed on writing across the media, for diverse publics, to achieve organizational objectives. Basic formats include, but are not limited to, news releases, feature articles, fact sheets, newsletters, brochures, and business correspondence. Basic copy editing and design concepts will be covered. Analysis of publicity methods used in professional campaigns will also be included. Prerequisites: JMC 194 and 391 with a grade of *C* or better; and CSC 125 and GCM 153.

JMC 417 Advertising Creative Strategies (3). A study of the theory, techniques and practical skills needed for both writing advertising copy and doing basic advertising layout. Prerequisites: JMC 394 with a grade of *C* or better; and CSC 125 and GCM 153.

JMC 426 Advertising Media Sales (3). Theory and practical application of media advertising sales. Advertising strategy, policy formulation and implementation. Creative and media decision-making structure and procedure. Management of media sales personnel. Students prepare and present advertising sales plan. Prerequisite: JMC 394 with a grade of *C* or better.

JMC 439 Advertising Media Planning (3). The study and application of media analysis, planning, and buying. Students prepare and present an advertising media campaign. Prerequisite: JMC 394 with a grade of *C* or better.

JMC 440 Research Methods for Public Relations (3). Use of social science research methods in public relations. Emphasis will be on survey techniques and focus groups, interpretation, application, and communication of research findings to the public. Prerequisites: JMC 168 and 330 with a grade of *C* or better.

JMC 444 Digital Technology for Public Relations (3). A study of the strategy, tactics, tools, techniques and trends pertinent to the "business" of public relations. The course focuses on new and digital media; social networks and promotional applications; and event planning. Course work includes hands-on use of the latest tools and technologies, including blogs and social websites, monitoring with metrics and analytics, online news releases and new digital methods of disseminating information, Internet promotion and content generation, and special event planning and implementation. Prerequisites: JMC 168, 194, 391 and 412, with a grade of *C* or better.

JMC 445 Community Journalism (3). An examination of community news media, including organization, content, production, and distribution. Prerequisite: JMC 394 or permission of instructor. Students are encouraged to take ACC 200 and MGT 350 before enrolling in this course.

JMC 448 Media Production Enterprises (3). Creating a plan and proposal for a television program, including audience analysis, market appraisal, concept, treatment, script, budget, facilities, crew, cast, location, shooting schedule, and distribution across multiple digital platforms. Prerequisites: JMC 336 and 358.

JMC 451 Television Field Production (3). Single camera and multi-camera electronic field production, non-linear editing and postproduction to create a variety of television productions from spots to full-length programs, with an emphasis on broadcast-quality results. Prerequisites: ENG 105, JMC 168, 270, and 336; junior standing or permission of instructor.

JMC 455 Capstone in Media Production (3). Capstone seminar in creating television programs. Topics include program concepts, target audiences, scripting, budgeting, pre-production planning, producing and marketing pilots. It is anticipated that for a successful outcome, students will commit a minimum of nine hours per week to this course plus an additional 30 hours during the semester working on special projects and productions. Work outside the studios may be required for some productions. Prerequisites: JMC 270, 336, 358, 451. Preference given to television production majors.

JMC 456 Advertising Capstone: The Campaign (3). A seminar course designed to bring together the knowledge acquired in advertising, marketing and communications courses and apply them to a realistic problem. Students develop management ability in analysis and preparation of complete advertising campaign. Students are required to work in teams to prepare plans books and give formal ad agency presentations. Prerequisites: JMC 417, 426, and 439 all with a grade of *C* or better.

JMC 466 Advanced Electronic News Reporting and Production (3). Advanced electronic journalism, including emphasis on compiling, writing, videotaping, editing and producing news for television. Students serve as reporters, photographers and producers and gain practical work experience at MSU-TV. Includes 30 hours arrangeable lab work. Prerequisites: JMC 270 and 398 with a grade of *C* or better.

JMC 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

JMC 491 PR Capstone: Cases and Campaigns (3). A capstone seminar course designed to provide students an opportunity to demonstrate their mastery of the skills, techniques, and knowledge acquired in previous major and minor courses. Working in teams, students will research, develop, and create a public relations campaign, as well as give formal presentation of their work that includes production of all materials supporting the campaign. This semester-long project should further enhance the students public relations skills and knowledge, as well as develop their management and analytical skills. Prerequisites: JMC 412, 440, and 444 with a grade of *C* or better.

JMC 492 Feature Writing (3). Techniques of researching, writing, editing and marketing feature articles. Prerequisite: JMC 194 with a grade of *C* or better.

JMC 499 Senior Seminar (1). A required course for all graduating seniors in advertising, public relations, journalism, and radio-TV. A forum for career preparation on such topics as resume and portfolio preparation, job searches, interviews and graduation requirements. Graded pass/fail.

JMC 586 Special Topics (3-6). Seminar for juniors or seniors concerning a current topic affecting the mass media. May be repeated one time for a total of six hours of credit. Prerequisite: permission of instructor; junior or senior standing.

JMC 590 Mass Communication Law (3). The law as it affects journalism and broadcasting. History and background of the freedom of the press and broadcast industries with emphasis on First Amendment and FCC regulations, including such areas as seditious libel, libel, obscenity, privacy, copyright, advertising and the Fairness Doctrine. Primarily a lecture and reading course. Prerequisite: JMC 330 with a grade of *C* or better.

JMC 593 Opinion Writing (3). A course in the writing of opinion, including editorials, personal columns, commentaries, Web logs, and reviews. Prerequisites: JMC 194 and 330 with a grade of *C* or better or permission of instructor.

JMC 596 Internship (3). Course for students majoring in advertising, journalism, public relations, or television production who have completed a minimum of eight weeks as an intern with the media or an advertising or public relations organization. Students will prepare and present case studies on their work experience. Prerequisite: permission of instructor.

JMC 597 Collaborative Journalism Capstone (3). Capstone course in journalism. Project-based advanced techniques of specialized reporting, emphasizing community-based journalism and civic journalism for print, broadcast, and online platforms. Includes overview of issues concerning diversity, journalism ethics, and legal concerns. Prerequisites: JMC 397 and 398 with a grade of *C* or better.

JMC 600 Seminar in International Mass Communication (3). Analysis of theories and research in international mass communication. Focus on transnational information flow and the role of media in facilitating international knowledge and understanding.

JMC 601 Media, Culture, Gender, and Race (3). An analysis of theories and research in mass media influences on images of culture, race, and gender in our society. Focus on the role of news, entertainment, and advertising media in the construction and perpetuation of systemic views about members of these particular groups. Prerequisite: permission of the instructor.

JMC 602 Seminar in Advertising (3). An in-depth study of the profession of advertising, with a focus on contemporary issues, problems, and challenges; guided discussion and analysis of case studies. Enrollment is limited, with preference to JMC majors.

JMC 603 Seminar in Public Relations (3). An in-depth study of the profession of public relations with a focus on contemporary issues, problems, and challenges using guided discussion and analysis of case studies. Enrollment is limited, with preference to JMC majors.

JMC 610 Introduction to Graduate Studies in Mass Communications (1). Course to orient the new graduate student to graduate study in mass communications. Students are presented with an overview of key skills needed in most research-driven courses. Topics include exploring the library, abstracting research articles, conducting a literature search, developing a research plan, choosing a research topic, examining data and graphics, writing for the social sciences, writing styles for the social sciences, establishing research partnerships, exploring research ideas, and presenting seminars. Students must enroll in this course during their first semester in the graduate program.

JMC 615 American Media History (3). History of journalism and broadcasting with emphasis on the role of newspaper, radio, television, and other communications media in the United States.

JMC 616 Professional Internship in Mass Communications (3). Course for advanced students who have completed a minimum of eight weeks as an intern with the media or a public relations or advertising agency. Case studies are prepared by the students on their work experience. Prerequisite: permission of instructor.

JMC 620 Strategic Communications (3). Course is designed to explore strategic communication strategies for businesses and other organizations which must communicate with the public. The course addresses the media, methods and ethics of institutions' interactions with a variety of publics. This course uses a lab-based format each week to apply the concepts of the course material. Students should be prepared to think, write, compose, and practice strategic communication skills on weekly basis.

JMC 622 JMC Study Abroad (3). Study of current trends and practices in mass media in foreign nations; specific content will vary. Prerequisites: admission to graduate studies; consent of supervising instructor and department chair; and acceptance in a study abroad program approved by Murray State University.

JMC 630 Theories of Mass Communications (3). The communications process in terms of definitions, characteristics, models, language, and nonverbal elements, with a particular emphasis on such empirical effects as selective attention, perception and retention, functions, uses and gratifications, agenda-setting, aggressive behavior due to violent content, and effects of advertising on children.

JMC 648 Mass Media Industries (3). Basic principles of markets and economics and how they apply to media industries. Topics include ownership, convergence, regulation, market forces, and technological forces.

JMC 658 New Technologies (3). The development of technology in media industries and related businesses, such as consumer electronics and office systems. Topics include the nature of technical innovation, economic feasibility, public policy, social impact, and diffusion models.

JMC 660 Methods of Communications Research (3). The research process in mass communication including survey, experimental, and archival. Students will become familiar with the philosophy and techniques of social science research, data collection methods, sampling procedures, and statistical analysis. Students will also conduct a research project.

JMC 670 Philosophical and Ethical Concepts of the Mass Media (3). Lecture and seminar course in concepts of the role of the mass media in society. Philosophical background to include legal and ethical issues.

JMC 677 Directed Individual Study (3). A course designed to allow student pursuit of individual interests. Proposal must be approved by the graduate faculty instructor prior to registering for the course.

JMC 685 Specialized Mass Communications (1-3). Directed individual study. Can be a journalistic effort in areas such as science, sports, government, religion, graphics, etc., or a project in radio or television such as a major production or series, an extensive research project on paper, or other approved project. Repeatable up to three hours. Prerequisites: permission of instructor and written approved proposal required prior to registration.

JMC 686 Special Topics (3-6). Seminar for graduate students concerning a current topic affecting the mass media. May be repeated one time for a total of six hours of credit. Prerequisite: permission of instructor.

JMC 690 Comprehensive Project (3). Capstone of the mass communications degree. An individual independent research, creative, or professional project, designed by the student under the direction of the graduate coordinator and one other JMC faculty member. Prerequisites: proposal submitted to and approved by the graduate coordinator by October 15 for spring enrollment–March 15 for summer or fall enrollment; completion of 21 hours in the program; JMC 630 and 660.

JAPANESE (JPN)

JPN 101 Elementary Japanese I (3). Introductory course in modern spoken and written Japanese, designed to develop fundamental skills in the areas of speaking, listening, reading, and writing. Gives contextualized instructions to develop both communicative and cultural competency. Systematically introduces the Japanese writing system (Hiragana, Katakana, and Kanji characters).

JPN 102 Elementary Japanese II (3). A continuation of JPN 101. Prerequisite: JPN 101.

JPN 105 Introduction to Japanese Culture (3). A survey of contemporary Japanese character and society from a historical perspective. Attitudes, achievements, institutions and life styles of the Japanese people are explored. Conducted in English.

JPN 110 Basic Conversational Japanese (3). A conversation-oriented introduction to pronunciation and essential structures and vocabulary. Pronunciation, listening comprehension, speaking and simple reading and writing of material related to conversational situations are included. No continuation offered. Only taught abroad.

JPN 201 Intermediate Japanese I (3). Continuing study of Japanese at the intermediate level. Stresses reading comprehension, spoken fluency, and composition, with materials organized around social and cultural topics; continues to introduce new Kanji characters.

JPN 202 Intermediate Japanese II (3). A continuation of JPN 201. Prerequisite: JPN 201 or permission of instructor.

JPN 210 Intermediate Conversational Japanese (3). Course designed to develop the vocabulary and oral communication skills of the student with a background of one year of college Japanese or equivalent. Emphasis will be placed on bringing the student into contact with the Japanese people and various aspects of their culture. No continuation offered. Only taught abroad. May count as a required language course. Prerequisite: JPN 102 or equivalent.

JPN 301 Japanese Conversation and Composition I (3). Intensive practice in speaking and writing based on a variety of topics and materials. Prerequisite: JPN 202 or permission of instructor.

JPN 302 Japanese Conversation and Composition II (3). Additional intensive practice in speaking and writing based on a variety of topics and materials. Prerequisite: JPN 301 or permission of instructor.

JPN 306 Introduction to Japanese Literature (3). As an introduction to literary analysis, this course is designed to develop abilities in analytical reading, oral presentation, and expository writing. The course surveys a variety of literary genres, and is conducted in Japanese and in English. Prerequisite: JPN 301 or permission of instructor.

JPN 310 Conversation and Composition Abroad (3). Intensive practice in speaking and writing based on the student's interaction with native speakers and the international setting. Only taught abroad. No continuation offered. May count toward the major and minor approved electives. Prerequisite: Two years of college Japanese or equivalent.

JPN 314 Japanese Culture Abroad (3). Japanese culture taught in Japanese and only taught in study-abroad programs in Japan. The course entails planned activities as well as excursions to cultural sites in conjunction with readings about the activities, the sites, and the intellectual history and milieu behind their conceptions. The student will explore the history, art, literature, politics, and music of the host country. Prerequisite: JPN 202 or equivalent, or consent of instructor.

JPN 315 Global Cinema in Japanese (3). A study of Japanese cinema and film industry through the examination of significant directors and film movements. The course includes a two-hour per week film screening in addition to class meetings. The course is conducted in Japanese. Prerequisite: JPN 301 or permission of instructor.

JPN 323 Japanese Culture and Civilization (3). Survey of the contributions of Japan to world culture including the historical development of Japan from pre-historic time up to the Meiji Restoration (1868). The class is conducted in Japanese. Prerequisite: JPN 301 or permission of instructor.

JPN 324 Contemporary Japanese Culture and Civilization (3). A survey of attitudes, achievements and behavioral characteristics of the Japanese people from the Meiji Restoration (1868) to the present. The class is conducted in Japanese. Prerequisite: JPN 301 or permission of instructor.

JPN 331 Advanced Language Practice (3). Course will offer students the opportunity to expand their cultural and linguistic knowledge of Japanese culture through series of conceptual frameworks, such as an international conference, an apartment building, a hotel, or a business. Students will engage in extensive "role play" and creative exercises to establish contexts, choose fictive identities, and improvise a series of encounters. The class is conducted in Japanese. Prerequisite: JPN 202.

JPN 350 Modern Japanese Literature in Translation (3). This course surveys Japanese fiction from the Meiji Restoration (1868) to the present day. We will examine the personal voice, manifest in literary works, and explore the ways in which literature has been closely interwoven with historical movements and social changes of modern times. Prerequisite: ENG 105 or 150.
(Same as ENG 350.)

JPN 401 Advanced Japanese I (3). This course is the first semester of the fourth-year Japanese curriculum, which is a continuation of JPN 302 and is designed to further develop the student's four language skills (speaking, listening reading, and writing) and cultural knowledge. The class is conducted in Japanese. Prerequisite: JPN 302.

JPN 402 Advanced Japanese II (3). This course is the second semester of the fourth-year Japanese curriculum, which is designed to further develop the student's four language skills (speaking, listening, reading, and writing) and cultural knowledge through various means including the study of authentic materials and classroom activities. The class is conducted in Japanese. Prerequisite: JPN 401

JPN 421 Topics in Japanese literature (3). Analysis and discussion of characteristics and representative authors from different historical periods and genres of Japanese literature. Course content will vary according to the needs of the Japanese Program. May be repeated to a maximum of nine credit hours. The course is conducted in Japanese. Prerequisite: JPN 302.

JPN 431 Advanced Translation and Interpretation in Japanese (3). This course provides the academic resources and practical skills necessary to provide cross-cultural, professional translation and interpretation from Japanese to English and from English to Japanese in a variety of professional fields, such as: business, healthcare, and criminal justice, among others. A field visit to a professional setting where interaction with native speakers is possible. Prerequisites: JPN 301, 302, 331, GLT 401; or permission of instructor.

JPN 441 Topics in Japanese Cultural Studies (3). This course explores a variety of factors that contribute to and illustrate the cultural life, social themes, and national perspectives of Japanese society. The course topic will vary depending on the semester during which the course is offered and according to the needs of the students in the Japanese program. The course may be repeated for a maximum of six credit hours. The course is conducted in Japanese and in English. Prerequisite: JPN 302.

JPN 460 Studies in a Genre (3). The course will explore a particular genre of Japanese literature (e.g., the novel, novella, drama, poetry, short story, etc.), the theory behind the respective genre, and an examination of a variety of works within that genre. May be repeated as a second course for up to six credit hours provided that the second course covers a different genre. The course is conducted in Japanese. Prerequisite: JPN 302.

JPN 551 Directed Studies (1-3). Course work designed to meet specific needs and interests on an individual basis. Prerequisite: junior standing or above.

LETTERS, ARTS, AND SOCIAL SCIENCES (LAS)

LAS 150 Reading, Writing, and Research in Letters, Arts, and the Social Sciences (4). Focusing on the value of the humanities, arts, and social sciences, the course instructs students in the practices of close reading, research, writing, and critical thinking as applied to academic writing and speaking. For all degrees, this course may be used in lieu of ENG 105. May require overnight study away. Prerequisite: open only to students enrolled in the CLASS Cohort.

LAS 211 World's Historical, Literary, and Philosophical Traditions to 1600 (3). Interdisciplinary course that focuses on enduring ideas, themes, and issues in the world's historical, literary, religious, and philosophical traditions up to 1600 CE. The course contains experiential learning components (such as internship, study away, service learning) that reinforce its academic aims. Fulfills three hours of the humanities University Studies requirement in place HUM 211. Prerequisite: LAS 150. Corequisite: LAS 221. Open only to students enrolled in the CLASS Cohort.

LAS 212 World's Historical, Literary, and Philosophical Traditions from 1600 (3). Interdisciplinary course that focuses on enduring ideas, themes, and issues in the world's historical, literary, religious, and philosophical traditions from 1600 CE to the present that characterize the central question of human and civic flourishing. The course contains experiential learning components (such as internship, study away, service learning) that reinforce its academic aims. Prerequisite: LAS 211. Corequisite: LAS 222. Open only to students enrolled in the CLASS Cohort.

LAS 221 World's Artistic Traditions to 1600 (3). Interdisciplinary course that combines art history, music history, and theatre history with a focus on how these take up enduring ideas, themes, and issues up to 1600 CE. The course contains experiential learning components (such as internship, study away, service learning) that reinforce its academic aims. Prerequisite: LAS 150. Corequisite: LAS 211. Open only to students enrolled in the CLASS Cohort.

LAS 222 World's Artistic Traditions from 1600 (3). Interdisciplinary course that focuses on enduring ideas, themes, and issues in the world's artistic traditions from 1600 CE to the present. The course contains experiential learning components (such as internship, study away, service learning) that reinforce its academic aims. Prerequisite: LAS 221. Corequisite: LAS 212. Open only to students enrolled in the CLASS Cohort.

LAS 251 Ethics and Humanities (3). Exploration of classic and contemporary problems of personal and social morality and the systems and methods proposed by philosophers, past and present, in response to questions of good and evil. Prerequisites: LAS 212 and 222. Corequisite: LAS 261. Open only to students enrolled in the CLASS Cohort.

LAS 261 The Self, the Society, and Global Citizenship (3). Course will introduce students to the perspective of the social sciences by focusing on the ways in which identities, actions, and behaviors are shaped by social realities, civic structures, and notion of the self. Through a study of the key concepts within sociology, political science, and psychology, students will be given the tools by which to understand better their society and others around the world. The course contains experiential learning components (such as internship, study away, and service learning) that reinforce its academic aims. Prerequisite: LAS 211. Corequisite: LAS 251. Open only to students enrolled in the CLASS Cohort.

LAS 311 Topics in Letters, Arts, and Social Sciences (3). Study of pertinent issues that advance student knowledge and engage students with the humanities, arts, and social sciences. Topics studied are at the discretion of the instructor. The course contains experiential learning components (such as internship, study away, and service learning) that reinforce its academic aims. Prerequisites: LAS 251 and 261. Open only to students enrolled in the CLASS Cohort.

LAS 312 Advanced Topics in Letters, Arts, and Social Sciences (3). Intensive study of pertinent issues that advance student knowledge and engage students with the humanities, arts, and social sciences. Topics studied are at the discretion of the instructor. The course contains experiential learning components (such as internship, study away, and service learning) that reinforce its academic aims. Prerequisite: LAS 311. Open to student enrolled in the CLASS Cohort.

LIBERAL ARTS (LBA)

LBA 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. An introduction to university life in general and the liberal arts major in particular. Graded pass/fail.

LBA 438 Seminar in Liberal Arts (3). Capstone course limited to Liberal Arts majors. It is designed to help students who are completing their coursework refine writing, thinking research, and document design skills through the development and completion of a multidisciplinary research-oriented project. Prerequisite: permission of program coordinator.

LBA 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of program coordinator.

LBA 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of program coordinator.

LIBRARY SCIENCE (LIB)

LIB 600 Libraries and Education (2). Course is an introduction to the concept of school librarianship, providing an overview of the role of the school media librarian as a teacher and leader in a school community. Students will be required

to observe different aspects of a school librarian's activities as part of a field experience activity. The course must be taken during the first semester of the program. Field experience required. Prerequisite: permission of instructor.

LIB 601 Learning and Libraries (3). The role of libraries and librarians in encouraging learning, and the concept of information literacy as an essential competency for the enhancement of lifelong learning.

LIB 604 Library in the School Curriculum (3). An approach to understanding the role of the library media specialist and the media center in the school curriculum, with the aim of developing the school as a learning community, stressing collaboration between administrators, teachers, and media specialists in planning curriculum and professional development.

LIB 610 Collection Management (3). Principles, standards, practices, and problems in managing and maintaining library collections, with a focus on school library media centers; examination of the major selection tools and critical evaluation of reviewing sources; integration of external sources, particularly those on the web, into the collection; and consideration of weeding techniques and principles.

LIB 613 Clinical Experiences in Library Media (3). Students seeking initial certification in library media will participate in a supervised clinical experience for a total of 12 weeks of student teaching. Graded pass/fail. Prerequisite: admission to Teacher Education and Student Teaching.

LIB 617 Research in Young Adult Literature (3). An in-depth study of chosen areas of young adult literature with emphasis on electronic and print sources by and about authors, genres, and issues, which may include a field experience where students explore the pedagogical implications of their study.

LIB 620 Library Administration (3). The theories, principles and processes underlying the administration and organization of library service for a learning community; planning; organizing, staffing, directing, coordinating, evaluating, reporting, programming, scheduling, public relations/marketing, budgeting, equipping and housing. May include visits to school library media centers or other libraries for observations or to consult resources as required by course assignments.

LIB 621 Library Practicum: Capstone Experience (3). Observation and supervised practice work in an assigned media center upon the completion of the required course work. Students are assigned to an approved school library media center, under the supervision of a certified school media specialist as well as a university coordinator, where they must spend a minimum of 150 clock hours "on the job" to earn a total of three hours of semester credit. Prerequisites: EDU 626, LIB 620, LIB 630, and LIB 640.

LIB 626 Administration Practicum in Library Media (1). Course provides students with field experience in an assigned school library with a focus on administration of the school library. Students are assigned to an approved school library, under the supervision of a certified, experienced school media librarian as well as a university coordinator, where they must spend a minimum of 50 hours observing or leading activities in or related to the school library. Field experience required. The course is graded pass/fail. Prerequisite: permission of instructor.

LIB 630 Organizing and Managing Library Collections (3). Course will introduce the student to principles for organizing and managing library collections, and trace the life cycle of library materials from selection and acquisition, cataloging, classification, and organization on the shelf, to the removal of materials from the library's collection in deselection or weeding.

LIB 636 Collections Practicum in Library Media (1). Course provides students field experience in an assigned school library with a focus on managing and organizing a school library collection. Students are assigned to an approved school library, under the supervision of a certified, experienced school media librarian as well as a university coordinator, where they must spend a minimum of 50 hours observing or leading activities in or related to the school library. Field experience required. The course is graded pass/fail. Prerequisite: permission of the instructor.

LIB 640 21st Century Skills and Services (3). A consideration of 21st century skills and the services delivered in libraries in order to serve the needs of library users in communicating, collaborating, and cultivating critical thinking and problem solving skills to answer questions, and compile information into knowledge, using both print and digital information sources.

LIB 646 21st-Century Skills Practicum in Library Media (1). Course provides students with field experience in an assigned school library with a focus on the teaching of 21st-century skills and on reference services in the school library. Students are assigned to an approved school library, under the supervision of a certified, experienced school media librarian as well as a university coordinator, where they must spend a minimum of 50 hours observing or leading activities in or related to the school library. Field experience is required. The course is graded pass/fail. Prerequisite: permission of the instructor.

LIB 656 Technology Practicum in Library Media (1). Course provides students with field experience in an assigned school library with a focus on the teaching and management of technology in the school library. Students area assigned to an approved school library, under the supervision of a certified, experienced school media librarian as well as a university coordinator, where they must spend a minimum of 50 hours observing or leading activities in or related to the school library. Field experience required. The course is graded pass/fail. Prerequisite: permission of the instructor.

LIB 699 Exit Seminar in Library Media (1). This course provides culminating experiences for the Library Media Education Master's Degree program. Students will reflect on their program activities and document their professional growth and development toward becoming school media librarians. The course must be taken in the last semester of the master's program but can be taken with other courses. Prerequisite: Permission of the instructor.

LOGISTICS AND SUPPLY CHAIN MANAGEMENT (LSC)

LSC 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

LSC 343 Fundamentals of Operations and Technology (3). A study of the concepts and processes of the operations function with emphasis on the application of these to the management of various types of systems. Special attention is given to the management of technology, quality and globalization. The student is introduced to models commonly used in decision-making. Prerequisites: MAT 120 or higher and conditional or full admission to upper-level business courses or junior standing.

LSC 452 Process Management (3). Course examines the major aspects of developing, analyzing, improving, and managing business processes. The focus is on processes, as opposed to functions. Virtually all businesses are made up of a series of sequential and/or parallel business processes, many of which cut across functional and organizational boundaries. The ability to understand, design, and manage these complex processes is a critical skill, and competent business process analysts, managers, and architects are in high demand in the job market. Prerequisite: LSC 343 with a minimum grade of *C*.

LSC 461 Principles of Purchasing and Supply Management (3). Course provides in-depth exposure to the ideas and concepts of purchasing or procurement. These areas include: procurement objectives, ethical standards, strategies and policies, the basic purchasing process, organizing and staffing, supplier selection and relations, international purchasing, price/cost analysis, negotiation, legal aspects, and managing material flows. A focus on the career opportunities in procurement, materials management, and logistics management will be provided.

LSC 470 Introduction to Quantitative Decision Making (3). Course is an introduction to the quantitative analysis of logistics and supply chain systems. Students learn how to analyze, model, and solve a variety of business problems to support managerial decision making. Emphasis is placed on developing fundamental mathematical modeling skills and Excel solution methods. Prerequisites: LSC 343 (with a minimum grade of *C*) and CIS 243 or STA 135.

LSC 475 International Transportation and Logistics Management (3). Course is an introduction to business logistics and international freight distribution. Emphasis is placed on supply chain management (SCM) theories, practice,

and problems. Students will also explore a Geographical Information Systems (GIS) software package through case study assessments. Prerequisite: LSC 343 with a minimum grade of *C*.

LSC 480 Supply Chain Management Strategy (3). Studies and analyzes the dynamic nature of supply chain management for products and services. The course investigates the linkage between a firm's supply chain strategy and business strategy by means of case analysis and focuses on the development and mastery of concepts, insights, practical tools, and decision support systems important for the effective management of the supply chain. Prerequisites: LSC 343 with a minimum grade of *C* and CIS 243 or STA 135.

LSC 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and financial remuneration. May be repeated for a maximum of six hours from the 488/489 course sequence. Graded pass/fail.

LSC 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluate work experience related to the career and educational objectives of the student for which he/she may receive academic credit and financial remuneration. May be repeated for six hours from the 488/489 course sequence. Letter-graded.

LSC 595 Special Problems (3). This course consists of independent study in the area of logistics and supply chain. Periodic conferences will be arranged with the supervising faculty member on an individual basis. Prerequisite: Permission of instructor.

LEGAL STUDIES (LST)

LST 240 The Legal Environment of Business (3). This course involves a presentation of the basic principles of law as they apply to business.

LST 242 Real Estate Law (3). Comprehensive survey of the law of realty as it affects the real estate professional. A study which involves historical and recent developments in legislation and court precedent affecting real estate, with emphasis in license law, real estate commission rules and regulations and professional ethics. (Same as RES 242.)

LST 250 Mock Trial (3). A legal studies course that teaches basic trial advocacy skills through preparation for and participation with the MSU Mock Trial Team in American Mock Trial Association sanctioned competition. May be repeated for up to six hours credit. Prerequisite: permission of instructor.

LST 300 Introduction to Legal Research (3). An introduction to primary and secondary sources of law including finding tools; federal and state court reports and citation forms; legal digests and encyclopedias; annotated law reports; legal periodicals, including periodical indexes; treatises and restatements; federal and state administrative law; federal, state, and local court rules; research aids. Students will also learn to think, analyze, research, and write like law-trained professionals.

LST 320 Family Law (3). This course will explore various areas of family law, such as the formation and dissolution of domestic relations, which includes the law of marriage, annulment, separation, dissolution and maintenance, as well as the custody and support of children.

LST 340 Immigration Law (3). Course will explore various areas of immigration law including the following: the history of U.S. immigration law and policy; the contours of the immigration bureaucracy, including the roles played by various federal agencies in immigration decisions; the admission of non-immigrants (i.e., temporary visitors) and immigrants into the U.S.; the deportation and exclusion of non-immigrants and immigrants; refugee and asylum law; administrative and judicial review; undocumented immigration; immigration and national security; and citizenship and naturalization.

LST 350 Legal Services for the Elderly (3). An in-depth survey of the major public benefit programs affecting the elderly including Social Security, Supplemental Security Income, Medicare, and Medicaid. The course also studies the law relating to pensions, wills, protective arrangements and nursing homes and is intended to prepare paralegal students to assist the elderly having legal problems in these areas.

LST 370 Law and Literature (3). A course that explores the intersections between law and literature within larger cultural contexts. Prerequisites: CIV 101 and 102, HUM 211 and 212, or equivalent. (Same as ENG 370.)

LST 400 Litigation and Trial Practice (3). Course that explores pre-trial discovery and preparation methods, attorney client privilege, rules of evidence, rules of civil and criminal procedure, and some trial motions. The course will conclude with a moot court trial wherein students will participate as litigating attorneys and witnesses. Prerequisite: LST 300.

LST 430 Trusts and Estates (3). Course that explores the legal requirements of a valid will, living will, power of attorney, a variety of trusts and other estate documents, and the state laws that govern inheritance rights when a person dies without a will. Probate court documents required of a state administrator and probate court evidence methods will also be studied along with state and federal tax consequences. Prerequisite: LST 300.

LST 440 Commercial Transactions (3). A study of business organizations and their commercial transactions. Topics include business organizations and relationships, contracts, the Uniform Commercial Code, sales, credit, agency, and property. Prerequisite: LST 240.

LST 444 Judicial Process (3). A political science course that surveys the nature, functions and sources of law and the role of politics and the courts in the administration of justice. (Same as POL 444.)

LST 445 Constitutional Law I: Developments and Trends (3). A political science course that surveys the development of and historic trends in selected subjects of constitutional law. (Same as POL 445.)

LST 446 Criminal Law (3). Sources of criminal law. The Model Penal Code, Rules of Criminal Procedure. Constitutional mandates relevant to law enforcement investigative procedures.

LST 447 Constitutional Law II: Civil Liberties and Civil Rights (3). A political science course that studies the leading court decisions and their impact on the development of American Constitutional Law in the subject areas of civil liberties (Amendment I), civil rights (Amendments IV, V, VI, VIII, and IX) and the equal protection and due process clauses of the Amendment XIV. (Same as POL 447.)

LST 457 International Law and Organizations (3). The origin and development of international law and international organizations. (Same as POL 457.)

LST 476 Law in Public Administration (3). An examination of the role of law in the administrative process. Topics to be covered include administrative rulemaking and adjudication, enabling statutes, open records and open meetings laws, procedural due process, and civil liability and immunity for public employees and governments. (Same as POL 476.)

LST 480 Topical Seminar in Legal Studies (3). Inquiry into selected topics and problems in the field of legal studies. May be repeated for a maximum of six hours provided topics may vary.

LST 482 Land Use and Planning Law (3). An undergraduate level examination of the legal, political, and economic aspects of efforts to control the use of land. The course will cover constitutional, statutory, and common law issues regarding nuisance suits, private covenants, subdivision controls, zoning and zoning procedure, planning processes, and the exercise of eminent domain. (Same as POL 482.)

LST 485 Local Government Law (3). An undergraduate level study of basic standards of law pertaining to various forms of local government, including municipalities, counties, special districts, public authorities, and school districts. (Same as POL 485.)

LST 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. To be eligible, a student must be a LST minor with a junior or senior status and an overall GPA of 2.5. In addition, the student must have completed LST 240, 300, and 310 with a GPA of 2.8. Six hours of the LST

courses must be completed at MSU. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

LST 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. To be eligible, a student must be a LST minor with a junior or senior status and an overall GPA of 2.5. In addition, the student must have completed LST 240, 300, and 310 with a GPA of 2.8. Six hours of the LST courses must be completed at MSU. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

LST 495 Special Problems (1-3). Supervised readings or research in selected subjects designed to supplement regular course offerings. To be eligible, a student must be a LST minor with senior status and an overall GPA of 3.0. In addition, the student must have completed at least 12 hours in LST courses including LST 240, 300, and 310 with a GPA of 3.0. At least six hours of the LST courses must be completed at MSU. Prerequisites: permission of chair.

MATHEMATICS AND STATISTICS (MAT)

MAT 095 Fundamental Mathematics (2). Basic operations as they pertain to integers, fractions, decimals, and percentages. Applied problems will include topics in geometry. A developmental and refresher course required for students with math ACT scores of 15 or below. Advanced placement into a higher-level math course is possible through assessment exams such as ALEKS or KYOTE. Credit earned in this course cannot be counted toward graduation requirements and cannot be used to fulfill University Studies requirements. Students with credit in a higher-level math course may not schedule this course without instructor permission. Letter-graded course.

MAT 096 Introductory Algebra (3). Introduction to roots, exponents, and polynomials; linear and quadratic equations; factoring; graphing; systems of equations and inequalities with applications using these concepts. A developmental and refresher course required for students with math ACT scores of 16-18. Advanced placement into a higher-level math course is possible through assessment exams such as ALEKS or KYOTE. Credit earned in this course cannot be counted toward graduation requirements and cannot be used to fulfill University Studies requirements. Students with credit in a higher-level math course may not schedule this course without instructor permission. Prerequisite: ACT math score of 16-18 or MAT 095.

MAT 097 Intermediate Algebra (4). Algebraic expressions, exponents, linear and quadratic equations, graphing, systems of equations, inequalities, and mathematical modeling. Students who have received a grade of *C* or better in any mathematics course numbered MAT 130 or above can not enroll in this course without written permission of the departmental chair. Credit earned in this course cannot be counted toward graduation requirements and cannot be used to fulfill University Studies requirements. Required for students with a 19 ACT and degree requirements which include MAT 130, 135, 140, 145, or 150. Prerequisite: ACT math standard score of at least 19 or MAT 096.

MAT 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Required for all entering freshmen. Graded pass/fail. (Fall)

MAT 115 Mathematics for Middle and Elementary Teachers I (3). Development of the real number system with arithmetic and basic ideas of algebra. A course specifically designed for the needs of future elementary and middle school teachers. Cannot be used for University Studies requirements. Prerequisite: Math ACT score of at least 20 or KYOTE score of at least 22 or MAT 097.

MAT 117 Mathematical Concepts (3). Provides students with problem-solving skills and literacy related to the mathematics which is commonly encountered in our society. Topics can include descriptive statistics, personal finance, voting methods, elementary probability, and graph theory. This course is especially appropriate for students whose degree programs do not otherwise require a course in mathematics. It is not an adequate preparation for any other mathematics course. Prerequisite: ACT math standard score of at least 19 or MAT 096.

MAT 130 Technical Math I (5). Topics from algebra and trigonometry for the technology student. Restriction: A student may not receive credit for MAT 130 and 140 or 145 or 150. Prerequisite: ACT math standard score of at least 21 or MAT 097.

MAT 140 College Algebra (4). Course develops and extends the student's basic algebra concepts and problem-solving skills in the context of functions, models, and applications. Topics include exponents and radicals, graphing, setting up and solving equations in linear, quadratic, and other forms, systems of equations, and operations on functions. Properties and applications of linear, quadratic, polynomial, rational, exponential, and logarithmic functions are studied. Prerequisite: ACT math standard score of at least 21 or MAT 097. A student may not receive credit for MAT 140 and 130 or 150. (MAT 140 in combination with MAT 145 will substitute for MAT 150.)

MAT 145 Trigonometry (3). Course is a study of plane trigonometry. Topics include angles, right triangle trigonometry, trigonometric functions and their graphs, identities, solving trigonometric equations, and applications of trigonometry. Prerequisite: ACT math standard score of at least 21 or MAT 097. A student may not receive credit for MAT 145 and MAT 130 or 150. (MAT 145 in combination with MAT 140 will substitute for MAT 150.)

MAT 150 Algebra and Trigonometry (5). Course is an intensive study of college algebra and trigonometry. A combination of MAT 140 and MAT 145, it is a faster-paced course for students with some familiarity with the subjects. MAT 150 may be used as a "refresher" course to help prepare students for MAT 250. Prerequisite: ACT math standard score of at least 23. Restriction: A student who receives credit for MAT 150 may not receive credit for MAT 130, 140 or 145. (Credit for the combination of MAT 140 and MAT 145 will substitute for MAT 150.)

MAT 215 Mathematics for Middle and Elementary Teachers II (3). Geometry, measurements, probability and statistics for elementary and middle school teachers. Cannot be used for University Studies requirements. Prerequisite: Math ACT score of at least 20 or KYOTE score of at least 22 or MAT 097.

MAT 220 Business Calculus (3). An introduction to calculus and its applications for students in various fields of business. Primary emphasis is on differential calculus. Prerequisite: MAT 120 or 140 or math ACT score of at least 23.

MAT 230 Technical Math II (5). Analytic geometry, differential and integral calculus with applications from technical fields. Prerequisite: MAT 130 or ACT math standard score of at least 24.

MAT 250 Calculus and Analytic Geometry I (5). First course in calculus develops main ideas of differentiation and integration of single-variable functions. Topics include limits, continuity, techniques of differentiation, graphing techniques, definite and indefinite integral, basic integration methods, and applications of the derivative and integral to natural and social sciences. Prerequisites: ACT math standard score of at least 26 or MAT 150 or MAT 140/145.

MAT 305 Intermediate Geometry (3). Selected elementary topics in Euclidean geometry. Includes studies in parallelism, similarity, congruence, areas, volumes, elementary transformation, and coordinate geometry. Intended for students seeking middle school certification. Prerequisite: MAT 115 or 215.

MAT 308 Calculus and Analytic Geometry II (5). A continuation of MAT 250, this course further develops techniques and applications of integration and is an introduction to sequences and series. Topics include integration strategies, computing areas and volumes, arc length, parametric curves, polar coordinates, sequences and series, tests for convergence of series, power series, and Taylor series. Prerequisite: MAT 250.

MAT 309 Calculus and Analytic Geometry III (4). Course develops main ideas of differentiation and integration of functions of several variables and introduces vector calculus. Topics include vectors, analytic geometry of 3-dimensional space, functions of several variables, partial derivatives, directional derivatives, integrals of functions of two and three variables, vector fields, line integrals, Green's theorem, and the divergence theorem. Prerequisite: MAT 308.

MAT 312 Mathematical Reasoning (3). Course designed to improve the students understanding of the nature and methods of mathematical proof by means of practice and participation. The content will include mathematical logic, set theory, relations and functions, cardinality, axiomatic structures, techniques of proof, and extensive practice in proof and problem solving. Credit cannot be received for both MAT 312 and 399. The department recommends a student take this course in his/her sophomore year in the program. Prerequisite: MAT 308 or permission of instructor.

MAT 330 Technical Math III (3). Continuation of MAT 230. Includes differentiation and integration of transcendental functions, series expansions of functions, and differential equations. Prerequisite: MAT 230.

MAT 335 Matrix Theory and Linear Algebra (3). The algebra of matrices and its application to problems in Euclidean spaces and elementary linear transformations. Prerequisite: MAT 308.

MAT 338 Ordinary Differential Equations (3). First-order differential equations, linear equations with constant coefficients, linear and nonlinear systems of equations. Prerequisite: MAT 308.

MAT 399 Sets, Logic and Functions (3). An investigation of mathematical reasoning including techniques of mathematical exploration, problem-solving and proof. Intended for students seeking Middle School Certification. Does not count toward a major or minor in mathematics and credit cannot be received for both MAT 312 and MAT 399. Prerequisite: MAT 250 or permission of instructor.

MAT 421 Introductions to Algebraic Structures (3). An elementary study of the major structures in modern algebra including groups, rings, fields and integral domains. Prerequisites: MAT 308 and 312.

MAT 430 Explorations in Mathematics (1-3). A guided investigation of selected topics in mathematics. May be repeated for a maximum of six hours of credit. Prerequisites: MAT 308 with a mathematics GPA of at least 3.0; permission of instructor.

MAT 440 Mathematics Transforms with Applications (3). Integral and discrete transforms, such as Laplace and Fourier transforms, and the z-transform. Power series solutions and special functions. Prerequisite: MAT 338 or permission of instructor.

MAT 442 Introduction to Numerical Analysis (3). Taylor polynomial approximation, numerical root finding methods and fixed-point iteration, polynomial and spline interpolation, numerical differentiation and integration, and direct methods for the solutions of linear systems. Prerequisite: MAT 308 or permission of instructor.

MAT 460 Principles of Biomathematics (3). The study of biological and mathematical models is united in this research-based course. A variety of quantitative biological models and their underlying mathematics are studied, with an emphasis on population dynamics and evolutionary biology. Students engage in research and communicate thier results. Laboratory experiences and short-distance field trips are required. Only one of MAT 460 and 461 may count as a limited elective for the mathematics major. Prerequisites: BIO 216 and MAT 250 or consent of instructor. (Same as BIO 460.)

MAT 461 Biomathematics in the Biomedical Sciences (3). A variety of quantitative biological models and their underlying mathematics are studied, with an emphasis on epidemiology, genetics, and physiology. Students engage in research and communicate their results. Laboratory experiences and short-distance field trips are required. Only one of MAT 460 or MAT 461 may count as a limited elective for the mathematics major. Prerequisites: MAT 250 and BIO 216 or consent of instructor. (Same as BIO 461.)

MAT 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

MAT 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

MAT 500 Internship (1). Graded pass/fail.

MAT 506 Mathematical Modeling I (3). A study of mathematical models used in the social, life and management sciences and their role in explaining and predicting real world phenomena. The emphasis is on developing skills of model building. Topics include difference equations, perturbation theory and non-dimensional analysis. Prerequisite: MAT 338.

MAT 507 Mathematical Modeling II (3). A continuation of topics discussed in MAT 501. A term project consisting of a model of a non-mathematical problem is required. Prerequisite: MAT 506.

MAT 508 Introduction to Combinatorics and Graph Theory (3). Selected topics and applications from combinatorics and discrete mathematics, which can include: enumeration, generating functions, recurrence relations, partially ordered sets, Boolean algebras, block designs, coding theory, and topics in graph theory, including trees, networks, optimization, and scheduling. Prerequisites: MAT 308 and either MAT 312 or MAT 335.

MAT 512 Partial Differential Equations (3). Partial differential equations of first and second order and applications. Prerequisites: MAT 309 and 338.

MAT 513 Modern Algebra I (3). An in-depth study of groups. Topics will include permutation groups, cyclic groups, cosets and factor groups, subgroups and normal groups, and the homomorphism theorems. Some introductory discussions of rings and fields will be included as well. Prerequisites: MAT 308 and 312.

MAT 514 Modern Algebra II (3). An in-depth study of rings and fields. Topics will include the Isomorphism Theorems, ideals, polynomial rings, integral domains, fields, field extensions. Prerequisite: MAT 513 or permission of instructor.

MAT 515 Theory of Numbers (3). Divisibility, the Euclidean algorithm, mathematical induction, prime and composite numbers, Diophantine equation, Pythagorean triplets, Fermat's Theorem, congruencies, quadratic residues, continued fractions. Prerequisite: MAT 312.

MAT 516 Introduction to Topology (3). Set theory, topology of the real line, topological spaces, metric spaces. Prerequisites: MAT 309 and 312.

MAT 517 Foundations of Geometry (3). Study of postulate systems for geometry, critical examination of Euclid's Elements, introduction to non-Euclidean geometry. Prerequisite: MAT 309 or permission of instructor.

MAT 522 Vector Calculus (3). Operations with vectors; differentiation and integration of functions of several variables; transformation of coordinates; line and surface integrals; Green's, Stokes's, and the divergence theorems. Prerequisite: MAT 309.

MAT 523 Introduction to Complex Variables (3). Complex numbers, analytic functions, elementary functions, integration, Cauchy theorem, Taylor and Laurent expansions, and applications. Prerequisite: MAT 309.

MAT 524 Boundary Value Problems (3). Analytic and computational techniques for linear first and second order partial differential equations, initial, and boundary value problems. Classification, Fourier series, separation of variables, finite difference and/or finite element methods. Prerequisites: MAT 309, 335 or permission of instructor, and 338.

MAT 525 Advanced Calculus I (3). A rigorous development of one variable calculus including limits, continuity, differentiation, integration and sequences of functions. Prerequisites: MAT 309 and 312.

MAT 526 Advanced Calculus II (3). A continuation of MAT 525 and functions of several variables. Prerequisite: MAT 525.

MAT 528 Introduction to Game Theory (3). In this introductory course, we investigate mathematical models of certain conflict and cooperation situations (games), paying attention to applications in biology, philosophy, political science,

economics, and social psychology. We study two-person zero-sum games, two-person non-zero-sum games, and/or other multi-player games. We consider pure and mixed strategy solutions, Nash equilibria, and other aspects of such games. Prerequisite: MAT 250 or permission of instructor.

MAT 530 Special Topics in Mathematics I (1-3). Library investigations of various lengths concerning special topics in mathematics. Periodic conferences will be arranged with the supervising faculty member on an individual basis. May be repeated for credit as different topics are offered. Prerequisites: Six hours of mathematics courses numbered 400 and above with a mathematics GPA of at least 3.0; permission of instructor.

MAT 531 Special Topics in Mathematics II (1-3). Library investigations of various lengths concerning special topics in mathematics. Periodic conferences will be arranged with the supervising faculty member on an individual basis. May be repeated for credit as different topics are offered. Prerequisites: Six hours of mathematics courses numbered 400 and above with a mathematics GPA of at least a 3.0; permission of instructor.

MAT 535 Linear Algebra (3). Linear transformations, matrices, quadratic and hermitian forms, eigenvalues and elementary spectral theory. Prerequisite: MAT 335.

MAT 538 Ordinary Differential Equations II (3). Systems of differential equations (including matrix based solutions), higher order differential equations, series solutions to differential equations, numerical applications, and stability analysis. Prerequisites: MAT 335 and MAT 338.

MAT 542 Numerical Analysis (3). Numerical solutions of differential equations, iterative techniques for solving linear systems, discrete least-squares methods, orthogonal polynomials, and approximating eigenvalues. Prerequisites: MAT 338 and either MAT 442 or permission of instructor. Requires knowledge of a scientific programming language.

MAT 543 Financial Mathematics (3). Course develops an understanding of the fundamental concepts of financial mathematics. Concepts will be applied in calculating present and accumulated values for various streams of cash flows for future use in reserving, valuation, pricing, asset/liability management, investment income, capital budgeting, and contingencies. Prerequisite: MAT 308 or permission of instructor.

MAT 545 Boolean Algebra with Applications to Digital Computer Design (3). Boolean algebra is developed as a model to study various physical systems, including the algebra of subsets of a set, propositional logic, and switching circuits. Prerequisite: permission of instructor.

MAT 550 Teaching Mathematics (3). A study of the "whys" of mathematics with the aim of equipping future/current teachers with the ability to explain rather than merely do mathematics. Taught in the context of theories of learning and pedagogy. Involves mathematics content taught at the secondary and community college level. Credit granted toward an undergraduate major or minor in mathematics only for those students following a teacher certification program. Prerequisite: MAT 312 or permission of instructor.

MAT 551 Mathematics for Teachers (3). Explorations of mathematical topics from the viewpoint of future/current secondary and community college teachers of mathematics. Gives credit toward an undergraduate major or minor in mathematics only for those students following a teacher certification program. Can be taken without MAT 550. Prerequisite: MAT 312 or permission of instructor.

MAT 555 Probability in the Actuarial Sciences (3). Course develops knowledge of the fundamental probability tools for quantitatively assessing risk. The application of these tools to problems encountered in actuarial science is emphasized. Prerequisites: MAT 309 and STA 540 or consent of instructor.

MAT 570 Linear Programming (3). Theory and application of linear programming and the role it plays in operations research. Prerequisite: MAT 335.

MAT 606 Mathematical Modeling I (3). A study of mathematical models used in the social, life and management sciences and their role in explaining and predicting real world phenomena. The emphasis is on developing skills of model building. Topics include difference equations, perturbation theory and nondimensional analysis. Prerequisite: MAT 338.

MAT 607 Mathematical Modeling II (3). A continuation of topics discussed in MAT 606. A term project consisting of a model of a non-mathematical problem is required. Prerequisite: MAT 506 or 606.

MAT 608 Introduction to Combinatorics and Graph Theory (3). Selected topics and applications from combinatorics and discrete mathematics, which can include: enumeration, generating functions, recurrence relations, partially ordered sets, Boolean algebras, block designs, coding theory, and topics in graph theory, including trees, networks, optimization, and scheduling. Prerequisites: MAT 308 and either MAT 312 or MAT 335.

MAT 613 Modern Algebra I (3). An in-depth study of groups. Topics will include permutation groups, cyclic groups, cosets and factor groups, subgroups and normal groups, and the homomorphism theorems. Some introductory discussions of rings and fields will be included as well. Prerequisites: MAT 308 and 312.

MAT 614 Modern Algebra II (3). An in-depth study of rings and fields. Topics will include the Isomorphism Theorems, ideals, polynomial rings, integral domains, fields, and field extensions. Prerequisite: MAT 513, 613, or permission of instructor.

MAT 615 Theory of Numbers (3). Divisibility, the Euclidean algorithm, mathematical induction, prime and composite numbers, Diophantine equation, Pythagorean triplets, Fermat's Theorem, congruencies, quadratic residues, and continued fractions. Prerequisite: MAT 312 or permission of instructor.

MAT 616 Introduction to Topology (3). Set theory, topology of the real line, topological spaces, and metric spaces. Prerequisites: MAT 309 and 312.

MAT 617 Foundations of Geometry (3). Study of postulate systems for geometry, critical examination of Euclid's Elements, and introduction to non-Euclidean geometry. Prerequisite: MAT 309 or permission of instructor.

MAT 623 Introduction to Complex Variables (3). Complex numbers, analytic functions, elementary functions, integration, Cauchy theorem, Taylor and Laurent expansions, and applications. Prerequisite: MAT 309.

MAT 624 Boundary Value Problems (3). Analytic and computational techniques for linear first and second order partial differential equations, initial, and boundary value problems. Classification, Fourier series, separation of variables, finite difference and/or finite element methods. Prerequisites: MAT 309, MAT 335, and MAT 338 or permission of instructor.

MAT 625 Advanced Calculus I (3). A rigorous development of one variable calculus including limits, continuity, differentiation, integration and sequences of functions. Prerequisites: MAT 309 and 312.

MAT 626 Advanced Calculus II (3). A continuation of MAT 625 and functions of several variables. Prerequisite: MAT 525 or 625.

MAT 628 Introduction to Game Theory (3). In this introductory course, we investigate mathematical models of certain conflict and cooperation situations (games), paying attention to applications in biology, philosophy, political science, economics, and social psychology. We study two-person zero-sum games, two-person non-zero-sum games, and/or other multi-player games. We consider pure and mixed strategy solutions, Nash equilibria, and other aspects of such games. Prerequisite: MAT 250 or permission of instructor.

MAT 630 Real Number System I (3). Development of the natural numbers and the integers. (This course does not offer graduate credit for those people seeking a master of science degree in mathematics, chemistry or physics, or a master of arts degree in mathematics.) Prerequisite: permission of instructor.

MAT 631 Real Number System II (3). A detailed development of the rational and real numbers. (This course does not offer graduate credit for those people seeking a master of science degree in mathematics, chemistry, or physics, or a master of arts degree in mathematics.) Prerequisite: permission of instructor.

MAT 632 Foundations of Analysis (3). A study of concepts basic to the elementary calculus, such as limits continuity, the derivative, and the integral. (This course does not offer graduate credit to those people seeking a master of science degree in mathematics, chemistry, or physics, or a master of arts degree in mathematics.) Prerequisites: MAT 309 and permission of instructor.

MAT 635 Linear Algebra (3). Linear transformations, matrices, quadratic and hermitian forms, eigenvalues and elementary spectral theory. Prerequisite: MAT 335.

MAT 638 Ordinary Differential Equations II (3). Systems of differential equations (including matrix based solutions), higher order differential equations, series solutions to differential equations, numerical applications, and stability analysis. Prerequisites: MAT 335 and 338.

MAT 642 Numerical Analysis (3). Numerical solutions of differential equations, iterative techniques for solving linear systems, discrete least-squares methods, orthogonal polynomials, and approximating eigenvalues. Requires knowledge of a scientific programming language. Prerequisites: MAT 338 and either MAT 442 or permission of instructor.

MAT 643 Financial Mathematics (3). Course develops an understanding of the fundamental concepts of financial mathematics. Concepts will be applied in calculating present and accumulated values for various streams of cash flows for future use in reserving, valuation, pricing, asset/liability management, investment income, capital budgeting, and contingencies. (**Note:** Does not apply towards an M.A. in Mathematics degree; may be applied as a mathematics course in the M.A.T. in Mathematics degree; may be applied as a 600-level course in an allied field for the M.S. in Mathematics degree. May not be taken as a component of a 700-level mathematics course.) Prerequisite: MAT 308 or permission of instructor.

MAT 644 Graduate Cooperative Education (3). May be repeated to maximum of six credits. Graded pass/fail.

MAT 645 Boolean Algebra with Applications to Digital Computer Design (3). Boolean algebra is developed as a model to study various physical systems, including the algebra of subsets of a set, propositional logic, and switching circuits. Prerequisite: permission of instructor.

MAT 650 Teaching Mathematics (3). A study of the "whys" of mathematics with the aim of equipping future/current teachers with the ability to explain rather than merely do mathematics. Taught in the context of theories of learning and pedagogy. Involves mathematics content taught at the secondary and community college level. Prerequisite: MAT 312 or permission of instructor.

MAT 651 Mathematics for Teachers (3). Explorations of mathematical topics from the viewpoint of future/current secondary and community college teachers of mathematics. Can be taken without MAT 650. Prerequisite: MAT 312 or permission of instructor.

MAT 655 Probability in the Actuarial Sciences (3). Course develops knowledge of the fundamental probability tools for quantitatively assessing risk. The application of these tools to problems encountered in actuarial science is emphasized. Does not count towards an M.A. in Mathematics degree. Prerequisite: STA 540 or 640 and MAT 309 or consent of instructor.

MAT 670 Linear Programming (3). Theory and application of linear programming and the role it plays in operations research. Prerequisite: MAT 335.

MAT 690 Selected Topics in Mathematics I (1-3). Independent work on selected topics. May be repeated for credit. Prerequisite: permission of instructor.

MAT 716 Selected Topics in Topology (3). An in-depth study of selected topics introduced in MAT 616. Prerequisite: MAT 516 or 616.

MAT 721 Algebra (3). An in-depth study of group theory. Topics will include Lagrange's Theorem, Cauchy's Theorem, the Sylow Theorems, and factor groups. Prerequisite: MAT 514 or 614.

MAT 722 Selected Topics in Algebra (3). An in-depth study of selected topics introduced in MAT 614 and 721. Prerequisite: MAT 721.

MAT 723 Selected Topics in Complex Analysis (3). An in-depth study of selected topics introduced in MAT 623. Prerequisite: MAT 523 or 623.

MAT 725 Integration Theory (3). Riemann integrals, continuous functions, functions of bounded variation, Riemann-Stieltjes integrals, and an introduction to Lebesgue measure. Prerequisite: MAT 526 or 626 or consent of instructor.

MAT 726 Real Function Theory I (3). Lebesque measure and integration theory and related topics. Prerequisite: MAT 725 or consent of instructor.

MAT 727 Real Function Theory II (3). Functional analysis, including Classical Banach spaces and Lp spaces. Prerequisite: MAT 726.

MAT 738 Advanced Ordinary Differential Equations (3). Existence and uniqueness of first-order initial value problems. Linear systems of differential equations. Boundary value problems. Stability of dynamical systems. Lyapunov's method. Periodicity of planar systems. Prerequisite: MAT 625 and MAT 638.

MAT 742 Numerical Linear Algebra (3). Consideration of topics in numerical linear algebra: the Singular Value Decomposition, QR Factorization, Conditioning and Stability, Advanced Iterative Methods. Prerequisite: MAT 642.

MAT 790 Selected Topics in Mathematics I (1-3). Independent work on selected topics. May be repeated for credit. Prerequisite: permission of instructor.

MAT 791 Selected Topics in Mathematics II (1-3). Independent work on selected topics. May be repeated for credit. Prerequisite: permission of instructor.

MAT 798 Research and Thesis (3).

MAT 799 Research and Thesis (3).

MANUFACTURING ENGINEERING TECHNOLOGY (MET)

MET 310 Manufacturing Analysis (3). Course will apply systematic computational analysis processes using manufacturing data to enhance process outcomes, quality, and manufacturing control systems. This course will teach students how to extract and interpret manufacturing data for critical business decisions and systems design. Prerequisites: CSC 199 and STA 135.

MET 320 Manufacturing Control Systems (4). This course will cover the techniques of utilizing programmable logic controllers (PLCs) in the industrial environment and the study of sensors, interfacing to final outputs, controller principles and control loop characteristics used in manufacturing processes. Hardware aspects, programming techniques, and interfacing situations will be covered. Prerequisite: EMT 351.

MET 400 Lean Manufacturing Systems (3). The planning, evaluation, deployment, and integration of lean manufacturing theory and methods. Emphasis will be placed on manufacturing processes/equipment and systems, such as: planning/control, product design, supply chain, and human resource management. Prerequisite: junior standing.

MET 410 Sustainability Management (3). The purpose of the course is to examine industrial management as it relates to sustainability in correlation with lean manufacturing processes. It includes an overview of energy technology, energy resources, industrial energy management, and emerging future energy technologies coupled with social and environmentally related legislation and its effect on corporations' triple bottom line (people, profit, and planet). Prerequisite: junior standing.

MET 440 Quality Management Systems (3). Topics include verification, validation, quality assurance techniques and processes, methods, types of testing, creation oF assurance systems, and international quality standards. Prerequisites: STA 135 and MET 310.

MET 450 Systems Project Management (3). Course provides students with a comprehensive understanding of how to plan, optimize, and efficiently manage projects (or tasks) to implement products, services or developments. This includes building the structure, processes, components, and linkages with a team for successful project delivery within schedule, budget and quality requirements. Prerequisite: junior standing.

MANAGEMENT (MGT)

MGT 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

MGT 350 Fundamentals of Management (3). The fundamental concepts, relationships and principles of managing organized activities are studied. Special emphasis is given to human behavior in organized systems, with attention to the diverse workforce, interpersonal relations, group processes, and the philosophy for managing human resources effectively. Prerequisite: conditional or full admission to upper-level business courses or junior standing.

MGT 354 Techniques of Oral Reporting and Management Briefings (3). Stresses basic principles of oral reporting with emphasis upon informational speeches and special techniques of management briefings. Provides practice in preparation and use of visual aids and the conduct of briefings. Prerequisites: junior standing; MGT 350.

MGT 358 Entrepreneurial Business Plan Development (3). This course is devoted to the study of the entrepreneurial process including identifying opportunities, creating value, developing concepts and plans, attracting resources, building an organization, and managing growth. Prerequisites: junior standing; ACC 200 and MGT 350.

MGT 370 Sports Business (3). Course will prepare students for managing sports-related businesses from a strategic perspective. The course provides the foundation for a variety of sports business careers by establishing the basic knowledge and skills needed and examining current trends and issues. It will focus on the unique qualities of the sports industry, which include service and product characteristics, individual and group behavior, and amateur and professional levels. Prerequisite: MGT 350.

MGT 420 Entrepreneurial Strategic Growth (3). An in-depth study of the managing a growing business in a professional manner, while maintaining the entrepreneurial spirit. Subject matter includes measuring economic performance, obtaining management information for decision making, management control systems, short and long-term planning, capital funding, and condition that prevail in similar business environments. Prerequisites: MGT 350 and MKT 360.

MGT 440 Entrepreneurial Innovation and Creativity (3). Focus is on the creative process and helps students develop creative solutions to a wide range of issues facing entrepreneurial firms. This course will encourage students to approach problems from a creative perspective and develop innovative solutions. Prerequisites: MGT 350 and MKT 360.

MGT 445 New Product Development (3). Course explores the process of bringing a new product or service to market. The course covers the entire process from the innovation front-end to market introduction. While the primary focus will be medium-sized and larger companies, consideration will be given to small and start-up companies. Prerequisite: MGT 350 or permission of instructor.

MGT 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

MGT 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

MGT 490 Entrepreneurial Consulting (3). Students will develop the tools necessary to provide a meaningful consulting experience to an entrepreneurial business. Students in teams of three or four individuals will work with an assigned consulting client and provide value by creating a deliverable for the client. Prerequisites: MGT 350, MKT 360, and senior standing.

MGT 499 Senior Seminar (1). Seminar for students of the Management and Marketing Department's programs with a primary focus on employment preparation and professional development. Recommended for students enrolled in their next-to-last undergraduate semester.

MGT 550 Human Resource Management (3). Familiarizes the student with fundamental tools to effectively manage and motivate a diversified workforce. Included in this course is a study and analysis of the programs in human resource management including job analysis, job evaluation, selection and placement, testing and training, personnel services, and labor relations, as well as the current issues of globalization and the changing composition of the workforce. Prerequisite: MGT 350.

MGT 551 Organizational Behavior (3). A field of study that investigates the impact that individuals, groups, and structure have on behavior within organizations, for the purpose of applying such knowledge toward improving an organization's effectiveness. May not be taken by M.B.A. students. Prerequisite: MGT 350.

MGT 553 Human Resource Selection (3). A concentrated investigation of the methods appropriate to the development, implementation and administration of the staffing process (attracting, selecting and placing candidates in positions) in contemporary organizations will be conducted. This will involve analyzing organizational environments and identifying the appropriate staffing strategies and policies, including an examination of the regulatory environment, cost analysis of human resources, and the statistics of personnel validation of screening devices, i.e. personnel testing, interviewing and biographical information. Prerequisite: MGT 350.

MGT 554 Managing a Diverse Workforce (3). This course involves a study of the cultural perspective and processes reflecting individual, work group, and organizational diversity in the work place. Specific issues this course will include are: prejudice and stereotypes; group and organizational factors affecting diversity; legal issues related to diversity; and global, cross-cultural and gender issues. Prerequisite: MGT 350.

MGT 555 Training and Development (3). This course examines the needs and characteristics of adult learners and the role of training and development as part of human resources in the business setting. The role of the trainer, the learner, needs assessment, methodologies, learning objectives, and measurement and evaluation techniques will be explored and practiced. Prerequisite: senior standing.

MGT 557 International Management (3). Course covers the process of applying management concepts and techniques in a multinational environment and adapting management practices to different economic, political, and cultural environments. Prerequisite: MGT 350.

MGT 558 Advanced Topics in Human Resources (3). This course addresses the application of effective human resource management practices to the current business realities of the organization. Topics include: strategy and human resource management, mergers and acquisitions, human resource analytics, human resource information systems, and the use of social media and employee communications as human resource management tools. Prerequisite: MGT 550.

MGT 559 Compensation Management (3). A study of basic considerations for successful wage and salary administration. Areas studied include job evaluation, employee evaluation and systems and plans of compensating employees. Prerequisite: MGT 350.

MGT 570 Organization Theories (3). A study of the major contemporary theories of organization with emphasis on such modern concepts as Management by Objectives and organization design. Prerequisite: MGT 350.

MGT 572 Organizational Development (3). Studies approaches to organizational development, growth and renewal, with special emphasis on the organization's ability to adapt to its environment. Particular attention is paid to the process of planned change, the techniques used in organizational development, and the role of ethics in organizational change. May not be taken by M.B.A. students. Prerequisite: MGT 350.

MGT 575 Labor-Management Relations (3). A study of labor-management relations in the United States with emphasis on the structure and role of labor organizations, the collective bargaining functions and processes, and the philosophy and approaches essential to a successful relationship between labor and management institutions. Prerequisite: MGT 350.

MGT 577 Labor Law and Public Policy (3). Traces the development of the principles of labor law and labor legislation as well as their administration at the national, state and local levels in the United States. Uses administrative and court decisions and policy analysis to examine issues of current significance concerning labor relations. Prerequisite: MGT 350 or permission of instructor.

MGT 580 Seminar in Leadership (3). Describes the nature and meaning of leadership in organizations, including the importance of effective leadership, knowledge of various leadership theories, and personal attributes associated with effective leaders. The course integrates leadership research findings with leadership application and skill development. Prerequisite: MGT 350.

MGT 590 Strategic Management (3). Course involves a study of the process of strategy formulation and implementation and the integration of the functional areas of the business into a concerted organizational effort. Case problems are used. Should be taken in the student's last semester. May not be taken by M.B.A. students. Prerequisites: FIN 330, MGT 350, MKT 360, and senior standing.

MGT 595 Special Problems (3). This course consists of independent study of some managerial problem area. Periodic conferences will be arranged with the supervising faculty member on an individual basis. Prerequisite: permission of instructor.

MGT 644 Graduate Cooperative Education (3). May be repeated for a maximum of six credits. Cannot be used to meet M.B.A., M.P.A., or M.S. degree requirements. Graded pass/fail. Prerequisite: permission of chair.

MGT 651 Seminar in Organizational Behavior (3). Studies management as a profession, with special emphasis upon behavioral and organizational issues. Examines individual, group and organizational processes in light of the environment within which the organization functions. Special attention is given to managing in non-U.S. settings and the ethical problems faced in the managerial job. Prerequisite: MGT 350 or equivalent, or MKT 490.

MGT 652 Evolution of Management Thought (3). The evolution of management theory in the United States with emphasis on modern concepts of organization. Selected readings and study reports on each of the major stages of development are required. Prerequisite: MGT 350 or equivalent, or MKT 490.

MGT 653 Seminar in Human Resource Staffing (3). This course takes an in depth look at the process of acquiring, deploying, and retaining an effective workforce in the pursuit of such organizational outcomes as profitability, market share, customer satisfaction, and environmental sustainability. The course examines staffing as the organizational function used to manage the organization's workforce through such systems as staffing strategy, HR planning, recruitment, selection, employment ,and retention. Prerequisite: MGT 350 or equivalent, or MKT 490.

MGT 654 Seminar in Human Resource Management (3). Course focuses on the strategic role of the human resource management system, processes, and practices to achieve organizational success. It emphasizes how organizations can use human resource management to develop the necessary levels of human capital to provide sustainable value to stakeholders. Consideration is given to both internal and external issues that influence the human resource management process. Prerequisite: MGT 350 or equivalent, or MKT 490.

MGT 655 Seminar in Organization Development (3). A study of the concepts, literature, and implementation strategies of organization development. Emphasis is placed on the effective management of planned change, approaches to organization change, the evaluation of change efforts, and the role that organization development can play in international business. Prerequisite: MGT 350 or equivalent, or MKT 490.

MGT 656 Seminar in Strategic Management (3). This is the capstone course in which the students must integrate all of the functional areas of business administration and analyze their impact on management policy and strategy decisions by use of the case study method. Individual, small group, and class approaches will be used to analyze the various cases selected for study. Even though each student will bring knowledge of his or her area of specialization into the classroom, it is expected that the student will perform as a generalist rather than a specialist and as a practicing manager rather than an impartial researcher in analyzing case situations. Prerequisite: 18 hours of graduate work in business.

MGT 657 Seminar in International Management (3). An interdisciplinary course examining issues in international business and management with a major focus on characteristics and challenges of international management involving business theory and practice, strategy, and operations, human resource management and motivation, ethics and corporate social responsibility, workforce diversity, and cross-cultural perspectives on all these. Prerequisite: MGT 350 or equivalent, or MKT 490.

MGT 658 Advanced Topics in Human Resources (3). This course addresses the application of effective human resource management practices to the current business realities of the organization. Topics include: strategy and human resource management, mergers and acquisitions, downsizing and rightsizing, HR measurement, human resource information systems, and the use of social media and employee communications as human resource management tools. A student may not enroll if they have taken MGT 558. Prerequisite: MGT 550 or MGT 654 or equivalent.

MGT 695 Special Problems (3). This course consists of independent study of some managerial problem areas. A weekly conference will be scheduled with the supervising faculty member on an individual basis. Prerequisites: 18 hours of graduate work in business and permission of instructor.

MGT 801 Educational Entrepreneurship (3). Course will prepare P-20 educational and community leaders to leverage problem-solving models with emerging technologies to energize, change, and improve their unit's capabilities and performance. Taught in collaboration with the College of Education, this course will develop leadership skills by drawing on business practices.

MIDDLE SCHOOL EDUCATION (MID)

MID 270 Teaching and Learning in the Middle Grades (3). A course designed to provide students in the middle school education with knowledge and experience critical for instruction of middle school students and management of middle school classrooms. Field experiences required. Prerequisites: EDP 260 and EDU 103.

MID 307 Middle School Writing and Content Literacy (3). This course focuses on teaching communication skills - listening, speaking, reading and writing within the subject matter fields subject matter fields as well as enhancing comprehension and vocabulary development - to middle school children. Prerequisites: MID 342 and admission to Teacher Education.

MID 342 Middle Level Teaching Strategies (3). This course is an investigation of the skills of teaching that are applicable in the middle grades. The course will focus on understanding middle school concepts as specified by the American Middle Level Association; application of middle level teaching strategies through demonstrations and microteaching presentations; and coverage of classroom management strategies, discipline techniques, Charlotte Danielson Framework for Teachers, and formative/summative assessments appropriate for the middle level. Field experiences required. Prerequisite: EDP 260.

MID 395 Advanced Strategies of Teaching in the Middle Grades (4). This course is advanced application of the skills of teaching that are applicable in the middle grades. Emphasis placed on unit, lesson, and assessment design; and the application of teaching strategies in classroom settings. The course will also include in-depth coverage of classroom management strategies, discipline techniques, and curriculum development as a function of instruction. Field experiences required. Prerequisites: MID 342 and admission to Teacher Education.

MID 421 Middle School Student Teaching (7-14). Student teaching in the middle school should allow the individual to participate in the work and duties of the school that are generally expected of the classroom teacher. Student teachers will be supervised by a public school teacher as well as a university coordinator. This will be a 2-7 week assignment with students having experiences in

both teaching specialization fields. Graded pass/fail. (Professional Semester.) Prerequisites: admission to Teacher Education and student teaching.

MID 422 Extended Practicum (4). Course will provide opportunities for supervised direct involvement with classrooms in the public school setting. Students will implement strategies and procedures used in the education of middle grades learners. 130 hours of field experience required. Prerequisites: MID 395 and admission to Teacher Education.

MILITARY SCIENCE (MIL)

MIL 100 Physical Conditioning Lab (1). This course provides the student an opportunity to participate and lead a military style physical fitness program. Training is based on the Army Physical Fitness Test (APFT) and assists the student in developing a fit life-style. May be repeated for a maximum of ten credit hours. Graded pass/fail. Open to all students.

MIL 101 Introduction to the Army and Critical Thinking (2). Course introduces personal challenges and competencies that are critical for effective leadership and communication. Students will learn how the personal development of life skills such as cultural understanding, goal setting, time management, stress management, and comprehensive fitness relate to leadership, officership, and the Army profession. As they become further acquainted with MIL 101, they will learn the structure of the ROTC Basic Course Program consisting of MIL 101, 102, 201, 202, Fall and Spring Leadership Labs, and CIET. The focus is on developing basic knowledge and comprehension of Army leadership dimensions, attributes and core leader competencies, while gaining an understanding of the ROTC program, its purpose in the Army, and its advantages for the student.

MIL 102 Introduction to the Profession of Arms (2). Course introduces professional challenges and competencies that are needed for effective execution of the profession of arms and Army communication. Through this course, students will learn how Army ethics and values shape the Army and the specific ways that these ethics are inculcated into Army culture. Additionally, students will explore the Seven Army Values, Warrior Ethos, and investigate the Profession of Arms and Army leadership as well as provide an overview of the Army, and gain practical experience using critical communication skills. Prerequisite: MIL 101 or permission of instructor.

MIL 201 Leadership and Decision Making (3). This is a course where the students will study, practice, and apply the fundamentals of Army leadership, officership, Army values and ethics, personal development, and small unit tactics at platoon level. They will be required to demonstrate writing skills and present information briefings as preparation for development in becoming successful future officers. Prerequisite: MIL 102 or permission of instructor.

MIL 202 Army Doctrine and Team Development (3). This course is primarily drawn from the Army Profession and Team Work ALA's. This is a course where the students will study, practice, and apply the fundamentals of leadership, officer skills, Army values and ethics, personal development, and tactics at the small unit level. They will be required to demonstrate writing skills and present information briefings as preparation for development in becoming successful future officers. Prerequisite: MIL 201 or permission of instructor.

MIL 210 Leader's Training-Basic Cadet Summer Training (6). This is one of the army's two-year ROTC program entry points. Through this course, students without ROTC Basic course experience can examine the Army without incurring an obligation. This course is a substitute for MIL 101, 102, 201, and 202 and will qualify students for advanced course entry. The Army observes these students and determines their officer potential in a leadership oriented, challenging, and motivating training program at Fort Knox, Kentucky. Graded pass/fail. Prerequisites: the student must meet academic and physical standards established by the Army and permission of instructor.

MIL 301 Training Management and the Warfighting Functions (4). This is a course where the students will study, practice, and apply the fundamentals of Army leadership, officership, Army values and ethics, personal development, and small unit tactics at platoon level. At the conclusion of this course, they will plan, coordinate, navigate, motivate, and lead a squad and/or platoon in the execution of a mission during a classroom PE, a Leadership Lab, or a Leader Training Exercise (LTX). Prerequisite: MIL 100, 202, or permission of instruction.

MIL 302 Applied Leadership in Small Unit Operations (4). This is a course where the students will continue to study, practice, and apply the fundamentals of Army leadership, officership, Army values and ethics, personal development, and small unit tactics at platoon level, building on the lessons from MIL 301. As in MIL 301, again at the conclusion of this course, they will plan, coordinate, navigate, motivate, and lead a squad and/or platoon in the execution of a mission during a classroom PE, a Leadership Lab, or a Leader Training Exercise (LTX). Prerequisite: MIL 100, 301, or permission of instructor.

MIL 333 Military History of the United States (3). This course is designed to give the student a multifaceted approach to the study of American military history from colonial times to the present day. Topics covered include the causes of war, methods of recruitment, military policies, and the effect of the industrial revolution and technology of war. Required for all military science students working toward a commission as an army officer. (Same as HIS 333.)

MIL 401 The Army Officer (4). This is an academically challenging course where the students will study, practice, develop, and apply critical thinking skills pertaining to Army leadership, officer skills, Army values and ethics, personal development, and small unit tactics at platoon level. They will be assessed on the execution of a mission during a classroom PE, Leadership Lab, or during a Leader Training exercise (LTX). They will receive systematic and specific feedback on their leader attributes, values, and core leader competencies from their instructor, Professor of Military Science, and other MSL IV Cadets using the Cadet Officer Evaluation Report (COER). At the conclusion of this course, they will be able to plan, coordinate, navigate, motivate, and lead a platoon in future operational environments. Successful completion of this course will assist in preparing for the BOLC B course and is a mandatory requirement for commissioning. Prerequisites: MIL 100, 302, or permission of instructor.

MIL 402 Company Grade Leadership (4). This is an academically challenging course where the students will study, practice, develop, and apply critical thinking skills pertaining to Army leadership, officer skills, Army values and ethics, personal development, and small unit tactics at platoon level. This course includes a mid-term exam and a Capstone Exercise in place of the final exam. For the Capstone Exercise, they will be required to complete an Oral Practicum which will be evaluated on the student's knowledge of the 20 Army Warfighting Challenges (AWFC) covered throughout MIL 401 and 402 coursework. In addition, they will be assessed on leadership abilities during classroom PE, Leadership Labs, or Leader Training Exercises (LTX). Students will receive systematic and specific feedback on leader attributes, values, and core leader competencies from the instructor, Professor of Military Science, and other MSL IV cadets who will use the Cadet Officer Evaluation Report (COER). At the conclusion of this course, students will be able to plan, coordinate, navigate, motivate, and lead a platoon in future operational environments. Successful completion of this course will assist in preparing for the BOLC B course and is a mandatory requirement for commissioning. Prerequisites: MIL 100, 401, or permission of instructor.

MIL 410 Leader Development-Advanced Cadet Summer Training (6). Course is designed to develop leadership through an intensive summer field course of rotating leader/command roles, practical experience in problem analysis, decision making and troop leading while providing in-depth coverage of technical subjects at a military installation. Successful completion of this course is required for a U.S. Army commission. Prior to enrollment, the student must meet the physical and academic standards established by the army. Graded pass/fail. Prerequisites: MIL 301, 302, or permission of instructor.

MIL 490 Military Leadership Seminar (1-3). Course is designed to enable the student to pursue independent study in selected areas of military science. Requires attendance at a three-day off-campus field training exercise. Course is repeatable for up to four hours credit. Prerequisite: MIL 100 or permission of instructor.

MARKETING (MKT)

MKT 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

MKT 285 Emerging Technologies in Marketing (3). Course focuses on the new technologies that are currently shaping the world's economy and markets. It includes practical, hands on instruction in these technologies, readings on their potential impact, discussion of appropriate strategies for exploiting them and a project which integrates multiple technologies in a business setting. Prerequisite: freshman or sophomore status; instructor permission for juniors or seniors.

MKT 360 Principles of Marketing (3). An integrated study of the interrelationship of marketing to the other primary functions of business through an analytical survey of problems related to product planning, pricing, promotion, channels of distribution, and legislation affecting marketing activity encountered in distributing goods and services to markets. Emphasis is on the role of the consumer. Prerequisites: Conditional of full admission to upper-level business courses or junior standing.

MKT 361 Selling and Sales Management (3). A thorough study of the elements that contribute to success in the field of selling and sales management. In selling, attention will be given to researching and understanding the needs of business and retail customers, developing long-term relationships with customers, learning and applying the basic steps in the sales presentation, and negotiating with customers. Related to sales management, attention will be given to structuring and determining the appropriate size of the sales force, recruiting, selecting, motivating, compensating, training, evaluating salespeople, and supervising day-to-day sales operations. Prerequisites: MKT 360 and junior standing.

MKT 362 Food and Beverage Marketing (3). Course will examine food and beverage marketing along with the food chain, focusing primarily on the producer—retailer—consumer portion of the food chain. We will consider the roles of consumers, scientists, policy makers and food marketers while exploring (1) the food-marketing environment, (2) techniques used by food and beverage marketers, and (3) social, health and ethical issues relevant to the food chain and food marketing.

MKT 369 Retailing Management (3). A study of the fundamentals of successful retail store management and merchandising. Some of the topics discussed are store organization, location, layout, fixtures and equipment. Aspects of merchandise planning and control, buying, sales promotion and customer services are emphasized. Prerequisites: junior standing; MKT 360.

MKT 390 Entrepreneurial Marketing (3). This course examines the tools and activities entrepreneurial businesses can utilize to develop an effective marketing strategy, considering severe time, budget, and marketing information constraints. The course emphasizes understanding the important role that marketing plays in the entrepreneurial process. Prerequisites: junior standing; MKT 360.

MKT 396 International Marketing Seminar (3). Designed to give participants a high exposure to the international environment and business practices outside the U.S. The seminar includes an intensive travel-study program in various European countries. Prerequisite: junior standing.

MKT 460 Integrated Marketing Communications (3). Course emphasizes the role of promotional tools, individually and collectively, in the marketing communications of an organization. Marketers practice integrated marketing communication, which is the coordination and integration of all marketing communication tools with the goal of creating a uniform brand image and reinforcing the impact of each tool. Students will learn about advertising, digital marketing, alternative marketing, sales promotion, database and direct marketing, and public relations. In class, students will engage in activities that allow them to put textbook knowledge into practice. Prerequisite: MKT 360.

MKT 462 Sales Management (3). A study of the managerial aspects of marketing, with special emphasis upon problems involved in determining markets; planning sales campaigns; selection, training and management of sales and service personnel; and control of sales operations. Prerequisite: MKT 361.

MKT 463 Consumer Behavior (3). An overall view of some of the basic perspectives of consumer behavior. An interdisciplinary approach will be stressed including the fields of economics, psychology, sociology and anthropology as they relate to marketing. Emphasis will be placed on the fundamental processes of motivation, perception and learning, as well as analysis of individual predispositions and group influences in marketing. May not be taken by M.B.A. students. Prerequisite: MKT 360 or permission of instructor.

MKT 469 Retail Merchandising (3). A problem-solving course of tools used in buying, pricing, stock control, sales promotion, and expense control. Prerequisite: MKT 369.

MKT 475 Digital Marketing (3). Topics include elements of digital marketing activities, such as search engine optimization, search engine marketing, and social media, among others. Digital marketing tools used to create campaigns will be discussed as well as key performance indicators (KPIs) to evaluate the success. Prerequisite: MKT 360 or equivalent.

MKT 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

MKT 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

MKT 490 Survey of Management and Marketing (3). Designed for students who have an inadequate background in marketing and management. Covers the same material covered in MKT 360 and MGT 350 or the equivalent. Not open to students who have credit for MKT 360 and MGT 350 or the equivalent.

MKT 499 Senior Seminar (1). Seminar for students of the Managing and Marketing Department's programs with a primary focus on employment preparation and professional development. Recommended for students enrolled in their next-to-last undergraduate semester.

MKT 564 Marketing Channels (3). The methods and processes used in the distribution of consumer and industrial products and services. Emphasis is on the way certain basic distribution functions are carried out in an integrated channel system. The role of a variety of manufacturers, wholesalers and retailers as parts of this system is analyzed. Prerequisite: MKT 360.

MKT 565 Marketing Research (3). An introduction to research methods and procedures used in the marketing process. Areas given emphasis include sources of market data, sampling, surveys, interpretation of data and the relationship of market research to the policies and functions of the business enterprise. Prerequisites: MKT 360 and senior standing.

MKT 566 Marketing Management (3). A problems course dealing with specialized marketing strategies for consumers as well as industrial markets, new product development, sales promotion, sales organization, and prices and pricing. Attention is given to marketing research as a determinant of policy. Cases are used extensively to emphasize analysis and decision-making. Prerequisites: MKT 360 and senior standing.

MKT 567 Marketing Planning and Strategy (3). This course is designed to develop a comprehensive integrated knowledge of the broad field of marketing. The course will synthesize material presented in basic marketing; however, the major emphasis will be on systematic analytical problem-solving, and the dynamics of decision-making as faced by marketing management. Prerequisite: MKT 360.

MKT 568 Global Marketing Management (3). This is the undergraduate capstone marketing course. It covers the practice of marketing in a global economy. Major topics include (1) multi-national environmental scanning, (2) marketing planning and strategy in a global context, (3) tactical international marketing decisions, (4) assessment of international market opportunities, and (5) ethical considerations in global marketing. Prerequisite: MKT 360.

MKT 569 Promotion Management (3). A study of various promotional tools including social media, advertising, personal selling, sales promotion, public relations, and direct marketing. Emphasis is placed on the integrated use of

these tools in the context of emerging technologies. The degree of emphasis placed on each tool is determined by the technological environment and the needs of the class. Prerequisite: MKT 360.

MKT 578 Social Media and Marketing (3). Course addresses the role of social media in the marketing mix. Students will gain a working knowledge of various social media tools (e.g., Facebook, blogs, wikis, videos and video-sharing sites, podcasts and podcast sharing sites, online communities, online forums, etc.) and develop an understanding of how those tools can be integrated into the organization's marketing and promotion mixes. Prerequisite: MKT 360.

MKT 579 Social Media Consulting (3). A hands-on learning experience in which advanced students assist organizations with integrating social media into their marketing efforts. Students should expect approximately one hour of lecture/discussion each week and five hours of project-based work which will be accomplished under the supervision of the course instructor. Much of the project-based consulting work will be conducted at the client organizations' facilities outside of the regularly scheduled class times. Prerequisite: MKT 578.

MKT 585 Location Analytics in Marketing (3). Location Analytics combines traditional analysis of business data with Geographic Information Systems (GIS) technologies which enable the geospatial analysis of that data. This course focuses on the use of these technologies to core marketing analysis applications such as environmental scanning, market area analysis, international market assessment, site screening, customer profiling, segmenting, and targeting. In this course, students expand their knowledge of these technologies, enhance their skills in applying them to marketing applications and learn how to share these tools and resources across enterprises. Prerequisite: MKT 360 or MKT 485 or consent of instructor.

MKT 595 Special Problems (1-3). This course consists of independent study in some area of marketing. Periodic conferences will be arranged with the supervising faculty member on an individual basis. Prerequisite: permission of instructor.

MKT 644 Graduate Cooperative Education (3). May be repeated to a maximum of six credits. Cannot be used to meet M.B.A., M.P.A., or M.S. degree requirements. Graded pass/fail. Prerequisite: permission of chair.

MKT 645 Seminar in New Product Development (3). Course examines issues in innovation and new product development from a strategic marketing prospective.

MKT 663 Advanced Consumer Behavior (3). This course provides an overall view of some of the basic perspectives of consumer behavior, and the consumer decision process. Emphasis is placed on the contributions made to the understanding of consumer behavior from the behavior sciences of economics, sociology, psychology, and anthropology. Prerequisite: MKT 360. Not open to students who have completed MKT 463.

MKT 667 Marketing Planning and Application (3). This course is a study of marketing as the firm's strategic link with its customers in a global competitive environment. Major topics include (1) the development of marketing strategy, (2) the formulation of marketing plans, (3) the selection and implementation of marketing tactics, and (4) ethical considerations in marketing. Prerequisite: MKT 360 or equivalent, or MKT 490.

MKT 669 Seminar in Global Marketing (3). This course covers the practice of marketing in the global economy. It develops students' abilities to engage in global marketing strategic planning, select appropriate entry strategies and develop responsive marketing tactics. It also enhances students' skills in using information technology resources, assessing world markets, analyzing ethical issues and communicating orally and in writing. May not be taken for credit by students who have completed MKT 568. Prerequisite: MKT 360 or equivalent, or MKT 490.

MKT 675 Seminar in Digital Marketing (3). Course reflects the shift in marketing from traditional media to digital platforms such as those based on the Internet and mobile networks. Topics include digital marketing strategies as they relate to the elements of digital marketing, such as search engine marketing, social media marketing, and others. Digital marketing tools used to create campaigns will be discussed. Credit cannot be earned for MKT 475 and MKT 675. Prerequisite: MKT 360 or equivalent, or MKT 490.

MKT 685 Seminar in Marketing Location Analytics (3). Location Analytics combines traditional analysis of business data with Geographic Information System (GIS) technologies which enable the geospatial analysis of that data. This course focuses on the use of these technologies to core marketing analysis applications such as environmental scanning, market area analysis, international market assessment, site screening, customer profiling, segmenting, and targeting. In this course, students expand their knowledge of these technologies, enhance their skills in applying them to marketing applications and learn how to share these tools and resources across enterprises. Students will also complete a customized Location Analytics research project for an external organization. Prerequisite: MKT 360 or MKT 684 or consent of instructor.

MKT 695 Special Problems (3). This course consists of independent study in some area of marketing. Periodic conferences will be arranged with the supervising faculty member on an individual basis. Prerequisite: Permission of instructor.

MUSIC (MUS)

Note: Variation in all applied music courses is related to the degree program of the student. Admission of non-music majors is by permission of the chair only.

MUS 097 Developmental Music Theory (1). A five-week course, for those planning to major or minor in music, providing instruction in reading pitches, simple meters, intervals and key signatures. All music majors or minors must take this course concurrently with MUS 170 unless they pass a music theory diagnostic examination. Credit earned in this course may not be counted toward graduation requirements. Graded pass/fail.

MUS 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. The course is designed to provide information for the freshman music student about the academic and musical life of the music major. Emphasis will be placed upon university resources and services found on campus. Graded pass/fail.

MUS 101 Recital Attendance and Assembly (0). All music majors are required to complete successfully six semesters of enrollment unless excused by department chair. Successful completion of the course is achieved by certified attendance at 13 approved recitals per semester and no more than one absence from scheduled assemblies. Graded pass/fail.

MUS 104 Introduction to Jazz History (3). A survey of the many facets of jazz music. Designed to follow stylistic trends as jazz developed from nineteenth-century African and European influences to the modern forms of today. The study of significant composers, compositions, performers and terminology associated with this uniquely American musical form through listening assignments, reading and discussion activities.

MUS 105 Introduction to Music History (3). Understanding and appreciation of music for the beginner. Designed to acquaint the student with the place music holds in heritage through studying and listening to great musical works; to acquaint the student with composers and the influence of history on their compositions; and to create the ability to understand and enjoy music in the world around us. A student cannot have credit for both this course and HON 162. Students who have passed MUS 381 may not take this course for credit.

MUS 106 Music in Film (3). Course will present a survey of the history of film music from the silent era to the present. Students will develop critical listening, viewing, and analytical skill sin relation to music's function in film. For the viewing of complete films, extra meetings may be held on campus. Students will be expected to view current release films in a local theater.

MUS 107 Introduction to the American Musical Theatre (3). Student will explore in-depth the development of the American musical theatre through stylistic elements found in the standard repertoire. Representative works by individual and collaborative composer and librettist will be studied with special emphasis on innovative trends, perspectives and genres.

MUS 108 Introduction to World Music (3). The students will explore the development of World Music (both art and folk music) through stylistic elements found in the repertoire of many differing nations and cultures. Representative works by individual composers as well as traditional folk tunes by unnamed composers will be studied with special emphasis on innovative trends, perspectives, and genres.

MUS 109 Musicianship I: Music Fundamentals (3). Fundamentals of music will be taught as they affect music performance, music listening, and music understanding. Content will include pitch and rhythmic notation, scales, intervals, triads and their inversions, seventh chords, lead sheet symbols, roman numerals, basic aural training, and analytical procedures from common practice and popular repertoires. Students may not have credit for both this course and MUS 170.

MUS 110 Musicianship II (3). A continuation of MUS 109. Content will include phrases and cadences, non-chord tones, voice leading, basic chromatic harmony including secondary chords and borrowed chords, and analytical procedures from common practice and popular repertoires. Aural training will build upon MUS 109 continuing with harmonic progressions and analysis of popular song form. Prerequisite: MUS 109 with a grade of *C* or better.

MUS 114 Percussion Instruments Level I (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 115 Wind Instruments Level I (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 116 Organ Level I (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 117 Piano Level I (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 118 Strings Level I (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 119 Voice Level I (1-4). One 25-minute or one 50-minute individual instruction period per week. Participation in weekly vocal studio classes may be required. Credit will be given for as many semesters as taken.

MUS 120 Beginning Guitar (1). Instruction for those with limited or no musical background. Note reading, strumming, and theory fundamentals are stressed. Credit will be given for as many semesters as taken.

MUS 121 Intermediate Guitar (1). Student must be able to read music and have had previous class or private instruction. Credit will be given for as many semesters as taken. Prerequisite: MUS 120.

MUS 122 Band: Community (1). Credit will be given for as many semesters as taken.

MUS 123 Introduction to Music Education (3). This course is the initial course for all students seeking a degree in music education. It is designed to provide students with an introduction to the field of music education. Included are topics related to learning theories, curriculum, historical and philosophical foundations of music education, resources for teaching, and twentieth century developments in music education.

MUS 124 Beginning Class Piano I (1). Class instruction in piano for students with no, or very limited, musical experience. Prerequisite: B.S. in music business major or instructor permission.

MUS 125 Beginning Class Piano II (1). A continuation of MUS 124. Prerequisite: B.S. in music business major or instructor permission.

MUS 127 Class Voice I (1). Course is designed to guide music business majors and non-music majors without prior vocal training, to develop effective and healthy vocal techniques through classical, musical theater, and other appropriate repertoire. Concert attendance will be required.

MUS 128 Class Voice II (1). A continuation of MUS 127, this course is designed to guide music business majors and non-music majors to develop effective and healthy vocal techniques through classical, musical theater, and other appropriate repertoire. Concert attendance will be required.

MUS 131 Percussion Methods (1). This class is designed to acquaint the music education major with percussion instruments and pedagogical techniques through participation.

MUS 132 Woodwind Methods (1). This class is designed to acquaint the music education major with woodwind instruments and pedagogical techniques through participation.

MUS 133 String Methods (1). This class is designed to acquaint the music education major with string instruments and pedagogical techniques through participation.

MUS 134 Voice Methods (1). Class designed to acquaint the music education major with the singing voice and pedagogical techniques through participation.

MUS 135 Brass Methods (1). This class is designed to acquaint the music education major with brass instruments and pedagogical techniques through participation.

MUS 136 Fundamentals of Keyboard Accompanying (1). Study of the basic principles of keyboard accompanying. Normally offered during the spring semester. Credit will be given for as many semesters as taken. Letter graded course.

MUS 137 Guitar Methods (1). This class is designed to acquaint music education students with the guitar and pedagogical techniques through class discussion and participation. Prior experience on the guitar is required. Prerequisites: MUS 120 or 121; permission of the instructor.

MUS 148 Commercial Guitar Seminar I (1). The first course of a two-semester sequence of courses. The student will be introduced to the guitar fretboard through the study and performance of intervals, scales and chords. Prerequisite: permission of instructor.

MUS 149 Commercial Guitar Seminar II (1). The second course of a two-semester sequence of courses. The student will learn performance skills and techniques required for ensemble and develop familiarity of the jazz and blues repertoire. Prerequisite: MUS 148 or permission of instructor.

MUS 150 Instrumental Ensemble (1). Small ensembles concentrating on chamber music literature. Emphasis will be placed upon developing chamber ensemble skills. Credit will be given for as many semesters as taken.

MUS 151 University Orchestra (1). The ensemble will study and perform symphonic literature from a variety of style periods. Credit will be given for as many semesters as taken. Membership by audition.

MUS 152 Marching Band (1). The marching band prepares field performances for all home football games as well as selected away games and exhibitions. Credit will be given for as many semesters as taken. Membership open.

MUS 153 Brass and Percussion Ensemble (1). Designed to give brass and percussion players experience in the study and performance of large brass ensemble literature. Credit will be given for as many semesters as taken. Membership by audition.

MUS 154 Wind Ensemble (1). The wind ensemble develops an understanding of representative wind band literature through study and performance. Credit will be given for as many semesters as taken. Membership by audition.

MUS 155 Jazz Ensemble (1). The jazz ensemble develops an understanding of representative jazz styles and skills through study and performance. Credit will be given for as many semesters as taken. Membership by audition.

MUS 156 Jazz Combo (1). Concentration on development of improvisatory techniques through performance and listening skills. Credit will be given for as many semesters as taken.

MUS 157 Symphonic Band (1). The symphonic band develops an understanding of representative concert band literature through study and performance. Credit will be given for as many semesters as taken. Membership open.

MUS 158 Concert Band (1). The Concert Band develops an understanding of musical styles and skills through study and performance. Credit will be given for as many semesters as taken. Prerequisite: Concert band skills on a wind or percussion instrument.

MUS 160 University Chorale (1). University Chorale is dedicated to the study and performance of a wide variety of choral literature from all the major stylistic periods and genres. The development of basic musical skills and proper vocal function is emphasized. Credit will be given for as many semesters as taken. Membership is open.

MUS 161 Concert Choir (1). Concert Choir is dedicated to the study and performance of the masterworks of choral literature from all periods, genres and styles. Credit will be given for as many semesters as taken. Membership is by audition.

MUS 162 Chamber Singers (1). The Chamber Singers study and perform a wide variety of choral literature from all periods, genres and styles with special attention to that body of work composed specifically for small vocal ensembles. Credit will be given for as many semesters as taken. Prerequisites: audition and concurrent enrollment in MUS 160/360 or 161/361.

MUS 163 MSU Town and Gown Chorale (1). Murray Choral Society is an ensemble comprised of students and community members and is dedicated to the study and performance of choral literature from all periods, genres, and styles. Credit will be given for as many semesters as taken. Membership is open.

MUS 164 Opera Workshop (1). Practical experience in a workshop situation of scenes from opera and/or musical theatre. Credit will be given for as many semesters as taken. Membership by audition.

MUS 166 Women's Chorus (1). This chorus is a non-auditioned ensemble and performs a wide variety of challenging repertoire from all of the major historical periods and styles.

MUS 167 Racer Men's Chorus (1). This chorus is a non-auditioned ensemble and performs a wide variety of challenging repertoire from all of the major historical periods and styles.

MUS 168 A Cappella Vocal Ensemble (1). This ensemble is auditioned at the start of each semester and performs a wide variety of challenging a cappella vocal repertoire.

MUS 170 Theory I (3). The fundamentals of music through part-writing and analysis. Course content includes key signatures, scales, intervals, triads, and an introduction to figured bass. Taken concurrently with MUS 171 and 172.

MUS 171 Aural Skills I (1). This course is to be taken concurrently with MUS 170 and 172. It offers a practical application of the materials studied in MUS 170 and provides the necessary drill in the skills of sight-singing and aural perception.

MUS 172 Functional Keyboard I (1). Class instruction in elementary level piano technique, functional keyboard skills and keyboard literature for music majors and minors. This course should be taken concurrently with MUS 170 and 171.

MUS 173 Theory II (3). A continuation of MUS 170 emphasizing inversions of triads, the dominant-seventh chord, non-harmonic tones, and elementary modulations through part-writing, composition and analysis with and without figured bass. This course should be taken concurrently with MUS 174 and 175. Prerequisite: MUS 170.

MUS 174 Aural Skills II (1). This course offers a practical application of the materials studied in MUS 173 and provides necessary drill in the skills of sight-singing and aural perception. This course should be taken concurrently with MUS 173 and 175. Prerequisite: MUS 171.

MUS 175 Functional Keyboard II (1). A continuation of MUS 172. This course should be taken concurrently with MSU 173 and 174. Prerequisite: MUS 172.

MUS 180 Exploring the Music Education Profession (3). Course introduces aspiring teacher candidates to explore the music education profession. Students will engage in experiential learning activities including clinical observations and interaction in appropriate schools setting in K-12 music classes and school-sponsored performing ensemble classes. Candidates will actively explore the importance of professional identify, roles, and responsibilities; knowledge, skills and dispositions; student-centered practices; and students' developmental and cultural needs. Historical and philosophical foundations of music education, curriculum and lesson design, contemporary resources, best practices for music teaching and twentieth century developments in music education will be presented. By the end of this course, candidates will be able to decide for themselves if teaching music is their career choice. Clinical experiences required.

MUS 209 Musicianship III (3). A continuation of MUS 110. Content will include advanced functional harmony, chromaticism, and modulation. Aural training includes all material from MUS 110 plus advanced functional harmonic progressions. Prerequisite: MUS 110 with a grade of *C* or better.

MUS 210 Musicianship IV (3). A continuation of MUS 209. Content will include expanded tonality, extended chords (9th, 11th, and 13th chords), jazz harmony, tonality in popular idioms, and arranging techniques. Aural training includes those topics, plus material from MUS 209. Prerequisite: MUS 209 with a grade of *C* or better.

MUS 214 Percussion Instruments Level II (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 215 Wind Instruments Level II (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 216 Organ Level II (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 217 Piano Level II (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 218 Strings Level II (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 219 Voice Level II (1-4). One 25-minute or one 50-minute individual instruction period per week. Participation in weekly vocal studio classes may be required. Credit will be given for as many semesters as taken.

MUS 225 English and German Diction for Singers (1). A course designed to give voice majors rules for pronouncing sung English and sung German.

MUS 226 French and Italian Diction for Singers (1). A course designed to give voice majors rules for pronouncing sung French and sung Italian. Prerequisite: MUS 225.

MUS 230 Introduction to the Music Industry (3). A survey of the various aspects of the music industry with emphasis on professional careers in the field.

MUS 240 Introduction to Composition (3). The student will compose exercises and small-scale pieces that each focus on a particular style, instrumentation, or compositional technique. The course deals primarily with contemporary art music and the wide variety of musical languages and techniques exhibited therein. In most cases the student's creative work will be performed by other members of the class and discussed as a group. The course is repeatable for as many semesters as taken. Prerequisites: status as a music major and successful completion (*C* or better) of MUS 170 and 171.

MUS 241 Composition Level I (2-3). One 50-minute individual session per week. The student will compose one or more original compositions during the semester with the eventual goal of public performance. Credit will be given for as many semesters as taken. Prerequisites: MUS 240 and permission of instructor.

MUS 243 Making Music with Your Laptop (3). In this course students will compose and improvise music on their laptop, creating ideas as an individual and in small groups.

MUS 246 Music for Elementary Classroom Teachers (3). Course will prepare elementary classroom teachers to integrate music into daily classroom instruction. Students will increase their skills in reading and performing music so that they will be able to make music with children, prepare to use music as a teaching tool with children, increase their knowledge of state and national standards in music education, and develop their understanding of the importance of music in the educational development of children. Prerequisite: EDU 103.

MUS 255 Introduction to Music Therapy (3). An introduction to the theory and practice of music therapy. The course includes an overview of several different approaches to music therapy with various clinical populations. Aspects of the dynamics between therapist, client, and music will be explored and experienced. Field experience required.

MUS 256 Psychology of Music (3). Course focuses on the role of music in human life, issues and research findings regarding what makes music, and how human beings perceive and respond to musical sounds. Critical thinking and reflection on topics such as music preferences, musical performance, and listening to music are meant to encourage the student to identify the relationship between music and human behavior. This course is suitable for students who are curious about the influence of music on people. It is open to all students with or without musical training.

MUS 270 Theory III (3). A continuation of MUS 173, emphasizing diatonic seventh chords, modulation types, secondary functions and chromaticism through composition and analysis. This course should be taken concurrently with MUS 271 and 272. Prerequisite: MUS 173.

MUS 271 Aural Skills III (1). This course offers a practical application of the materials studied in MUS 270 and provides necessary drill in the skills of sight-singing and aural perception. This course should be taken concurrently with MUS 270 and 272. Prerequisite: MUS 174.

MUS 272 Functional Keyboard III (1). Class instruction in intermediate level piano technique, functional keyboard skills and keyboard literature for music majors. This course should be taken concurrently with MSU 270 and 271. Prerequisite: MUS 175.

MUS 273 Theory IV (3). A continuation of MUS 270, emphasizing the Neapolitan and augmented-sixth chords, complex modulations and key schemes, extreme chromaticism, and an introduction to 20th century compositional practices through composition and analysis. This course should be taken concurrently with MUS 274 and 275. Prerequisite: MUS 270.

MUS 274 Aural Skills IV (1). This course offers a practical application of the materials studied in MUS 273 and provides necessary drill in the skills of sight-singing and aural perception. This course should be taken concurrently with MUS 273 and 275. Prerequisite: MUS 271.

MUS 275 Functional Keyboard IV (1). A continuation of MUS 272. This course should be taken concurrently with MUS 273 and 274. Prerequisite: MUS 272.

MUS 280 Educating for Human Development in the Music Classroom (3). Course addresses human development as a foundation for student learning across the lifespan, in addition to musical development. Candidates will develop a basis for creating developmentally appropriate educational practices and assessments in the music classroom. Emphasis will be placed on understanding the importance of building relationships, developing collaborative partnerships, and creating a culturally responsive, student-centered environment to meet all students' needs. Clinical experiences required.

MUS 301 General Music Methods (3). Fundamentals of music teaching are continued along with procedures for selecting materials, teaching musical concepts, and assessing progress in the musical growth and development of the student. Prerequisites: EDU 180 and MUS 280 or equivalents with a B or higher. Admission to Teacher Education. Corequisite: MUS 380.

MUS 302 Choral Methods (2). Methods, materials and pedagogy related to the teaching of choral music in the elementary, junior high/middle school and senior high school choirs. Students must be of junior standing. Required for all music education majors. Prerequisites: EDU 180, MUS 134, 280, and MUS 380 or equivalent with a B or higher. Admission to Teacher Education. Corequisites: MUS 480 and SEC 420.

MUS 303 Instrumental Methods: Elementary and Middle School (2). Methods, materials and pedagogy related to the teaching of instrumental music in the elementary and middle schools will be studied. Students must be of junior standing and completion of instrument techniques courses is recommended. Vocal proficiency must be successfully completed. Prerequisites: EDU 180 and MUS 280 or equivalents with a *B* or higher. Admission to Teacher Education.

MUS 304 Advanced Instrumental Methods (2). Methods, materials, organization, administration and pedagogy related to the teaching of instrumental music in the secondary schools. Students must be of junior standing and completion of instrument techniques courses is recommended. Vocal Proficiency must be successfully completed. Prerequisites: EDU 180 and MUS 280 or equivalent with a *B* or higher. Admission to Teacher Education. Corequisites: MUS 480 and SEC 420.

MUS 313 Introduction to Music Synthesis (1). This course emphasizes a study of the concepts and selected applications of computer music in a digital music studio. Course content includes computer techniques, music sequencing, sound design, sound sampling, and the use of MIDI. Credit will be given for as many semesters as taken. Prerequisites: MUS 170 and 171.

MUS 314 Percussion Instruments Level III (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 315 Wind Instruments Level III (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 316 Organ Level III (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 317 Piano Level III (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 318 Strings Level III (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 319 Voice Level III (1-4). One 25-minute or one 50-minute individual instruction period per week. Participation in weekly vocal studio classes may be required. Credit will be given for as many semesters as taken.

MUS 320 Vocal Pedagogy for the Music Educator (2). This course is designed to acquaint the vocal music education major with the structure, function, and development of the vocal mechanism. Students will learn how to protect and develop the vocal instrument in group instructional settings. Topics include the physiology of the singing voice, basics of singing, characteristics of voices at various ages, teaching singing in the music classroom and in the choral rehearsal, choosing appropriate repertoire, assessing results, and developing musical artistry.

MUS 321 Choral Repertoire (2). Students will explore the evolution of choral forms through the major stylistic periods. Special emphasis will be placed on repertory appropriate for elementary, middle and high school choirs. Prerequisite: MUS 302.

MUS 323 Basic Conducting (2). Fundamentals of instrumental and choral conducting. The course will emphasize basic skills and techniques related to conducting instrumental and choral ensembles.

MUS 326 Marching Band Administration (2). Fundamentals of organization, arranging, charting of shows and aspects of public relations and program development.

MUS 327 Arranging Techniques (2). An exploration of the principles of instrumental and choral arranging through study of the instruments and voices involved, with practical application to the varied ensembles found in public schools. Prerequisites: MUS 270 and 271.

MUS 328 Choral Arranging (1). A study of the common arranging practices/principles observed in choral music. Special attention is placed on arranging for specific voice configurations commonly observed in public schools. An examination of the copyright law is included. Required for all music education majors on the comprehensive or vocal tracks. Prerequisites: MUS 273 and 274.

MUS 330 Music Business I (3). An overview of the diverse processes and resources of the Music Industry. Students will comprehend the complexity and synergy of the artistic and business aspects of the industry. Prerequisite: MUS 230

MUS 331 Music Business II (3). A continuation of MUS 330, exploring the diverse processes and resources of the Music Industry. Students will comprehend the complexity and synergy of the artistic and business aspects of the industry. Prerequisite: MUS 330.

MUS 332 Marketing in the Music Business (3). Course will build on the core industry knowledge gained in MUS 230 with an in depth view of the various models of marketing recordings and artists. Students will create a marketing plan as a final project. Prerequisite: MUS 230.

MUS 333 Live Performance and Concert Promotion (3). Course will build on the core industry knowledge gained in MUS 230 with a focus on the various dynamics involved in producing a live performance event. Students will learn the operational, marketing, media buying, hospitality, production, and financial aspects of live performances and concerts from both the venue and performer perspectives. The primary focus will be on the operation and booking of a live music event and/or festival and the components required to book and produce events. Seminars and field experience outside of class required. Prerequisite: MUS 230.

MUS 334 Artist Management and Development (3). Course will build on the core industry knowledge gained in MUS 230 with an in depth view of artist management and artist development. Students will apply principles by creating an artist career plan as a final project. Prerequisite: MUS 230.

MUS 335 Copyright Law and Legal Issues in the Music Business (3). This course will build on the core industry knowledge gained in MUS 230 with an in-depth view of the legal aspects of copyright protection, typical music industry contracts, business entities, and music industry practices. Prerequisite: MUS 230.

MUS 336 Piano as an Ensemble Instrument (1). Ensemble playing, piano duo literature, accompanying and chamber music performance. Credit will be given for as many semesters as taken. Prerequisite: MUS 136.

MUS 337 Recording Techniques I (3). Students will learn to operate multi-track recording equipment, associated hardware and software, and become familiar with audio production strategies. They will perform a variety of individual and group lab exercises and complete a series of assignments that provide an overview of the professional studio process, culminating in the mixing and mastering of a project recorded during the semester. Students will attend multiple live recording sessions.

MUS 338 Recording Techniques II (3). In this course students will learn advanced techniques in audio production. They will perform a variety of individual and group lab exercises and complete a series of assignments that simulate the standard functions performed in a modern commercial audio facility. Students will attend multiple live recording sessions. Prerequisite: MUS 337.

MUS 341 Composition Level II (3). One 50-minute session per week. The student will compose one or more original compositions during the semester with the eventual goal of public performance. Credit will be given for as many semesters as taken. Prerequisites: MUS 241 and status as a music composition major.

MUS 350 Instrumental Ensemble (1). Small ensembles concentrating on chamber music literature. Emphasis will be placed upon developing chamber ensemble skills. Credit will be given for as many semesters as taken.

MUS 351 University Orchestra (1). The ensemble will study and perform symphonic literature from a variety of style periods. Credit will be given for as many semesters as taken. Membership by audition.

MUS 352 Marching Band (1). The marching band prepares field performances for all home football games as well as selected away games and exhibitions. Credit will be given for as many semesters as taken. Membership is open.

MUS 353 Brass and Percussion Ensemble (1). Designed to give brass and percussion players experience in the study and performance of large brass ensemble literature. Credit will be given for as many semesters as taken. Membership by audition.

MUS 354 Wind Ensemble (1). The wind ensemble develops an understanding of representative wind band literature through study and performance. Credit will be given for as many semesters as taken. Membership by audition.

MUS 355 Jazz Ensemble (1). The jazz ensemble develops an understanding of representative jazz styles and skills through study and performance. Credit will be given for as many semesters as taken. Membership by audition.

MUS 356 Jazz Combo (1). Concentration on development of improvisatory techniques through performance and listening skills. Credit will be given for as many semesters as taken.

MUS 357 Symphonic Band (1). The symphonic band develops an understanding of representative concert band literature through study and performance. Credit will be given for as many semesters as taken. Membership is open.

MUS 358 Concert Band (1). The Concert Band develops an understanding of musical styles and skills through study and performance. Credit will be given for as many semesters as taken. Prerequisite: Concert band skills on a wind or percussion instrument.

MUS 360 University Chorale (1). University Chorale is dedicated to the study and performance of a wide variety of choral literature from all the major stylistic periods and genres. The development of basic musical skills and proper vocal function is emphasized. Credit will be given for as many semesters as taken. Membership is open.

MUS 361 Concert Choir (1). Concert Choir is dedicated to the study and performance of the masterworks of choral literature from all periods, genres and styles. Credit will be given for as many semesters as taken. Membership is by audition.

MUS 362 Chamber Singers (1). The Chamber Singers study and perform a wide variety of choral literature from all periods, genres and styles with special attention to that body of work composed specifically for small vocal ensembles. Credit will be given for as many semesters as taken. Prerequisite: audition and concurrent enrollment in MUS 160/360 or 161/361.

MUS 363 MSU Town and Gown Chorale (1). Murray Choral Society is an ensemble comprised of students and community members and is dedicated to the study and performance of choral literature from all periods, genres, and styles. Credit will be given for as many semesters as taken. Membership is open.

MUS 364 Opera Workshop (1-2). Practical experience in a workshop situation of scenes from opera and/or musical theatre. Only major operatic leads may take MUS 364 for two credits with permission of the instructor. Credit will be given for as many semesters as taken. Membership by audition.

MUS 365 Opera Production (2). Practical experience in costuming, stage management, construction of scenery, and stage lighting for the lyric stage. Credit will be given for as many semesters as taken.

MUS 366 Women's Chorus (1). This chorus is a non-auditioned ensemble and performs a wide variety of challenging repertoire from all of the major historical periods and styles.

MUS 367 Racer Men's Chorus (1). This chorus is a non-auditioned ensemble and performs a wide variety of challenging repertoire from all of the major historical periods and styles.

MUS 368 A Cappella Voice Ensemble (1). This ensemble is auditioned at the start of each semester and performs a wide variety of challenging a cappella vocal repertoire.

MUS 375 Foundations and Principles of Music Therapy I (3). Course is directed toward developing entry-level competencies needed in the field of music therapy and is geared toward individuals who wish to be licensed in music therapy. Classes will consist of lecture/discussion, lab-based activities, and field experience opportunities. Field experience required. Prerequisite: music therapy major or permission of the instructor.

MUS 376 Foundations and Principles of Music Therapy II (3). Course is a continuation of MUS 375 and is directed toward developing entry-level competencies needed for individuals seeking to attain licensure in music therapy. Specifically, this course will focus on the treatment process. This class must be taken consecutively to MUS 375. Field experience is required. Prerequisite: MUS 375 with a grade of *C* or higher or permission of the instructor.

MUS 380 Inclusive Teaching of Diverse Learners in Music (3). Course will examine the design, implementation, and assessment of music instruction with diverse learners in mind. Teacher candidates will synthesize knowledge of learning theories, technology, and evidence-based practices, including classroom management, to develop units of study and lesson plans for K-12 music classrooms and performing ensembles, as well as other non-classroom or community music settings. The course will introduce candidates to federal laws and guidelines addressing diverse learners (e.g. special education, ELL, gifted and talented) and the application to K-12 music classrooms. Clinical experiences required. Prerequisites: EDU 180 and MUS 280 or equivalents with a *B* or higher. Admission to Teacher Education. Corequisite: MUS 301.

MUS 381 Music History and Literature I (3). The study of musical styles and literature from the fifth century B.C. through 1750. A survey of the musical heritage of western music and cultures including such topics as early Christian church music, Middle Ages secular song, Renaissance vocal and instrumental music and Baroque opera, keyboard and instrumental music. Prerequisites: For music majors: MUS 270, 271 and ENG 105 or equivalent. For music minors and liberal arts majors: successful completion of MUS 105 and ENG 105 or equivalent.

MUS 382 Music History and Literature II (3). The study of musical styles and literature from 1730 through 1900. A survey of the musical heritage of western music and cultures including such topics as the Pre-Classic composers, Classic-Era symphonies, chamber music, keyboard and wind concerti, and opera and oratorio through Romantic-Era lieder, symphonies, symphonic poems, opera, oratorio, chamber music and concerti. Prerequisite: MUS 381 with a minimum grade of *C*.

MUS 383 Music History and Literature III (3). The study of musical styles and literature since 1900. A survey of the musical heritage of western music and cultures including modern artistic ideas and styles, music between the two world wars, and new concepts and directions in live and pre-recorded musical media. Special focus will be included on world music from a variety of non-western cultures. Prerequisite: MUS 381 with a minimum grade of *C*.

MUS 392 Professional Engagement (1). A capstone experience, preparing students for work in the field of music. The course covers some aspects of job preparation, such as creating a resume, but focuses primarily on an individual, leadership project designed by the student. The project requires use of music skills outside of the classroom, must be approved by music faculty, and entail a minimum of 25 hours of hands-on experience. The class will meet in person a minimum number of hours so that students may use class time to work on projects. The class is repeatable for a maximum number of two hours. Prerequisite: junior or senior status.

MUS 396 Repertoire/Pedagogy (2). A study of methods and materials available for teaching purposes as well as appropriate repertoire and pedagogical techniques available for various levels of learning.

MUS 398 Junior Recital (0). Bachelor of Music in Performance degree candidates of junior standing enroll in this course the semester of their junior recital.

MUS 414 Percussion Instruments Level IV (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 415 Wind Instruments Level IV (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 416 Organ Level IV (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 417 Piano Level IV (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 418 Strings Level IV (1-4). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken.

MUS 419 Voice Level IV (1-4). One 25-minute or one 50-minute individual instruction period per week. Participation in weekly vocal studio classes may be required. Credit will be given for as many semesters as taken.

MUS 423 Instrumental Conducting (2). An in-depth study of instrumental conducting techniques, with emphasis on practical conducting experiences using instrumental ensembles. Attention will be given to the selection, preparation and conducting of literature appropriate to various public school ensemble levels. Prerequisites: MUS 273, 274, and 323.

MUS 424 Choral Conducting (2). An in-depth study of choral conducting techniques, with emphasis on practical conducting experiences using choral ensembles. Attention will be given to the selection, preparation and conducting of literature appropriate to various public school ensemble levels. Prerequisites: MUS 273, 274, 302, and 323 or permission of instructor.

MUS 427 Advanced Arranging and Orchestration (2). An in-depth exploration of all the instruments of the orchestra and band as well as the study of how to effectively write for each, alone and in combination. This course focuses on detailed score study, intense listening and evaluation, composing effective arrangements, and professional-level score preparation. The course will meet for two hours of lecture per week as well as one orchestra or band reading session (to be arranged). Prerequisites: Status as a music major and a grade of *C* or better in MUS 273 and MUS 327.

MUS 431 Special Topics I (3). A study of selected musical topics: composers, genres, etc. The course will allow students to study topics in a concentrated, in-depth manner. Specific topics will vary. Credit will be given for as many semesters as taken.

MUS 432 Special Topics II (3). A study of selected musical topics: composers, genres, etc. The course will allow students to study topics in a concentrated, in-depth manner. Specific topics will vary. Credit will be given for as many semesters as taken.

MUS 433 History of the Music Industry (3). Course will build on the core industry knowledge gained in MUS 230 with an in depth view of the history of the music business, including inventions and technology, key businesses in recording, distribution and touring, and biographies of influential artists and executives. Prerequisite: MUS 230.

MUS 434 The Digital Revolution and the Music Industry (3). The course addresses how music is delivered and consumed through examining current case studies in digital media and content management. The course is aimed

at students with no technical background and serves as an overview of the digital aspects of the music business, including monetization of digital content (music and video). Prerequisites: MUS 230, 332, and 335.

MUS 439 Harpsichord (1). One 25-minute individual instruction period per week. Credit will be given for as many semesters as taken. For keyboard studies majors only. Prerequisites: MUS 116-316 or 117-317.

MUS 440 Entrepreneurship in Music Business (3). A practical, step-by-step approach with theoretical foundation to forma a basic framework for understanding the process of entrepreneurship in music business. The aim of the course is to present the most current thinking in entrepreneurship and to provide learners the opportunity to apply ideas and develop useful analytical skills. This is a writing-intensive course in the music business degree. Prerequisites: MUS 230, 330, 331, and admission to the music business degree.

MUS 441 Composition Level III (3). One 50-minute individual instruction period per week. The student will compose one or more original compositions during the semester with the eventual goal of public performance. Credit will be given for as many semesters as taken. Prerequisites: MUS 341 and status as a music composition major.

MUS 459 Advanced Music History and Literature (3). The student will explore in further depth the development of music in history through stylistic elements as found in the standard repertoire. Each of these musical elements will be traced from plainchant through music of the 20th century, with special emphasis on innovative trends, perspectives, and genres. Prerequisites: MUS 381 and 382 with a minimum grade of *C*, or permission of instructor.

MUS 475 Clinical Practicum I (3). Course builds on the foundations and principles of music therapy established in MUS 375 and MUS 376, specifically focusing on professional applications. Field experience is required. Prerequisite: MUS 376 with a grade of *C* or higher.

MUS 476 Clinical Practicum II (3). Course builds on the foundations and principles of music therapy established in MUS 375 and MUS 376, and exercised in MUS 475, specifically focusing on professional applications. Prerequisite: MUS 475 with a grade of *C* or higher.

MUS 480 Effective Pedagogy in Music Education (2). Teacher candidates will apply content knowledge, educational philosophies, learning theories, differentiated instruction, classroom management strategies, effective assessment practices, instructional technology, co-teaching strategies, student advocacy, and content-area literary in K-12 music classes and performing ensembles. Emphasis will be placed on roles of teachers, students, parents, school, and community as educational partners. Candidates will design and implement culturally relevant, developmentally-appropriate instruction for all students in music settings. Clinical experiences required. Prerequisites: EDU 380 or equivalent with a *B* or higher and admission to Teacher Education. Corequisites: MUS 302 and SEC 420.

MUS 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

MUS 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

MUS 490 Senior Seminar (1). A course designed to provide an opportunity for students in all three degree programs to meet with the music faculty to explore topics of mutual concern; a culminating experience in which students examine uniquenesses and differences of their programs in consideration of trends and concepts in music, the arts and places of these in human experience; a forum for verbal and non-verbal program assessment.

MUS 496 Repertoire/Pedagogy (2). A continuation of MUS 396. Required of B.M. degree students. Prerequisite: MUS 396.

MUS 497 Final Project (0). The final project may be a research paper, a musical composition or other work acceptable to both student and advisory committee. Bachelor of Arts in Music candidates in the research track enroll in this course during the seventh or eighth semester of study.

MUS 498 Senior Recital (0). Undergraduate degree candidates enroll in this course during the semester of their senior recital.

MUS 499 Concerto Performance (0). Undergraduate degree candidates in the Bachelor of Music in Performance program enroll in this course the semester of their concerto performance.

MUS 509 Clinical Internship (3). Course is designed to impart entry-level clinical competencies through site-based, six-month clinical experiences in a student-selected area of interest. Students will complete a minimum of 900 hours and a maximum of 1044 hours of clinical training in medical, psychiatric, special education, geriatric or other clinical music therapy settings. Hours will be determined based on the number of pre-intern training hours completed. Field experience required. Graded pass/fail. Prerequisites: successful completion of all equivalency-level educational requirements prior to internship. No exceptions will be made.

MUS 510 Pedagogy of Theory (2). An examination of current materials and practices in the teaching of theory; discussion and research of the problems of theory teaching with particular emphasis on application to and place in the secondary school and the junior college. (On demand)

MUS 511 Analysis of Contemporary Music (3). Study of the techniques and styles employed by composers since 1900. This course provides theoretical insight into the compositional procedures and stylistic tendencies exhibited in recent music, and, in many cases, how they connect logically with the music of the past. It emphasizes learning how to listen to, appreciate, and interpret contemporary music. Prerequisites: A grade of *C* or better in MUS 273 and 274.

MUS 512 Counterpoint (3). Contrapuntal practices from the 16th century to the modern era. There will be particular emphasis on contrapuntal writing of the 18th century as exemplified in the works of J.S. Bach. Study of species counterpoint, analysis of representative composition, and writing of contrapuntal works. Prerequisites: A grade of *C* or better in MUS 273 and 274.

MUS 513 Form and Analysis (3). A study in harmonic analysis and the forms of composition throughout the history of music. Prerequisites: MUS 273 and 274 with a grade of *C* or better.

MUS 514 Applied Music Study—Percussion Instruments (1-3). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken. Open to junior and senior students. Prerequisites: completion of 400-level of applied study or the equivalent, and permission of instructor.

MUS 515 Applied Music Study—Wind Instruments (1-3). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken. Open to junior and senior students. Prerequisites: completion of 400-level of applied study or the equivalent, and permission of instructor.

MUS 516 Applied Music Study—Organ (1-3). One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken. Open to junior and senior students. Prerequisites: completion of 400-level of applied study or the equivalent, and permission of instructor.

MUS 517 Applied Music Study—Piano (1-3) One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken. Open to junior and senior students. Prerequisites: completion of 400-level of applied study or the equivalent, and permission of instructor.

MUS 518 Applied Music Study—String Instruments (1-3) One 25-minute or one 50-minute individual instruction period per week. Credit will be given for as many semesters as taken. Open to junior and senior students. Prerequisites: completion of 400-level of applied study or the equivalent, and permission of instructor.

MUS 519 Applied Music Study—Voice (1-3) One 25-minute or one 50-minute individual instruction period per week. Participation in weekly vocal studio classes may be required. Credit will be given for as many semesters as taken.

MUS 530 Special Topics (3). A study of selected musical topics: composers, genres, etc. The course will allow students to study topics in a concentrated, in-depth manner. Specific topics will vary by semester according to student and faculty advisor interests. Credit will be given for as many semesters as taken.

MUS 550 Independent Study in Music (1-3). Independent study for selected students. Topics, methodology and evaluation procedures to be approved in advance by the instructor. Credit will be given for as many semesters as taken. Prerequisite: consent of department chair.

MUS 600 Historical and Philosophical Foundations of Music Education (3). Historical and philosophical foundations of music education; lecture and discussion with attention to aesthetics, aesthetic education, and the relationship of music and art to these in forming a philosophy of music education.

MUS 601 Psychological Foundations of Music Education (3). Psychological foundations of music education through readings, lecture, and discussion of educational learning theories. A survey of current trends in learning theories and their implications for teaching, supervision, administration, and evaluation in music education.

MUS 602 Curriculum and Assessment in Music (3). Students will develop an understanding of the major trends in curriculum development in music education and the assessment process as it relates to individual, classroom, and standardized evaluation.

MUS 610 Advanced Music Theory and Analysis (3). Selected composers from the Common Practice period to the present will be studied in depth. Complete movements of works will be studied, and proper analytical procedures and systems will be determined and implemented. A comprehensive look at a variety of styles and genres will be of particular importance, and emphasis will be placed on understanding 20th century music.

MUS 614 Percussion (1-3). Credit will be given for as many semesters as taken.

MUS 615 Wind Instruments (1-3). Credit will be given for as many semesters as taken.

MUS 616 Organ (1-3). Credit will be given for as many semesters as taken.

MUS 617 Piano (1-3). Credit will be given for as many semesters as taken.

MUS 618 Strings (1-3). Credit will be given for as many semesters as taken.

MUS 619 Voice (1-3). Credit will be given for as many semesters as taken.

MUS 620 Keyboard Literature and Performance Practice (2). Keyboard literature from the pre-Baroque era through the 20th century. Stylistic considerations, performance practices, ornamentation, etc., for each period researched and discussed. Prerequisite: consent of the instructor. (On demand.)

MUS 627 The Elementary Music Program (3). Administration of the elementary school music program, including curriculum, assessment, KERA standards, mainstreaming, gifted/talented students, 20th-century approaches to music education, and professional development.

MUS 628 The Secondary Music Program (3). This course is directed towards music planning in the secondary school, including curriculum development and evaluation, evaluation tools, scheduling strategies, budget and inventory control, summer program development, community relations, faculty development and in-service planning, and working relationships with school administrators.

MUS 629 Contemporary Instructional Practices in Music Education (3). Contemporary music education practices, with the implications of current research upon those practices.

MUS 630 Special Topics (3). A study of selected musical topics: composers, genres, etc. The course will allow students to study topics in a concentrated, in-depth manner. Specific topics will vary by semester according to student and faculty advisor interests. Credit will be given for as many semesters as taken. Prerequisite: instructor approval.

MUS 639 Methods of Research in Music Education (3). A study of procedures used to locate sources of information, organize and interpret collected data, and apply results of published research in music. A variety of research methods is studied and utilized.

MUS 640 Piano Pedagogy (2). Piano teaching, including the examination and evaluation of beginning and intermediate teaching methods, analysis of technical approaches, and research into the history of piano pedagogy. Observations and supervised practice teaching required. Prerequisite: consent of the instructor. (On demand.)

MUS 641 Vocal Pedagogy (2). Techniques, practices and materials used in the teaching of singing. Discussion of psychological and physical developmental growth principles applied to individual and group performance.

MUS 642 Seminar in Music Teaching (3). Pedagogical approaches and materials for the teaching of musical skills and concepts. Prerequisite: Students must be admitted to the M.M.E. degree program.

MUS 650 Problems and Projects in Music (1-4). Course designed to accommodate individual projects for selected students. Project reports will be presented orally and/or in writing. Credit will be given for as many semesters as taken. Prerequisites: consent of departmental chair and instructor.

MUS 651 University Orchestra (1). The ensemble will study and perform symphonic literature from a variety of style periods. Credit will be given for as many semesters as taken. Audition required.

MUS 652 Marching Band (1). The marching band develops an understanding of musical styles and skills through study and performance. Credit will be given for as many semesters as taken. Audition required.

MUS 654 Symphonic Wind Ensemble (1). The ensemble develops an understanding of representative wind band literature through study and performance. Credit will be given for as many semesters as taken. Audition required.

MUS 655 Jazz Ensemble (1). The ensemble develops an understanding of representative jazz styles and skills through study and performance. Credit will be given for as many semesters as taken. Audition required.

MUS 656 Jazz Combo (1). Concentration on the development of improvisatory techniques through performance and listening skills. Special attention given to creation of arrangements (jazz theory) and pedagogic techniques. Credit will be given for as many semesters as taken. This course will only count as elective credit. Prerequisite: permission of instructor.

MUS 657 Symphonic Band (1). The symphonic band develops an understanding of musical styles and skills through study and performance. Credit will be given for as many semesters as taken. Audition required.

MUS 658 Concert Band (1). Develops an understanding of musical styles and skills through study and performance. Repeatable. Prerequisite: concert band skills on a wind or percussion instrument.

MUS 659 Advanced Music History and Literature (3). The student will explore in further depth the development of music in history through stylistic elements as found in the standard repertoire. Each of these musical elements will be traced from plainchant through music of the 20th century, with special emphasis on innovative trends, perspectives, and genres.

MUS 660 University Chorale (1). Course dedicated to the study and performance of a wide variety of choral literature from all major style periods and genres. The development of basic musical skills and vocal function is emphasized.

MUS 661 Concert Choir (1). Course dedicated to the study and performance of a wide variety of choral literature from all major style periods and genres. The continued development of musical skills and vocal function is emphasized. Audition required.

MUS 662 Chamber Singers (1). The group will study and perform a wide variety of choral literature from all major style periods and genres, with special attention to that body of work composed specifically for small vocal ensembles. Audition required. Requires concurrent enrollment in MUS 660 or 661.

MUS 664 Opera Workshop (1-2). Provides experiences for singers to gain experience in opera/music theatre repertoire through participation in full performances or staged scenes. Only students with major roles may take MUS 664 for two credits with permission of the instructor. Credit will be given for as many semesters as taken. Audition required.

MUS 670 Chamber Ensembles (1). Small ensembles concentrating on chamber music literature. Emphasis will be placed on developing chamber ensemble skills. Credit will be given for as many semesters as taken.

MUS 693 Workshop in Music for Teachers (1-3). A variable credit workshop with selected topics appropriate to music educators. Credit will be given for as many semesters as taken.

MUS 698 Music Thesis I (3). The initial preparation of a significant study of a topic deemed appropriate by the student's research director and research committee. This topic could be an outgrowth of an idea from previous coursework or may emanate from discussion with faculty and peers. Prerequisites: MUS 600, 601, 610, 639 and 659.

MUS 699 Music Thesis II (3). The continuation of a significant study of a topic deemed appropriate by the student's research director and research committee. Prerequisite: MUS 698.

NONPROFIT LEADERSHIP STUDIES (NLS)

NLS 100T Transitions (1). Course designed to assist students in their transition to Murray State University. Content includes orientation to the specific areas, majors, and minors within academic programs. Other topics may include university procedures, policies, resources, strategies for success and extracurricular activities. Only one transition course will count toward graduation. Graded pass/fail.

NLS 101 Introduction to Recreation and Leisure Services (3). An overview of the history, philosophy, aims, and objectives of the recreation and leisure profession.

NLS 102 Camp Leadership and Campcraft (2). Introduction to the history and objectives of organized camping with emphasis on the role of the modern camp counselor.

NLS 104 Rural Tourism (3). Course is designed to provide students with an overview of rural tourism including factors such as supply and demand, as well as cultural, economic and environmental impacts. Additional topics may include sustainable and global tourism. Students will be required to participate in field experiences.

NLS 129 Basic Canoeing (1).

NLS 150 Recreation Activity Leadership (1). Course provides a study of challenge education programming and direct experience in facilitating challenge education activities.

NLS 161 Outdoor Cooking and Menu Planning (1). An introduction to basic outdoor cooking. The course will cover basic equipment, food preparation techniques, nutrition and menu planning for backcountry.

NLS 162 Backpacking and Outdoor Living (1).

NLS 163 Caving (1).

NLS 164 Rock Climbing (1).

NLS 207 Diversity and Inclusion in a Global Society (3). The purpose of this course is to explore the meaning and impact of diversity for individuals and organizations in society. An overview of issues relating to diversity such as identity, difference, prejudice, privilege, and bias will be studied as they relate to patterns of discrimination based on certain criteria, such as race, color, religion or creed, national origin or ancestry, gender, age, physical or mental disability, genetic information, citizenship, sexual orientation, etc. Students will explore successful strategies and methods for achieving inclusive workplaces and interactions in society.

NLS 264 Intermediate Rock Climbing (2). The course will review outdoor rock climbing basics including techniques, equipment, knots and belaying. Students will then be given instruction and practice on setting up proper anchor systems for top-rope climbing. A weekend field experience is required for this course. Prerequisite: NLS 164 or permission of instructor.

NLS 290 Community Engagement and the Nonprofit Sector (3). Introduces students to the broad roles of nonprofit and recreation organizations in society. Includes an emphasis on the values embodied in philanthropy and the nonprofit sector, such as service, volunteering, human and cultural diversity, trust, stewardship, and social justice. Requires service in a community organization as part of the Service Learning Scholars Program.

NLS 295 Wilderness and Remote First Aid (3). The course will cover wilderness first aid basics and help-delayed care in environments where advanced medical services may be unavailable or delayed. Students will be trained in other areas of patient care, including the performance of cardiopulmonary resuscitation for the professional rescuer (CPR-PR). Students will be required to participate in a Wilderness Care Weekend Experience.

NLS 300 Introduction to Nonprofit Management (3). Course introduces students to nonprofit management from the perspective of the various stakeholders of nonprofit organizations. The course helps students to develop management and problem-solving skills, and to become better-informed board members, volunteers, and donors if they do not intend to pursue a career in the nonprofit sector. It analyzes the roles and functions of nonprofit organizations, as well as key questions in the research, theory, and practice of leading and managing nonprofit organizations and philanthropic institutions.

NLS 301 Outdoor Adventure Skills (3). An introduction to basic skills and concepts in a variety of outdoor adventure activities. Proficiency will be developed in hard skills (knots, belaying, paddle strokes, etc.) for various outdoor adventure activities including, but not limited to, rock climbing, backpacking, canoeing, kayaking, and caving. The course covers group dynamics, effective leadership, communication, and decision making in the backcountry. Weekend experiences required.

NLS 302 Special Event Management (3). An overview of special event management with a focus on best practices for effective planning, implementation, and evaluation. Includes organizing and delivering a special event.

NLS 304 Community Recreation Service Learning (1). Students obtain hands on professional experience by completing 40 service learning hours in community recreation programs. Recreation majors only.

NLS 305 Giving, Philanthropy, and Grant-making (3). Course analyzes the different forms of philanthropic action, from informal individual gift giving to strategic and institutional philanthropy. The course includes a student philanthropy component, as students will allocate a grant to a local nonprofit organization. This experience will familiarize students with key aspects of grant-making institutions, such as mission development, needs assessment, grant proposal analysis, and site visits. Students will develop their own grant-making strategy and learn how to be strategic in their individual giving. Prerequisite: permission of instructor.

NLS 306 Aging in American Society (3). An overview of physical, mental, social, and emotional aspects of aging. Focuses on the issues affecting older adults, as well as the individuals and organizations/institutions supporting them. Addresses the broader implications of these issues for society.

NLS 311 Leadership in Adventure Education (3). Course will provide a thorough study of leadership in adventure education programs. Topics will include leadership styles, trip planning, risk management, and group dynamics. Weekend experiences required. Prerequisite: REC 161 and either NLS 301 or two of the following: REC 129, 162, 163, or 164.

NLS 340 Extended Backcountry Travel (3). Designed to develop an understanding of leadership, knowledge, and skills specific to extended back country travel

situations. Week-long experience required. Field experiences may include, but are not limited to: backpacking, canoeing, and kayaking.

NLS 350 Program Development (3). Develops knowledge and understanding of techniques in organizing, planning, and evaluation of various types of nonprofit and recreation programs. Examines program development tools such as the logic model, and emphasizes program outputs/outcomes, structure, and policies/procedures. Provides opportunities to apply management and program development tools to a real-world context through service learning projects. Part of the Service Learning Scholars Program.

NLS 351 Leadership, Governance, and Board Development (3). Introduces students to the leadership and governance component of the nonprofit sector. Exposes students to leadership theories, leadership styles, and decision-making processes as they apply to the nonprofit sector. Provides an analysis of the role of governance structures in nonprofit organizations, including board development and relationship between executive director and board. An emphasis is placed on ethical issues in governance and leadership. Requires service in a community organization as part of the Service Learning Scholars Program.

NLS 352 Human Resource and Volunteer Development (3). Introduces students to the processes and practices of managing paid and unpaid staff with a focus on recruitment, development, supervision, recognition, and retention. Explores the roles, values, and dynamics of volunteerism in fulfilling organizational missions, including governance structures, committee systems, and advocacy activities. Requires service in a community organization as part of the Service Learning Scholars Program.

NLS 360 Special Topics (3). A study of a specific nonprofit management or outdoor recreation topic, such as focusing on a type of organization, population, or societal issue. The course will allow students to study the specific topic in a concentrated and in-depth manner. Specific topics will vary. Credits will be given for up to 15 credit hours for courses with a different topic.

NLS 370 Philanthropy, NGOs and International Development (3). Course analyzes the role of international philanthropy and transitional nongovernmental organizations (NGOs) in addressing world poverty. It provides students with an overview of the size and scope of U.S. international philanthropy, as well as the actors and challenges of international development assistance. The course introduces students to major debates on international development, and focuses in particular on the effectiveness and efficiency of international philanthropy and NGOs.

NLS 380 The Nonprofit Sector in Comparative Perspective: Study Abroad Experience (3). The course will explore civil society and nonprofit organizations in different cultural context. Students will be exposed to the multiple ways nonprofit organizations respond to the global issues confronting the world today. Particular attention will be given to the roles and functions of nonprofit organizations outside the United States, with an emphasis on the differences and similarities with the U.S. context. The course includes both pre-departure classroom meetings and international travel, and may also include student involvement in a local and/or international community service organization. In total, students will complete a minimum of 45 hours of classroom activities- combining pre-departure meetings and abroad experience.

NLS 395 Wilderness and Remote First Aid Instructor (2). Course covers the skills and competencies necessary to become certified as a Wilderness and Remote First Aid and CPR for the Professional Rescuer Instructor. Certification may be obtained through the American Red Cross. Weekend experiences required.

NLS 400 Professional Internship (1-3). A professional development experience with a community organization under the direct supervision of an experienced social sector professional. Course is repeatable for up to six hours of credit. Prerequisites: NLS 350, 351 and 402; and instructor approval.

NLS 402 (502) Financial Resource Management and Fund Development (3). A review of the impacts of basic economics and market dynamics on the nonprofit sector, frame an overview of financial management, and resource development processes and practices. The course presents students with quality practices and tools used in budgeting, accounting, reporting, and fund raising. Part of the Service Learning Scholars program.

NLS 403 Nonprofit and Recreation Facilities (3). Course emphasizes planning and design principles for managing facilities for nonprofit and recreation facilities. The course will focus on administration of existing facilities and new facility planning. Facilities covered include administrative offices, parks, playgrounds, pools, camps, and recreation centers.

NLS 405 Organization and Administration of Recreation (3). A study of the organizational and administrative practices of commercial, public and voluntary recreation agencies.

NLS 410 Technology Skills for Community Organizations (3). Studies current and emerging technology, including social media and "big data," as a tool to increase effectiveness and excellence in the management of nonprofit and recreation organizations. Practices basic skills required for individual and organizational success in the digital world.

NLS 420 Field Studies in Environmental Education (3). An overview of natural resources and programs that promote understanding and teaching of environmental education and environmental literacy. Class includes visits to nearby environmental education programs and areas that promote environmental education and enhance environmental literacy.

NLS 430 NPOs and Community Development: Comprehensive Strategies for Impact (3). The course prepares students for action in the complex and ever-changing context in which mission-driven nonprofit organizations operate. This course provides students with current and emerging action strategies and practices to strengthen or improve less-advantaged communities, empower their residents, and interact with a broad spectrum of public, for profit, and nonprofit agencies. Students examine and apply quality practices in comprehensive community development, coalition and movement building, integrated strategies, collective and collaborative action, and strategic planning and assessment approaches. Students are required to complete service with an approved organization outside of class time.

NLS 445 Research and Evaluation in Recreation (3). A study of methods and techniques of research and evaluation as applied to recreation and park services.

NLS 450 Senior Seminar Capstone (3). Course assists graduating seniors to synthesize and demonstrate their knowledge and competencies in nonprofit leadership studies. Students will complete an electronic portfolio. The course addresses the full range of professional development strategies, skills, and resources needed for a successful career in the nonprofit sector.

NLS 460 Natural Resources and Society (3). This course will provide a thorough investigation of the recreational use of natural resources in the United States, as well as an overview of conditions around the world. The information presented will focus on the primary issue of "preservation versus use" of natural resources.

NLS 465 Policy, Legal Issues, and Advocacy for Social Change in Nonprofit Organizations (3). An exploration of the legal issues impacting the nonprofit sector, the roles of policy in insuring compliance and effective practice, and the application of advocacy strategies. Student will build understanding through the examination of the basic legal needs nonprofits have in common, requirements of the tax exemption, the legal aspects of fund development, human resources law for nonprofits, and political activities, among others.

NLS 470 Interpretation of Cultural and Natural Resources (3). A study and application of techniques and best practices appropriate to historical, cultural, and natural resource interpretation in park and recreation settings. Includes analysis and development of a appreciation of interpretive programs and visitors information services.

NLS 475 Social Entrepreneurship (3). This course is about utilizing entrepreneurial skills to craft innovative responses to social problems. Entrepreneurs are particularly good at recognizing opportunities, exploring innovative approaches, mobilizing resources, managing risks, and building viable enterprises. Social entrepreneurship applies to both profit and nonprofit organizations that have programs designed to create social value. Part of the Service Learning Scholars Program. Prerequisite: junior standing or permission of instructor.

NLS 480 Special Problems in Nonprofit Organizations (1-3). Involves developing a project or independent study to address issues and needs within local nonprofits. Students will be responsible for planning, implementing, and their outcome evaluations for the project or independent study. May be repeated for a maximum of nine credit hours.

NLS 485 Seminar on Leadership Development (3). Course is a high-level exploration of leadership principles and practices, in support of the development of personal confidence and capacity to be more effective leaders and managers. Students will develop competencies for quality applications in the context of family, community, and career, including personal principles and values, ethical standards and practices, interpersonal and group dynamics, cultural competence, and vision and strategy development, among others.

NLS 490 National Recreation Sites and Rural Tourism Traveling Workshop (3). Study of national outdoor recreation sites and rural tourism where they occur. Includes educational interaction with professionals at national recreation sites and facilities and gateway communities. Course addresses primary management issues related to specific sites.

NLS 501 Seminar on Nonprofit Organizations (3). An advanced exploration of nonprofit organizations. Program development, leadership, personnel/volunteer management, communication, decision making, and problem solving are explored and includes a service learning project approach. Part of the Service Learning Scholars program.

NLS 600 The Nonprofit Sector and Civil Society (3). Course provides students with historical and philosophical foundations of the nonprofit sector in American society and around the globe, the roles and relationships among structural sectors of society (nonprofit, government, and business), and the competencies and functions of nonprofit sector leadership and management. Students identify and study current and emerging issues and trends impacting society and the response for the nonprofit sector, while exploring the range of career and volunteer opportunities.

NLS 601 Seminar on Nonprofit Organizations (3). An advanced exploration of nonprofit organizations. Program development, leadership, personnel/volunteer management, communication, decision making, and problem solving are explored and includes a service learning project approach. Part of the Service Learning Scholars program.

NLS 602 Financial Resource Management and Development (3). A review of the impacts of basic economics and market dynamics on the nonprofit sector, frame an overview of financial management, and resource development processes and practices. The course presents students with quality practices and tools used in budgeting, accounting, reporting, and fund raising. Part of the Service Learning Scholars program.

NLS (EDU) 615 Introduction to Environmental Education (3). An introduction to environmental education which will include philosophy, historical development, resource identification, curriculum development, field trip and other activities designed to use the various subject areas in all grade levels as a vehicle to create an environmental ethic.

NLS (EDU) 620 Internship in Environmental Education (3). Student spends a directed amount of time working under the supervision of a selected environmental educator. This may be in formal and non-formal settings. May be taken concurrently with EDU 660 if experience and length of internship merits additional credits.

NLS 625 Nonprofit Organization Development, Management, and Leadership (3). An examination of the roles and responsibilities of positional leaders in the ongoing development, management, and leadership of nonprofit organizations. Students develop understanding of strategies, practices, and tools for developing vision and mission, establishing and implementing strategic plans and operation policies, developing and guiding human resources (paid and volunteer), and building and sustaining effective governance structures.

NLS 630 Nonprofit Organizations and Community Development: Comprehensive Strategies for Impact (3). Course prepares students for action in the complex and ever-changing context in which mission-driven nonprofit organizations operate. This course provides students with current and emerging action strategies and practices to strengthen or improve less-advantaged communities, empower their residents, and interact with a broad spectrum of public, for profit, and nonprofit agencies. Students examine and apply quality practices in comprehensive community development, coalition and movement building, integrated strategies, collective and collaborative action, and strategic planning and assessment approaches.

NLS 640 Internship (3). Course provides graduate students opportunity to enhance and compliment their academic program through experimental learning in a professional nonprofit workplace. The experience provides students opportunities to build professional networks and better understand current issues in their profession. Prerequisites: completion of four core courses.

NLS (EDU) 660 Special Problems in Environmental Education (1-3). Selected projects in current developments and trends in environmental education. Repeatable to six hours.

NLS (EDU) 661 Workshops in Environmental Education (1). Selected workshops in environmental education. Graded pass/fall. Repeatable to three hours. Prerequisite: permission of the instructor.

NLS (EDU) 662 Workshops in Environmental Education (2). Selected workshops in environmental education. Graded pass/fall. Repeatable to six hours.

NLS (EDU) 663 Workshops in Environmental Education (1-3). Selected workshops in environmental education. Repeatable to nine hours. Graded pass/fail.

NLS (EDU) 664 Techniques of Teaching Environmental Education (3). This course provides opportunities for the development of teaching attitudes and understanding at all grade levels of the basic natural resources of the school environment. Study of the surrounding area is made through field trips.

NLS 665 Policy, Legal Issues, and Advocacy for Social Change in Nonprofit Organizations (3). An exploration of the legal issues impacting the nonprofit sector, the roles of policy in insuring compliance and effective practice, and the application of advocacy strategies. Student will build understanding through the examination of the basic legal needs nonprofits have in common, requirements of the tax exemption, the legal aspect of fund development, human resources law for nonprofits, and political activities, among others.

NLS (EDU) 667 International Environmental Education (3). Residential study of the mathematical, scientific, social studies, language arts, fine arts, and health connections to the environment in international locations. This class takes place in an international location (field experiences required). Prerequisite: permission of instructor.

NLS (EDU) 668 Agriculture and the Environment in the Classroom (3). The study of agriculture and the environment as it relates to origination and production of food and fiber and how this connects to topics, skills, and concepts that are included in the K-12 classroom. This program is conducted in conjunction with the Kentucky Department of Agriculture (field experience required).

NLS (EDU) 669 Investigation and Evaluation of Issues in Environmental Education (3). Course focuses on the identification and evaluation of specific environmental issues, leading to possible environmental/service action projects by their K-12 students, with attention to the potential outcomes of such projects on the physical environment, other humans and other living things. Weekend field experiences are required and include residential, classroom and outdoor experiences at Brandon Spring Group Camp, U.S. Forest Service and Land Between the Lakes.

NLS 670 (EDU 665) Field Experiences in Environmental Education (2-3). Study of the ecosystems and natural resources that support teaching environmental education. Focus on techniques of using the outdoors as a teaching tool and as a curriculum development resource including using environmental education programs to meet the needs of local communities. Includes assessments of field resources for teaching environmental education and enhancing environmental literacy. Class incorporates visits to nearby environmental education programs and areas.

NLS 675 Social Entrepreneurship (3). Course is about utilizing entrepreneurial skills to craft innovative responses to social problems. Entrepreneurs are particularly good at recognizing opportunities, exploring innovative approaches,

mobilizing resources, managing risks, and building viable enterprises. Social entrepreneurship applies to both profit and non-profit organizations that have programs designed to create social value.

NLS 680 Special Problems in Nonprofit Organizations (1-3). Involves developing a project or independent study to address issues and needs within local nonprofits. Students will be responsible for planning, implementing, and outcome evaluations for the project or independent study. May be repeated for a maximum of nine credit hours.

NLS 685 Seminar on Leadership Development (3). Course is a high-level exploration of leadership principles and practices, in support of the development of personal confidence and capacity to be more effective leaders and managers. Students will develop competencies for quality applications in the context of family, community, and career, including personal principles and values, ethical standards and practices, interpersonal and group dynamics, cultural competence, and vision and strategy development, among others.

NATIONAL STUDENT EXCHANGE (NSE)

NSE 300 National Student Exchange (6-15).

NUTRITION (NTN)

NTN 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

NTN 200 Introduction to the Profession (1). Introduction to nutrition, dietetics and food management including academic and professional preparation. Job shadowing outside the regular class periods may be required.

NTN 220 Food Safety and Sanitation (2). This course focuses on foodservice sanitation and safety principles in foodservice and lodging operations. Topics include issues impacting consumers and operators, application of Hazard Analysis Critical Control Point (HACCP) and preparation for the national foodservice sanitation certification examination. Characteristics of food, supplies, and equipment as related to quality, sanitation, and safety will also be addressed.

NTN 230 Nutrition (3). Principles of nutrition related to normal health include ethnic, cultural, and socioeconomic factors that determine eating patterns; nutrient components of foods and their functions; physical and chemical processes of using food nutrients.

NTN 231 Principles of Food Science and Preparation (3). Emphasis on understanding and applying the basic physical and chemical properties of foods. Development of skills in recipe interpretation, cooking methods, food safety, and sanitation. Lecture, two hours; laboratory, three hours.

NTN 303 Research Concepts in Food and Nutrition (3). Introduction to quantitative and qualitative research in foods and nutrition focusing on methods for collecting and analyzing data as well as critiques of research reports and the development of research proposals. Prerequisites: NTN 230.

NTN 330 Nutrient Metabolism (3). Advanced study of nutrition and human metabolism with emphasis on recent research. Diet pattern inter-relationship in physical health; research procedures and interpretation used in an individual project. The field of dietetics, its professional roles and responsibilities. Prerequisites: NTN 230 and eight hours of biology and/or chemistry.

NTN 333 Nutrition Throughout the Life Cycle (3). Identification of the nutritional needs and problems of individuals as they relate to physiological functions of the body at various stages of the life cycle. Specific health problems that require dietary intervention will be examined. Prerequisite: NTN 230.

NTN 350 Nutrition Counseling and Education (3). Course is intended for students preparing to work in a health-related field. Students will gain competency to effectively translate nutrition science into plain language for patients and clients interested in improving their health. Emphasis will be placed on application of counseling and learning theories that pertain to individuals and groups in clinical and community settings. Students will engage in simulated interviewing and counseling sessions. Prerequisite: NTN 230.

NTN 371 Quantity Food Production Practicum (1-2). Field experience to help students apply basic food preparation techniques, safety and sanitation procedures, work organization, and styles of service in quantity food establishments. Three clock hours per week for one credit hour, six clock hours per week for two credit hours. Corequisite: NTN 372.

NTN 372 Quantity Food Production and Purchasing (3). Principles of quantity food production: production flow, distribution and control. Use of the menu as a purchasing and production tool in accordance with budgetary, personnel and equipment constraints. Understanding principles of inventory and cost control. Prerequisites: NTN 220, 230, and 231. Corequisite: NTN 371.

NTN 373 Management of Food Service, Personnel and Facilities (3). Functions of management applied to food service systems; cost analysis and control systems; design of physical facilities and selection of equipment; and training and development of personnel. Prerequisite: NTN 372.

NTN 374 Food Service Management Practicum (3). Supervised work experience to help students apply concepts of food service management. Prerequisites: NTN 371 and 372.

NTN 412 Community Nutrition and Health (3). Study of problems in community nutrition and health including family and personal health issues, governmental health agencies and the development of community nutrition programs. Prerequisites: NTN 230 and 333.

NTN 422 Meal Management (3). Production and service of nutritious meals for groups in a restaurant type environment. Students manage the meal service incorporating nutrition guidelines as well as resource management principles. Four hours of laboratory and one hour of lecture per week. Prerequisites: NTN 230, 231, 372.

NTN 432 Experimental Foods (3). Objective and sensory methods of evaluating chemical and physical qualities of food; the interpretation of related research and writing of simple technical papers. Lecture, two hours; laboratory, two hours. Prerequisites: NTN 231 and 303.

NTN 434 Clinical Dietetics Practicum (1). Field experience in clinical dietetics to help students apply classroom instruction in a community facility under the supervision of a Registered Dietitian. Prerequisites: permission of instructor and NTN 440.

NTN 440 Medical Nutrition Therapy I (3). Study of the role of nutrition in the pathophysiology and care of chronic diseases. Emphasis is placed on the nutrition care process, nutrition assessment and the design of therapeutic diets for the management of chronic diseases and conditions. Prerequisites: NTN 333 and admission to the Dietetics Program.

NTN 445 Pathophysiology for Nutrition-Related Diseases (3). Course provides an in depth study of the pathophysiology associated with nutrition-related diseases. An emphasis is placed on the interrelationships among organ systems in deviations from homeostasis. Course topics include the etiology, signs and symptoms, diagnosis, complications, and treatment of commonly occurring diseases with nutrition-related implications. Prerequisites: eight hours of biology and/or chemistry courses.

NTN 450 Medical Nutrition Therapy II (4). Study of the role of nutrition in the pathophysiology and management of disease. Emphasis is placed on the design of therapeutic diets for the management of chronic diseases and conditions. Prerequisite: NTN 440.

NTN 460 Advanced Clinical Cases in Dietetics (1). Continued study of the role of nutrition in the pathophysiology and management of disease. Emphasis is placed on the design of therapeutic diets and nutrition support regiments for the management of chronically ill patients with multiple comorbidities and critically ill patients. Prerequisite: NTN 450.

NTN 480 Special Problems in Nutrition and Foods (1-3). Course designed to enable the student to pursue independent study in selected areas of

nutrition, dietetics, or food management. May be repeated for a maximum of six credits. Prerequisites: consent of the department chair and instructor supervising the project.

NTN 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

NTN 497 Trends and Issues in Nutrition and Foods (1-3). Topics may differ from semester to semester depending on program needs. Investigation of current problems, issues and topics in food, nutrition and dietetics. May be repeated for a maximum of six credit hours when topic differs.

NTN 499 Senior Seminar (1). Seminar for students in dietetics, nutrition, or food management focusing on professional issues, the internship application process, employment opportunities, interview skills, resume and portfolio development, and related problems. Recommended for students in the senior year.

NTN 610 Scholarly Research and Writing for Nutrition Professionals (3). Development and refinement of writing skills appropriate for the nutrition professions. Focus on APA formatting; interpretation of quantitative, qualitative, and mixed methods research; synthesis of literature into scholarly reports. Prerequisite: Admission to post-baccalaureate clinical training program in dietetics.

NTN 615 Supervised Professional Practice Primer (2). Development of writing skills and nutrition knowledge with a focus on medical terminology, nutrition-related medications, and anthropometric assessment and evaluation within the practice of medical nutrition therapy. Emphasis on application of concepts learned. Prerequisite: Admission to post-baccalaureate clinical training program in dietetics.

NTN 620 Nutrition for the Aging Adult (3). Course provides an in-depth exploration of the nutrient needs of aging adults and factors that influence their nutrition status. Physiological changes that accompany the aging process are examined. Diseases/conditions commonly seen in the aged population are discussed as well as nutrition recommendations for the prevention and/or treatment of such diseases/conditions. Focus is on current research and evidence-based practice. Prerequisite: NTN 230 or equivalent.

NTN 622 Trends in the Food Supply (3). Course will examine global trends impacting the food supply, including population growth and shifts in socioeconomic status. Anticipated shifts in dietary patterns and the changing landscape of agriculture will be explored. Current trends in food, agriculture, and nutrition will be examined–from seed to supermarket to plate.

NTN 623 Leadership and Management in Food, Nutrition, and Dietetics (3). Course focuses on the development and enhancement of skills and knowledge in the areas of leadership, strategic planning, and management of food, nutrition, and dietetic businesses and organizational units. Management of projects, quality, finances, and human resources is addressed.

NTN 630 Nutrient Metabolism (3). Advanced study of nutrition and human metabolism with emphasis on recent research. Diet pattern inter-relationship in physical health; research procedures and interpretation used in an individual project. The field of dietetics, its professional roles and responsibilities. Prerequisites: NTN 230 or equivalent and eight hours of undergraduate- and/or graduate-level biology and/or chemistry.

NTN 633 Nutrition throughout the Life Cycle (3). Identification of the nutritional needs and problems of individuals as they relate to physiological functions of the body at various stages of the life cycle. Specific health problems that require dietary intervention will be examined. Prerequisite: NTN 230 or equivalent.

NTN 640 Dietetics Clinical Training Primer (1). An intensive assessment and review course preparing student clinicians for the hospital dietetics clinical training program. Includes assessment of student competency, rules of general conduct, and review of principles of clinical nutrition and food service management. Prerequisite: admission to the Clinical Training Program in Dietetics.

NTN 641 Medical Nutrition Therapy I (4). A combined didactic and clinical practice course on nutrition therapy encompassing classroom instruction and planned work experiences in a pre-approved hospital training site. Students have the opportunity to apply principles of nutrition therapy in a functional setting. Prerequisite: admission to clinical training program in dietetics.

NTN 642 Management Practice in Dietetics (2). A combined didactic and clinical practice course on management in the field of dietetics encompassing classroom instruction and planned work experiences in a pre-approved hospital training site. Students have the opportunity to apply principles of foodservice management in a functional clinical setting. Prerequisite: admission to clinical training program in dietetics.

NTN 643 Community Nutrition (2). A combined didactic and clinical practice course on community nutrition encompassing classroom instruction and planned work experiences in a pre-approved hospital training site. Students have the opportunity to apply principles of nutrition therapy in a functional setting. Prerequisite: NTN 640.

NTN 645 Pathophysiology for Nutrition-Related Diseases (3). Course provides an in-depth study of the pathophysiology associated with nutrition-related diseases. An emphasis is placed on the interrelationships among organ systems in deviations for homeostasis. Course topics include the etiology, signs and symptoms, diagnosis, complications, and treatment of commonly occurring disease with nutrition-related implications. Prerequisite: eight hours of biology and/or chemistry.

NTN 651 Medical Nutrition Therapy II (4). A combined didactic and clinical practice course on advanced medical nutrition therapies encompassing classroom instruction and planned work experiences in a pre-approved hospital training sites. Students have the opportunity to apply principles of advanced nutrition therapies in a functional setting. Prerequisite: admission to clinical training program in dietetics.

NTN 652 Dietetics Clinical Practice in Long-Term Care (2). A combined didactic and clinical practice course on medical nutrition therapy in the long-term care setting. Students have the opportunity to apply principles of advanced nutrition therapies appropriate for specific populations in long-term care. Prerequisite: admission to clinical training program in dietetics.

NTN 653 Advanced Clinical Practice (3). A combined didactic and clinical practice experience and daily participation in clinical dietetic patient care in a hospital setting. Designed to comprehensively foster professional growth and competence in the skills required for entry-level dietitians. Assist students in preparing for the registration examination and credentialing process for dietitians. Prerequisite: admission to clinical training program in dietetics.

NTN 656 Nutrition Research Literature Review (2). Course enables the student to complete an in-depth literature review on a nutrition research focus area in preparation for NTN 660. The research focus area must be approved by the student's graduate program advisor.

NTN 660 Research Project in Nutrition I (3). An advanced nutrition research focusing upon the student's area of research interest, enabling the student to survey and review the research literature, collect and analyze research data, and prepare the research paper. Prerequisite: consent of graduate program advisor.

NTN 661 Research Project in Nutrition II (3). A continuation of the research project developed in NTN 660. Prerequisites: NTN 660, approved graduate statistics course, and permission of graduate program advisor.

NURSING (NUR)

NUR 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

NUR 200 Introduction to Nursing Concepts (4). Course introduces the student to nursing as a profession. The focus of the course is on professional nursing behaviors utilizing the concepts of nursing, person, health and environment with an emphasis on basic nursing concepts such as critical thinking, health promotion and communication. Prerequisite: admission to the BSN program.

NUR 202 Nursing Assessment and Basic Interventions (4). Course providing the didactic and experiential content needed to acquire knowledge and skills to complete a health assessment. Differentiation of nursing responsibilities associated with a variety of health and developmental levels is addressed. Prerequisite: admission to the BSN program.

NUR 203 Mental Health Nursing (3). This course is designed to be an introduction and practice of psychosocial nursing and mental health concepts. The course will introduce skills for assessment and delivery of psycho-social support and team building. Theories of stress, anxiety, crisis, coping, and human behavior will be explored. The course will include skills for therapeutic and assertive communication with individuals, groups, and health team members, as well as self-awareness and confidence building exercises. Three hours lecture per week. Prerequisites: Admission to the Nursing Program and COM 161.

NUR 205 Pharmacology in Nursing (3). This course is designed to present basic facts and principles upon which therapeutic pharmacology is founded. Areas discussed are major drug classifications, desired drug actions, and undesirable side and/or toxic effects of drugs. Emphasis will be placed on the nurse's legal responsibilities in administering these drugs and specific implications which are inherent in drug therapy. Prerequisites: admission to nursing, NUR 200, 202, and 301.

NUR 206 Nursing Practice Fundamentals (5). A course designed to offer opportunities for the student to gain knowledge and fundamental skills essential to client care and health promotion. Focus of the course is to provide opportunities for building clinical reasoning, practice, and nursing and evaluation skills. Prerequisites: NUR 200, 202, and 301.

NUR 301 Pathophysiology for Nursing Practice (3). Course serves as an introduction to pathophysiology with applications for BSN practice. Prerequisites: admission to the nursing program and courses in physiology. Prerequisite: admission to the BSN program.

NUR 302 Nursing Care of the Childbearing Family (3). The impact of pregnancy upon the mother's physical and psychological status is studied in depth. Emphasis is placed on the growth and development of the individual from conception through the first four weeks of life. The role of the nurse in health promotion and disease prevention in the childbearing family is emphasized in classroom and clinical experience. Prerequisites: NUR 205, 206, and 306.

NUR 305 Nursing Care of the Childrearing Family (3). A study of the nursing of children from infancy through adolescence, including the assessment of physical, psychological, developmental and cultural health needs. The role of the nurse in the care of children and families including health promotion, teaching and counseling and disease prevention is emphasized in classroom and clinical experiences. Prerequisites: NUR 205, 206, and 306.

NUR 306 Introduction to Research and Evidence Based Practice (3). Course focuses on developing skill in analyzing and critiquing research for clinical application. Evidence based practice is considered in light of improving patient outcomes. Prerequisites or corequisites: Descriptive and Inferential Statistics, STA 135, PSY 300 or 591. Prerequisites: NUR 200, 202, and 301.

NUR 307 Nursing Care of Adults I (6). A combined theory/clinical course, (2 hour lecture plus 1 hour skills lab (45 hours) which presents physiological and psychological concepts relevant to nursing practice. Theory focuses on the nursing process, concepts and skills of medical surgical nursing. The clinical focus is on the implementation of the nursing process and developing skills in the care of stable adults and their families. Prerequisites: NUR 205, 206, and 306.

NUR 308 Nursing Care of Adults II (6). A combined theory/clinical course, (3 hour lecture plus 2 hour clinical lab)which presents physiological and psychological concepts relevant to nursing practice. Theory focuses on the nursing process during phases of common and less common major dysfunction. The clinical focus is on the implementation of the nursing process in the care of stable acute and chronically ill adults and their families. Prerequisites: NUR 302, 305, and 307.

NUR 314 Professional Nursing Practice (3). Designed to provide the student with concepts and theories basic to baccalaureate nursing education. Professional nursing practice is emphasized. Analysis and synthesis of knowledge from other disciplines are incorporated into the practice of nursing. Prerequisites: admission to the RN-BSN program and required semester of admission.

NUR 320 Holistic Approach to Women's Health Issues (3). A course designed to provide the student with the opportunity to gain knowledge necessary to give nursing care to women across the life-span. Issues specific to women are studied in depth. Prerequisites: NUR 305, 308; RN to BSN students-NUR 314.

NUR 341 (201) Nursing Assessment (3). A course providing learning experiences needed to acquire assessment knowledge and skills for eliciting a sound data base. Activities involve interviewing, recognizing psychosocial-developmental status, performing physical examination, interpreting test findings, documenting findings and stating nursing diagnoses. Differentiation of nursing responsibilities associated with a variety of health states and developmental levels is addressed. Two hours theory and three hours laboratory weekly. Prerequisite: admission to RN-BSN program and NUR 314 with a minimum grade of *C*.

NUR 400 Applied Pharmacology (1). This course is designed to help nursing students apply principles and concepts related to drug therapy in practice. Prerequisite: Prerequisites: NUR 302, 305, and 307.

NUR 402 Psychiatric Nursing (4). The focus of this course is care of individuals, families, and groups with actual or potential psychiatric illness. Students are provided the opportunity to utilize knowledge and promote mental health across the life span. Also included is an exploration of the mental health care delivery system and community resources available. The course offers opportunities for students to enhance personal and interpersonal awareness. Knowledge synthesized from classroom and laboratory experiences provide the base for psychiatric nursing practice. (Credit hours reflect three weekly hours didactic and one hour clinical rotation which equates to 45 clock hours of lab.) Prerequisites: NUR 302, 305, and 307.

NUR 403 Community Nursing (4). An overview of the philosophy of community health care and trends in community health services delivery. The emphasis is on prevention of illness and promotion of health of individuals, families, communities, and related socio-cultural and environmental factors. A brief description of the political and financial structure at the local, state and national level is presented along with community health nursing's relationship to it. Practice projects include but are not limited to a community assessment and community implementation project. Pre- or corequisite: NUR 314 with a minimum grade of *C*.

NUR 404 Leadership and Management in Nursing (5). A study and/or review of leadership and management concepts relevant to working with groups of people in providing care for groups of clients with an emphasis on the application and integration of nursing knowledge. Through the completion of practice projects the student will work collaboratively as a leader with other health care personnel. Pre- or Corequisite: NUR 314.

NUR 405 The Nursing Profession and Health Care Delivery (3). An identification and analysis of the current and emerging issues in nursing and those forces impinging upon the nursing profession and health care delivery. Nursing as an independent profession, and the interdependent and collaborative relationships with other health related professions will be explored. Pre- or corequisite: NUR 314 with a minimum grade of *C*.

NUR 407 Integration Practicum (4). A combined seminar/clinical course to allow clinical integration of all study in previous nursing courses. The focus of the course is on clinical application of physiological and psychological concepts in caring for clients with complex health problems and their families in acute care settings. The seminar component is to provide direction in using the nursing process in the care of ill adults and families with complex health problems. One hour lecture and nine hours clinical laboratory weekly. Prerequisites: all courses in the nursing curriculum and NCLEX Readiness Test.

NUR 408 Nursing Care of Adults III (6). Theory focuses on the nursing process during phases of common and less common major dysfunction. The clinical focus is on the implementation of the nursing process in the care of acute and critically ill adults and their families. Prerequisites: NUR 308, 400, 402, and 410.

NUR 409 Issues in Healthcare Delivery (2). An identification and analysis of the current and emerging issues in nursing and the social, political and economic forces impinging upon the nursing profession and health care delivery are the focus of this course. Nursing as an independent profession and the inter-dependent and collaborative relationships with other health related professions will be explored. Prerequisites: NUR 305 and 308.

NUR 410 Community Health Nursing (4-5). An overview of the philosophy of community health care and trends in the community health services delivery. The emphasis is on prevention of illness and promotion of health of individual, families, communities, and related sociocultural and environmental factors. A brief description of the political and financial structure at the local, state, national, and international levels is presented along with community health nursing¿s relationship to it. Prerequisites: NUR 302, 305, and 307.

NUR 411 Problems in Nursing (1-3). Designed to permit special study in selected problems of nursing. Prerequisites: permission of instructor and approval of written proposal.

NUR 412 Leadership and Management in Nursing (4). The focus of this course is on basic organizational and systems leadership for patient safety and quality care, healthcare policy, finance, and regulation. Emphasis is placed on evidence-based practice, interprofessional communication, and collaboration for improving patient outcomes. The clinical component of this class is 45 hours. Prerequisites: NUR 308, 400, 402, and 410.

NUR 416 Critical Care Skills (2). Course is designed to provide the content and skills in Advanced Cardiopulmonary Life Support (ACLS) and Pediatric Advanced Life Support (PALS) required to become ACLS and PALS certified. Corequisite: current Basic Life Support Certification-Healthcare Provider (BLS) from the American Heart Association and NUR 408 or permission of instructor.

NUR 440 Directed Study (1-3). Faculty directed study is available for students, individually or in groups, who want to investigate special problems extending study begun in course work in clinical nursing. Prerequisites: approval of written proposal and consent of the instructor directing the study. May be repeated for a maximum of six hours.

NUR 445 The Professional Nurse as Client Educator (3). Patient education is an elective course in nursing designed to assist the nurse to develop those skills and intellectual competencies necessary for providing comprehensive health education across the lifespan. The role of the professional nurse as client educator will be explored. Two hours lecture/seminar and three hours clinical laboratory weekly. Prerequisites: NUR 205 and 206 or R.N. status.

NUR 447 Stress Management (3). This course is designed to acquaint the student with methods of personal stress and lifestyle management. It provides a foundation in wellness and stress management concepts and practices that the student can use in both professional and personal realms throughout the lifespan.

NUR 450 Independent Study (3). Faculty supervised individual study and/or investigation of selected areas of nursing related to student's academic and/or career goals. Prerequisites: senior standing and consent of department chair.

NUR 460 Special Topics (3). Course designed to assist students in expanding their knowledge base and developing additional skills in the field of nursing. Topics may vary depending on current issues and practices. Course may be repeated once with instructor's approval. Prerequisite: permission of instructor.

NUR 470 Complementary Healing Modalities (3). A combined theory/clinical course which explores complementary healing modalities as therapeutic nursing interventions that can be used with traditional medical practices or when traditional medical practices offer no cure or relief. A specific complementary healing modality (therapeutic touch) will be fully examined and practiced in the field setting. Prerequisites: NUR 206 or R.N. status; both must meet clinical requirements.

NUR 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

NUR 603 Theory and Concept Analysis in Nursing (3). Introduction to the nature and uses of theory; the process of theory construction and concept analysis. Major theories of nursing and concepts and theories from the sciences basic to nursing analyzed with emphasis on implications for nursing practice. Prerequisite: admission to DNP program or permission of instructor.

NUR 605 Issues in Rural Health Care (3). Examines similarities and differences between rural and urban residents as they relate to health and the health care system. Compares ethical theories and implications for decision-making. Explores the evolution of our present health care system, initiatives for change and issues related to rural health care agencies. Examines the existing and future roles for nursing in rural America and impact on health. Prerequisite: Admission to MSN program or permission of instructor.

NUR 606 Scientific Foundations in Anesthesia I (3). This course is designed to provide an in-depth understanding of physiological principles as they apply to normal, pathological, and clinical alterations in the respiratory system. In addition, the principles of chemistry and physics as applied to clinical nurse anesthesia will be presented. Prerequisites: Admission to nurse anesthesia program and NUR 673.

NUR 607 Scientific Foundations in Anesthesia II (2). Course is designed to provide an in-depth understanding of physiological principles as they apply to normal, pathological, and clinical alterations in cellular and neurophysiology. Emphasis will be placed on anesthetic implications throughout the course. Prerequisites: NUR 606 and 632.

NUR 608 Scientific Foundations in Anesthesia III (2). Course presents an in-depth understanding of physiological principles as they apply to normal, pathologic, and clinical alterations in endocrine, renal, and hepatic physiology. Emphasis is placed upon anesthetic implications throughout the course. Prerequisites: NUR 606, 607, 632, 633, and 636.

NUR 609 Scientific Foundations in Anesthesia IV (2). Course is designed to provide an in-depth understanding of physiological principles as they apply to normal, pathologic, and clinical alterations in cardiovascular physiology. Emphasis will be placed on anesthetic implications throughout the course. Prerequisites: NUR 606, 607, 608, 632, 633, 636, and 637.

NUR 610 Theoretical Foundations of Nurse Education (3). An identification and analysis of the theoretical foundations of nursing education in order to facilitate application of curriculum and instructional design, teaching and learning principles, assessment and evaluation, advisement, and other activities undertaken by nurse educators.

NUR 612 Nurse Educator Practicum I (2). This course is designed to provide experiences in developing competencies in nursing education. The focus is on didactic/classroom instruction and measurement of learning outcomes. Students are to assess and define their learning needs, select appropriate experiences for teaching experience, and participate in selected learning activities directed by a mentor/preceptor, and a graduate faculty member. Prerequisites: admission to graduate program in the academic nurse educator option.

NUR 613 Nurse Educator Practicum II (2). This course is designed to provide students with an opportunity to work closely with a nurse educator in the clinical setting. The focus is on clinical instruction and evaluation of student performance. Prerequisites: admission to graduate program in the academic nurse educator option. Corequisite: NUR 612.

NUR 614 Theory and Practice of Nursing Education (3). Course introduces theoretical foundations of nursing education and teaching and learning theory. The focus is on theories and principles that support a variety of evidence based teaching strategies and learning styles. Fundamentals of the design of learning experiences and lesson planning are explored along with personal and professional teacher attributes that demonstrate positive role modeling and support a positive learning environment. Prerequisite: admission to graduate program or permission of instructor.

NUR 615 Evaluation in Nursing Education (3). This course introduces evaluation methods used in didactic and clinical nursing education. Students will explore evaluation models, instrument selection, rubric and test development, and data collection procedures as well as interpretation, reporting and application or finding. Prerequisite: NUR 617

NUR 616 Curriculum Development in Nursing (3). This course is designed to explore the process by which nursing faculty evaluate student learning and performance, curriculum and course outcomes, and their own teaching skills. The evaluation process includes the use of models; selection of instruments; data collection procedures; and the means to interpret, report, and use findings. Prerequisite: NUR 603.

NUR 620 Critical Care Concepts and Applications (3). A didactic course with a clinical component (2:1=45 hours clinical) which presents concepts and their application relevant to critical care and acute nursing practice. Theory incorporates the Synergy Model as a framework to provide advanced nursing care to clients across the lifespan with various physiological and psychological conditions.

NUR 622 Diagnosis and Management of Acute Health Problems (3). Course designed to provide the CNS student the foundation necessary for the diagnosis and management of episodic illness and/or acute exacerbation of chronic illness in acutely or critically ill patients across the lifespan. Emphasis is placed on patient care problems organized by systems in the context of the nursing process, the CNS spheres of influence and advanced standards of practice and professional performance. Three credit hours distributed as two credit hours theory; one credit hour clinical practicum. This is to meet clinical hour requirement for certification for advanced practice. Prerequisites: NUR 520, 603, 605, 641, 642, and 673.

NUR 623 Advanced Nursing in Acute Care Settings (5). Course focuses on the essential characteristics and role development of the Clinical Nurse Specialist (CNS) in acute care, theory-based practice and interrelationships among concepts, phenomena, human responses, and nursing therapeutics across the lifespan. Values, beliefs, and attitudes about advanced nursing, health, and holism are explored. Prerequisites: NUR 603, 605, 641, 642, and 673.

NUR 624 Exacerbation of Chronic Health Problems (4). Course focuses on the essential characteristics and role development of the Clinical Nurse Specialist (CNS) in acute care, theory-based practice and interrelationships among concepts, phenomena, human responses, and nursing therapeutics across the lifespan. Values, beliefs, and attitudes about advanced nursing, health, and holism are explored. Prerequisites: NUR 603, 605, 641, 642, and 673.

NUR 630 Research in Nursing (3). Examination and analysis of quantitative and qualitative methods in the investigations of nursing phenomena. Critical analysis of nursing research studies is emphasized. Formulation of a researchable nursing problem and the strategies for its investigation is expected. Corequisite or prerequisite: NUR 603.

NUR 631 Evidence-Based Clinical Practice (3). Builds on NUR 630 to provide the foundation and methods for evidence-based clinical practice. This course focuses on the critical appraisal of external evidence, evaluation of indicators/outcomes of health care, application and dissemination of relevant findings to improve practice, and practice environments. Prerequisite: NUR 630.

NUR 632 Principles of Anesthesia Practice I (4). This course introduces the student to those concepts necessary to plan and execute an anesthetic individualized for the patient which ensures a margin of patient safety while meeting the surgical requirements. Prerequisite: Admission to nurse anesthesia program.

NUR 633 Principles of Anesthesia Practice II (2). Focuses on the role of the nurse anesthetist during the perioperative period. This course describes agents, techniques, indications, contra-indications and complications relevant to regional anesthesia practice. Case management strategies are developed for the care of the obstetric patient undergoing anesthetic intervention. Prerequisites: NUR 606 and 632.

NUR 634 Principles of Anesthesia Practice III (2). Case management strategies are developed for the care of the pediatric patient; the patient requiring general, genitourinary or orthopedic surgical procedures; and patients undergoing anesthetic intervention due to traumatic injuries. Prerequisites: NUR 606, 607, 632, and 633.

NUR 635 Principles of Anesthesia Practice IV (3). Case management strategies are developed for the care of patients as they relate to specialty procedures such as open heart surgery, neurological anesthesia, thoracic surgery and endocrine surgery. This course will conclude with the specific anesthetic implications of outpatient anesthesia. Prerequisites: NUR 606, 607, 608, 609, 632, 633, and 634.

NUR 636 Pharmacology Anesthesia I (2). Course is designed to provide an in-depth understanding of the general principles of pharmacodynamics and pharmacokinetics as related to physiological alterations across the life span. Prerequisites: NUR 606 and 632.

NUR 637 Pharmacology Anesthesia II (3). Course is a continuation of NUR 636 that will provide an in-depth understanding of the general principles of pharmacodynamics and pharmacokinetics as related to renal function, anticoagulation, analgesia, and adjunctive drugs utilized by patients undergoing anesthesia. Prerequisites: NUR 606, 607, 632, 633, and 636.

NUR 638 Pharmacology Anesthesia III (2). This course is designed to provide an in-depth understanding of the general principles of pharmacodynamics and pharmacokinetics as related to adjunct drugs utilized during anesthesia. Prerequisites: NUR 606, 607, 608, 632, 633, 636, and 637.

NUR 641 Advance Nursing Assessment (4). A combined theory/practicum course which introduces advanced assessment of patients in a variety of settings across the lifespan. Emphasis will be placed on advanced health assessment, growth and development across the lifespan, and health promotion and maintenance. Content will include techniques for comprehensive, holistic health assessment as well as focused assessment for common health problems. Prerequisite: admission to the DNP program.

NUR 642 Advanced Pharmacology (3). This course is designed to provide the advanced practice nurse with the theoretical and scientific basis for utilizing pharmacotherapeutics in advanced nursing practice. Throughout the course the role of clinical protocols and the privileges and responsibilities of prescription are emphasized. Prerequisite: admission to DNP program. Prerequisite: admission to the DNP program.

NUR 644 Primary Care of the Family I (6). This is the first of a two-course sequence designed to provide advanced knowledge of acute and chronic health problems of individuals and families of various age groups in rural settings. Emphasis is placed on pathology, assessments, diagnoses, therapeutic modalities, and evaluations related to specific health problems of various age groups, including high-risk pregnancy, perinatal health care, and geriatric health care. Additional role parameters of the family nurse practitioner will be included. A practicum is included in this course. Prerequisites: NUR 603, 605, 641, and 673. Corequisites: NUR 630, 642.

NUR 645 Primary Care of the Family II (7). This is the second of a two-course sequence designed to provide advanced knowledge of acute and chronic health care problems of individuals and families of various age groups in rural settings. Emphasis is placed on pathology, assessments, diagnoses, therapeutic modalities and evaluations related to management of acute and chronic problems within the context of the family including special problems related to the aged. Additional role parameters of the family nurse practitioner will be included. A practicum is included in this course. Prerequisite: NUR 644.

NUR 650 Advanced Clinical Nurse Specialist Integration Practicum II (5). This integration practicum is the capstone experience designed to provide the opportunity to integrate and synthesize the CNS role across the lifespan. Prerequisites: NUR 623 and 624. Corequisite: NUR 622.

NUR 651 Clinical Practicum I (3). Provides the student opportunity to apply the theories of nurse anesthesiology practice in the functional setting. Involves supervised experience in the role of the nurse anesthetist. Prerequisites: NUR 606, 607, 608, 609, 632, 633, and 634.

NUR 652 Clinical Practicum II (3). Offers practical experience and daily participation in anesthetic administration and related patient care. Designed to comprehensively promote growth, awareness and competence in the skills

and experiences required prior to readiness for independent practice and certification process. Prerequisites: NUR 606, 607, 608, 609, 632, 633, 634, 635, and 651.

NUR 653 Clinical Practicum III (3). Offers practical experience and daily participation in anesthetic administration and related patient care. Designed to comprehensively promote growth, awareness and competence in the skills and experiences required prior to readiness for independent practice and certification process. Prerequisites: NUR 606, 607, 608, 609, 632, 633, 634, 635, 651, and 652.

NUR 654 Advanced Family Nurse Practitioner Integration Practicum (9). This practicum offers experience in integrating and synthesizing components of theory, practice and research. Focus is on role development of the family nurse practitioner in the rural setting. Through comprehensive, holistic health assessment the focus is on the development of therapeutic plans and health promotion and maintenance activities for the family as a whole as well as individual members. Emphasis will be on integrating all previous course work and assimilating the nurse practitioner role. Prerequisite: NUR 645. Corequisite: NUR 631.

NUR 655 Seminar in Nurse Anesthesia I (3). Focuses on pertinent didactic information necessary for integration into clinical practice. Students participate in the development of strategies to manage critical and/or infrequent clinical anesthesia related problems. Prerequisites: NUR 605 and 651. Corequisites: NUR 635 and 652.

NUR 656 Seminar in Nurse Anesthesia II (3). This course builds/expands on NUR 655. Students participate in the development of strategies to manage critical and/or infrequent clinical anesthesia related problems. Prerequisites: NUR 635, 652, and 655. Corequisite: NUR 653.

NUR 657 Advanced FNP Integration Practicum for the APN (4). This practicum offers experience in integrating and synthesizing components of theory, practice, and research. Focus is on role development of the family nurse practitioner in the rural setting. Through comprehensive, holistic health assessment the focus is on the development of therapeutic plans and health promotion and maintenance activities for the family as a whole as well as individual members. Emphasis will be on integrating all previous course work and assimilating the nurse practitioner role. Prerequisite: NUR 645.

NUR 660 Special Topics (3). This course is designed to assist students in expanding their knowledge base and developing additional skills in the field of nursing. May be repeated twice for credit. Courses taught as special topics may have a field or clinical component (two hours lecture plus three hours lab). These will be further defined within the particular course. Prerequisite: permission of instructor.

NUR 661 Nursing Staff Development (2). An identification and analysis of the roles and responsibilities o nursing staff development in healthcare settings. The student will develop a mentor relationship with an experienced staff development nurse to work on a designated and/or self-designed project during practicum.

NUR 662 Instruction Design for Active Learning (2). An identification and analysis of the tools and techniques used to design meaningful learning experiences for nursing education. The student will develop an understanding of educational paradigms consistent with active learning in order to assist in the design of teaching strategies that produce desired student outcomes.

NUR 663 Instructional Technology Nurse Education (2). An identification and analysis of the tools and techniques used for teaching with technology. The student will develop an understanding of the educational paradigms consistent with distance education and interactive technology in order to assist in the design and/or evaluation of a variety of learning media.

NUR 664 Legal/Ethical Issues (2). An identification and analysis of the legal and ethical issues facing nurse educators. It provides students with the tools necessary to apply legal and ethical theories to decision-making within the scope of practice as nurse educators in institutional, clinical, community, and cross-cultural settings.

NUR 665 Multicultural Issues (2). An identification and analysis of the multicultural issues relevant to nursing education. The student will develop a mentor relationship with an individual who is culturally different than the student in order to understand the values of differentiation and inclusiveness in nursing education.

NUR 673 Pathophysiology in Advanced Nursing Practice (3). Course designed to provide an introduction to pathophysiology with applications for advanced registered nursing (ARNP) practice. Prerequisite: admission to graduate nursing program.

NUR 680 Independent Study (1-3). Prerequisite: permission of instructor.

NUR 698 Thesis (3).

NUR 699 Thesis (3).

NUR 900 Philosophy of Science (3). History and philosophy of science studied within context of Western philosophical systems and epistemology. Emphasis is on ways of knowing and way of thinking as they relate to the advancement of science and with relevance toward further development of the discipline of nursing.

NUR 901 Foundations of Advanced Nursing Practice (3). Explores the evolution of advanced practice nursing, initiatives for change and issues related to advanced practice on the health of society. Examines the different roles in-depth, the need for referral/collaboration between and among APN's. Compares ethical theories and implication for decision-making. Examines the existing and future roles for advanced practice in the United States and worldwide and their impact on health.

NUR 902 Ethics in Nursing (2). This course traces the development of select moral concepts and values relevant for health care professionals: informed consent, conflict of interest existential advocacy, confidentiality, accountability, care, competence, power, relationships, marginalization and vulnerability. Theories, concepts, methods, and research central to ethical professional role formation are examined. Ethical reasoning skills necessary for maintaining moral accountability in practice are developed. Models of independent, collaborative, and multidisciplinary practice for professional role acquisition are explored.

NUR 903 Principles of Epidemiology (3). Introduction to the basic principles and method of epidemiology. Topics covered include the historical perspective of epidemiology, measures of disease occurrence and of association, clinical epidemiology, disease screening, causal inference, and study design. Prerequisite: STA 660.

NUR 904 Informatics and Patient Care Technology (2). This course explores the use of information systems and patient care technology to support and improve patient care and provide leadership within healthcare systems and/or academic settings. The focus of this course is on the integration of informatics knowledge, skills, and attitudes to support culturally sensitive, evidence-based practice at a leadership level. Knowledge and skills related to information systems/technology and patient care technology, management of individual and aggregate level information, and assessment of the efficacy of patient care technology are emphasized. Prerequisites: NUR 682, NUR 683, STA 660.

NUR 905 Health Care Policy (3). Course focuses on health care policy, economics and finance and how they impact the health care of individuals and populations. Health policy proposals, health policies, and related issues from the perspective of consumers, nursing, other health care professions and other stakeholders will be critically analyzed. The conceptual basis and methods of financial analysis and decision making as they pertain to the healthcare delivery systems are analyzed. Health care economics, marketing principles, human resource management, and the influence of Healthy People 2010 and 2020 objectives that impact current healthcare environments are explored. Prerequisite: admission to the DNP program.

NUR 906 Leadership and Quality Improvement/Patient Safety (3). The focus of this course is organizational and systems leadership that emphasizes practice, improvement of health outcomes, and patient safety initiatives. Prerequisite: NUR 905.

NUR 907 Quality Improvement and Patient Safety (3). The focus of the course is to enhance the student's ability to critically analyze current healthcare delivery models and conceptualize new care delivery models to impact patient safety and outcomes. Building on political skills and systems thinking, students will design practice initiatives to minimize risks, reduce health disparities and improve healthcare outcomes. Prerequisite: NUR 905; Corequisite: NUR 906.

NUR 908 DNP Seminar (2). In this course, students will explore leadership in quality improvement, health policy and clinical practice. Using discussion, the seminar format will promote the synthesis of all factors that influence health care and the role of Advanced Practice Nursing. Prerequisite: all required 900-level courses in the curriculum.

NUR 909 Capstone (3). This capstone course provides an experience for the student to demonstrate mastery of an advanced specialty, document the synthesis of prior course work and lays the groundwork for future scholarship via varied types of scholarly endeavors. Capstone projects primarily focus on the appraisal and translation of theory and evidence to practice. The actual appraisal and translational process itself is complex and involves many layers of consideration. The entire process entails a dynamic and interactive progression of phases. The connecting theme in the scholarly endeavor is the use of best practice evidence to improve either practice or patient outcomes.

NUR 910 Advanced Practice Clinical Residency (6). This practicum offers experience in integrating and synthesizing components of theory, practice and research in providing APRN care. Focus is on role development of the APRN in their specified population and foci of practice. Emphasis will be on integrating all previous course work and assimilating the APRN role and DNP core competencies in practice.

NUR 911 Clinical Residency I, II, III (3). Individualized practicum offers experience that will expand expertise and specialized knowledge in the selected systems-focused advanced nursing practice specialty role. This course may be repeated up to nine credit hours. Emphasis will be on integrating all previous coursework and assimilating the APRN role and DNP core competencies in practice. Prerequisite: admission into the post-master's to Doctor of Nursing Practice (DNP) program.

NUR 912 Capstone Residency (1). This capstone course guides the BSN-DNP student through capstone project from developing a clinical project to implementation and evaluation of the project. Clinical hours selected to move the project forward and integrate the DNP program outcomes will be included. The course will be repeated twice. Letter-graded. Prerequisite: NUR 630.

NUR 920 Exacerbation of Chronic Health Problems (3). Course focuses on the essential characteristics and role development of the clinical nurse specialist (CNS) in theory-based practice and interrelationships among concepts, phenomena, human responses and nursing therapeutics for clients with acute exacerbations of chronic health problems across the lifespan. Values, beliefs, and attitudes about advanced nursing, health, and holism are explored. Prerequisites: NUR 603, NUR 673, NUR 641, NUR 901, and NUR 902; Corequisite: NUR 642.

NUR 921 Advanced Practice in Acute Care Setting (3). Course focuses on the essential characteristics and role development of the clinical nurse specialist (CNS) in adult health, theory-based practice and interrelationships among concepts, phenomena, human responses and nursing therapeutics. Values, beliefs, and attitudes about advanced nursing, health, and holism are explored. Prerequisite: NUR 920; Corequisite: NUR 922.

NUR 922 Advanced Practice in Critical Care (3). Course focuses on the essential characteristics and role development of the clinical nurse specialist (CNS) in theory-based practice and interrelationships among concepts, phenomena, human responses, and nursing therapeutics for clients across the lifespan with critical health problems. Values, beliefs, and attitudes about advanced nursing, health, and holism are explored. Prerequisite: NUR 920; Corequisite: NUR 921.

NUR 923 Advanced Acute Care for Pediatrics (3). Course focuses on the essential characteristics and role development of the clinical nurse specialist (CNS) in theory-based practice and interrelationships among concepts, phenomena, human responses and nursing therapeutics for pediatric clients needing acute care in various settings. Prerequisite: NUR 922; Corequisite NUR 924.

NUR 924 CNS Clinical Procedure and Diagnostics (3). Course is designed to provide the CNS students the foundation necessary for performing necessary procedures and the diagnosis and management of patients across the lifespan with acute illness and/or acute exacerbation of chronic illness. Emphasis is placed on patient care problems organized by systems in the context of the nursing process, the CNS spheres of influence and advanced standards of practice and professional performance. Prerequisite: NUR 922; Corequisite: NUR 923.

NUR 925 Advanced Practice in Emergency Care (3). Course focuses on the essential characteristics and role development of the clinical nurse specialist (CNS) in theory-based practice and interrelationships among concepts, phenomena, human responses, and nursing therapeutics for clients needing emergency care in various settings. Prerequisites: NUR 923 and 924.

NUR 926 Acute Care Intensivist Practicum (5). Course provides the experience necessary to help the student apply the knowledge required to develop sound clinical judgment and identify appropriate diagnostic and therapeutic interventions to manage acute illness across the lifespan in an acute care setting. The focus ranges from health and disease prevention to diagnosis and management of selected common acute and exacerbation of chronic problems that require hospitalization. Prerequisite: NUR 925.

NUR 929 Introduction to Primary Care (4). Introduction to the practice of primary care to families and individuals across the lifespan. Emphasis is on the beginning development of sa knowledge base necessary for clinical decision-making and the beginning refinements of a model of practice with the individual or family as the unit of service. Prerequisites: NUR 603 and 641.

NUR 930 Foundations of Family Nursing (3). Course will provide an in-depth study of concepts, theories, research, issues, trends, and public policy relevant to family health. It is designed to help the student develop the knowledge necessary to become a specialist in family nursing in the primary and specialty care setting and the community. Emphasis will be placed on developing a theoretical basis for intervention with families through direct care and facilitation family decision-making and self care. Prerequisites: NUR 603, NUR 605, and NUR 641.

NUR 931 Primary Care of the Family I (3). This is the first of a two course sequence designed to provide advanced knowledge of acute and chronic health problems of individuals and families of various age groups in rural settings. Emphasis is on the beginning development of a knowledge base necessary for clinical decision-making and the beginning refinements of a model of practice with the family as the unit of service. Prerequisite: NUR 930; Corequisite: NUR 932.

NUR 932 Primary Care of the Family Clinical I (3). This is the first in a series of clinical courses preparing the student to provide health care to families with an emphasis on rural settings. This clinical course is designed to integrate the nursing process learned in the basic baccalaureate program with the theory and practice necessary for the family nurse practitioner to provide primary health care for individuals across the lifespan. Course provides the experience necessary to help the student apply the knowledge required to develop sound clinical judgment and identify appropriate diagnostic and therapeutic interventions to manage illness and promote the health of individuals and families. The focus ranged from health and disease prevention to diagnosis and management of selected common acute and chronic problems. Corequisite: NUR 931.

NUR 933 Primary Care of the Family II (3). This is the second of a two course sequence designed to provide advanced knowledge of acute and chronic health problems of individuals and families of various age groups in rural settings. Emphasis is on the beginning development of a knowledge base necessary for clinical decision-making and the beginning refinements of a model of practice with the family as the unit of service. Prerequisites: NUR 931 and 932; Corequisite: NUR 934.

NUR 934 Primary Care of the Family Clinical II (3). This is the second in a series of advanced practice nursing clinical courses focusing on the development of the advanced practice knowledge and skills required to provide primary care services to families, particularly those in rural settings. Emphasis is on the continuing development and use of a knowledge base necessary for clinical decision making with the family as the unit of service. Corequisite: NUR 933.

NUR 935 FNP Clinical Procedures and Diagnostics (3). A theory and clinical procedures course designed to provide family practice advance practice nurses the skills and procedures necessary for the clinical management of selected clients. Prerequisites: NUR 933 and 934.

NUR 936 Advanced Primary Care Nursing Practicum (5). This practicum course focuses on the use of clinical and analytical skills in evaluating the links among practice, organizational, population, fiscal and policy issues in primary care nursing. From within this broad framework, the student will choose a focus of study that will involve the advanced practice nurse role, common clinical issues and implementation of care standards in the practice of primary care nursing. This course builds on the student's preparation as family nurse practitioner. Prerequisite: NUR 935.

NUR 937 Primary Care III (4). This is the third of three course sequence designed to provide advanced knowledge of acute and chronic health problems of individuals and families of various age groups in rural settings. Emphasis is on the continued development of the knowledge base necessary for clinical decision-making and refining a model of practice with the individual or the family as a unit of service.

NUR 940 Introduction to Principles and Practice of Nurse Anesthesia II (3). Course is the second of two basic principles courses, which adds a combined theory/practicum, providing an analysis of fundamental principles of anesthesia management and practices and the safe use of anesthesia delivery systems and related equipment. This course synthesizes the AANA Standards for Nurse Anesthesia Practice and Theory, emphasizing culturally competent individualized care across the life span. Content focuses on principles related to patient and provider safety, anesthesia equipment and technology, and pharmacologic agents commonly used in anesthesia. Patient simulation labs and clinical practicum will be utilized for development and evaluation of psychomotor skills. Prerequisite: admission to the nursing graduate program.

NUR 941 Basic Principles and Practice of Nurse Anesthesia (3). This is the first of three combined theory/practicum courses designed to develop an in-depth understanding of anesthesia principles as they apply to normal and pathologic conditions. Corequisite: NUR 942. Prerequisite: NUR 940.

NUR 942 Physiology and Anesthetic Implications I (3). This is the first of two courses designed to develop an in-depth understanding of normal and pathologic physiology as it applies to anesthesia. Corequisite: NUR 941. Prerequisite: NUR 940.

NUR 943 Principles and Practice of Nurse Anesthesia for Special Populations (3). This is the second of three combined theory/practicum courses designed to develop, examine, and apply principles and practice of nurse anesthesia for special populations. Prerequisites: NUR 941 and 942.

NUR 944 Advanced Pharmacology Nurse Anesthesia (3). This course is designed to provide and in-depth understanding of the general principles of pharmacodynamics and the administration of drugs used in the practice of anesthesia. Prerequisite: NUR 642.

NUR 945 Physiology and Anesthetic Implications II (3). This is the second of two courses designed develop an in-depth understanding of normal and pathologic physiology as it applies to anesthesia. Corequisite: NUR 947. Prerequisite: NUR 942.

NUR 946 Advanced Physiology and Anesthetic Application (5). This is a combined theory/practicum course designed to develop mastery in the application of physiological principles as they apply to normal, pathologic and clinical applications. Prerequisites: NUR 945 and 947.

NUR 947 Advanced Principles and Practice of Nurse Anesthesia (3). This is the third of three combined theory/practicum courses designed to develop, examine, and apply advanced principles and practice of nurse anesthesia in complex procedures. Corequisite: NUR 945. Prerequisite: NUR 943.

NUR 948 Senior Seminar I and II (2). Course is designed to provide a comprehensive review to prepare the student for certification completed over two consecutive semesters. Course will be taken twice. Prerequisite: NUR 947.

NUR 949 Clinical Residency for Nurse Anesthesia (6). This is a practicum course designed to develop mastery in application of physiological, pathophysiologic, and pharmacologic principals as they apply to complex anesthesia care. Prerequisites: NUR 945, 946, 947.

OCCUPATIONAL SAFETY AND HEALTH (OSH)

OSH 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Meetings with advisors, department personnel, service areas, and campus field trips comprise the main involvement. Availability of university resources is stressed with emphasis on personal needs. Graded pass/fail.

OSH 101 Emergency Medical Training (6). Designed to cover the overall role and responsibilities of the emergency medical technician -basic in performing both the emergency care and operational aspects of his/her job. Also covers diagnosis and all emergency treatment procedures short of those rendered by physicians. Successful completion of all required coursework and examinations will qualify the student to apply for state and national registry certification.

OSH 192 Introduction to Occupational Safety and Health (3). Students will be introduced to OSHA standards in the 29 CFR 1910 for General Industry. Students will also be introduced to safety management principles and will apply hazard identification and injury prevention techniques.

OSH 201 Advanced Emergency Medical Technician Training (9). Course is required to apply for certification as an Advanced Emergency Medical Technician (AEMT). This course introduces the theory and application of concepts related to the profession of the AEMT. Prepares students to provide basic and limited advanced emergency medical care and transportation for critical and emergent patients who access the emergency medical system. Advanced Emergency Medical Technicians function as part of a comprehensive EMS response, under medical oversight. Advanced Emergency Medical Technicians perform interventions with the basic and advanced equipment typically found on an ambulance. The Advanced Emergency Medical Technician is a link from the scene to the emergency health care system. Successful completion of the program allows the successful AEMT course participant to take the National Registry of Emergency Medical Technicians AEMT certification examination and apply for state licensure as an AEMT.

OSH 299 Professional Development Seminar I (1). Seminar for students in the occupational safety and health field, focusing on the job search process, employment opportunities, interviewing techniques, and current management topics. Introductory-level course recommended for students not only preparing for internships, but those preparing to transition from college to career. Graded pass/fail.

OSH 301 Product Liability (3). An examination of the problems and current practices in both industry and government pertaining to the design, production, testing and economic consideration of product hazards. Attention will be given to the impact of design deficiencies on the public and the liability involved. Prerequisite: ITD 120.

OSH 310 Fire and Emergency Preparedness Preplanning (3). Analysis of the historical perspective of fire science and examination of the various fields of study that make up the fire science curriculum. Fire control through building construction, occupancy, occupancy hazard control, life-saving tactics and knowledge. Control of flammable gases, solids, liquids, dusts, chemicals and explosives. In addition, the course is designed to develop an awareness and comprehension of the disasters known to modern man, including a detailed description of their characteristics and physical destructive potential, and to develop student awareness of all agency, public and individual responsibilities prior to, during and after the occurrence of any type of disaster. Prerequisites: OSH 192.

OSH 311 Hazardous Materials and Emergency Planning (3). This course is designed to develop an awareness and comprehension of disaster response programs, operations and responsibilities emphasizing the transportation, storage and handling of hazardous materials. Prerequisites: OSH 192 and CHE 105 pre- or corequisite.

OSH 320 Environmental and Occupational Health Engineering Technology (3). An environmental overview course that examines scientific causes and engineering solutions to water and air pollution problems. Focus is on adverse effects, generation sources, scientific principles, and EPA engineering control strategies. Solid and hazardous waste disposal methods are also covered.

OSH 330 Global Issues in Occupational Safety and Health (3). Course is designed to introduce the student to international issues in Occupational Safety and Health. The primary focus is for students to understand how culture can affect perceived risk and ultimately risk assessment. Course will be conducted in destination country.

OSH 353 Prevention of Musculoskeletal Disorders in the Workplace (3). A course examining the occurrence and prevention of musculoskeletal disorders (MSDs) in the workplace. Emphasis is on recognizing and identifying MSD signs and symptoms, contributing risk factors, control methods, training and prevention program development and implementation, and management issues.

OSH 370 Professional Internship I (3). Work experience or training in industry. Evaluation of work experience made by department. Graded pass/fail. Prerequisite: junior standing or permission of instructor.

OSH 371 Professional Internship II (3). Work experience or training in industry. Evaluation of experience made by department. Graded pass/fail. Prerequisite: junior standing or permission of instructor.

OSH 384 Construction Safety (3). Course will include management techniques necessary to address the unique needs of the construction workplace as contrasted to general industry, as well as a study of applicable standards and methods of recognition, avoidance and prevention of potential hazards.

OSH 387 OSH Standards (3). A study of OSHA standards and various consensus standards affecting occupational safety and health. Students will become adept at identifying, interpreting and applying appropriate 29 CFR 1910 requirements for situations frequently faced by occupational safety and health professionals. "Best practices" related to mandatory standards will also be discussed.

OSH 420 Fundamentals of Industrial Hygiene (3). An introduction to the field of industrial hygiene, including the chemical, physical, and biological agents which affect the health and safety of employees; the application of control measures for the various agents; study of threshold limit values and occupational health toxicology. Prerequisite: CHE 105.

OSH 412 Emergency Management (3). An introductory course covering the five major areas of emergency management: hazard assessment, mitigation, planning, response, and recovery. A field trip may be required.

OSH 425 Physical Agents (3). The study of physical agents including noise, radiation (ionizing and non-ionizing forms), abnormal atmospheric pressure, and heat and cold stresses in the workplace. Emphasis is given to properties, measurements, health effects and engineering controls recommended and practiced by OSHA.

OSH 445 Loss Control Management and Measurement (3). An analysis of actual or potential exposures to hazards and their resultant losses posed by agents, energy forms, forces, and substances in the workplace; measuring the loss exposures created by those hazards; and managing the appropriate counter measures to compensate for perils presented by those losses. Field experiences required. Prerequisites: OSH 192.

OSH 450 Practical Application Lab (2). Course designed to familiarize students with the various instruments that are utilized in occupational safety and health (industrial hygiene, ergonomics, and environmental sciences), understand calibration of these instruments, and provide hands-on experience with various types of equipment. OSH 425 prior to this course is strongly advised.

OSH 452 Systems Approach to Hazard Control (3). Course is designed to identify the broad spectrum of actual and potential hazards existing in systems using methodological system approaches. Emphasis is on systems safety analysis techniques such as fault tree analysis, event tree analysis, energy trace and barrier analysis, and human error and reliability. Prerequisite: STA 135 and junior standing.

OSH 453 Human Factors in Safety Engineering (3). An analysis of the man-machine relationship and the biological, physiological and psychological factors that contribute to accident causation; examination of theoretical and applied research findings.

OSH 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

OSH 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

OSH 499 Professional Development Seminar II (1). Seminar for students in occupational safety and health, focusing on the transition to the world of work and related problems. Recommended for students in the senior year. Graded pass/fail. Prerequisite: OSH 299.

OSH 511 Hazardous Waste Site Operation (3). This course will train the student to become a hazardous materials specialist. The course will explore the various aspects of the hazardous waste site (especially Superfund Sites), including rights and responsibilities, hazard recognition and monitoring.

OSH 523 Occupational Diseases (3). Survey of occupational diseases covering routes of entry and modes of action. In particular, the pathogenicity, epidemiology and diagnosis of occupational diseases will be stressed as they relate to chemical, biological and radiological hazards, dermatoses, airway diseases, plant and wood hazards, chemical carcinogens, and pesticides.

OSH 527 Air Contaminants and Industrial Ventilation (3). A course examining air contaminant problems, gas calculations, and industrial ventilation. This course covers the EPA laws and regulations, and the scientific principles and controls of classical air pollution problems. It also focuses on the engineering evaluation and design of industrial ventilation systems. Prerequisite: OSH 420 (pre- or corequisite) or permission of instructor.

OSH 536 Motor Fleet Safety (3). A basic introduction to problems and practices of motor fleet safety programming with emphasis on regulatory requirements.

OSH 546 Fundamentals of Risk Management (3). An overview of risk management: the process of making and implementing decisions that enable an organization to optimize its level of risk. Risk management topics include risk identification, risk assessment, development of appropriate controls, and risk communication. Prerequisite: OSH 192.

OSH 550 Safety and Health Program Management and Training (3). The concepts, relationships and principles of managing the occupational safety and health function and the development of training procedures and practices to integrate that function into the organization. Prerequisite: senior standing.

OSH 571 Problems in Safety and Health (3). Individual study and research relating to safety and health. May be repeated once for a maximum of six credit hours. Prerequisites: instructor approval of problem prior to registering for course and junior standing.

OSH 578 Workshop in Safety and Health (1-3). Workshops on topics pertinent to safety and health. May be repeated once for a maximum of six credit hours.

OSH 591 Engineering and Technical Aspects of Safety (3). A study of the fundamental engineering principles of electricity, statics, strength of materials, biomechanics, and other aspects of engineering related to safety. Emphasis is placed on the application of engineering principles to safety practices, hazard mitigation, and loss control. Prerequisites: MAT 230 and PHY 125.

OSH 621 Industrial Hygiene and Safety Program Development (3). Advanced, in-depth study of harmful chemical, biological, and physical agents found in the workplace. Emphasis is on analytical methods, control measures, monitoring and surveillance techniques, and developing and writing a comprehensive industrial hygiene or safety program. Prerequisite: OSH 420.

OSH 622 Toxicology of Industrial Materials (3). A study of the environmental and occupational health effects and hazards associated with the exposure to industrial chemicals and contaminants. This course will cove the basic principles of toxicology, target organ toxicities, and the mechanisms involved in toxic effects.

OSH 623 Occupational Diseases (3). Survey of occupational diseases covering routes of entry and modes of action. In particular, the pathogenicity, epidemiology and diagnosis of occupational diseases will be stressed as they relate to chemical, biological and radiological hazards, dermatoses, airway diseases, plant and wood hazards, chemical carcinogens, and pesticides.

OSH 626 Industrial Hygiene Sampling Strategies (3). Advanced in-depth study of the approaches to workplace sampling. Emphasis is on statistical sampling methods, passive monitoring, colorimetric devices, breathing zone, and area sampling strategies. Course work will include laboratory exercises and field experience. Prerequisites: OSH 420 and PHY 125.

OSH 627 Air Contaminants and Industrial Ventilation (3). A course examining air contaminant problems, gas calculations, and industrial ventilation. This course covers the EPA laws and regulations, and the scientific principles and controls of classical air pollution problems. It also focuses on the engineering evaluation and design of industrial ventilation systems. Prerequisite: OSH 420 (pre- or corequisite) or permission of instructor.

OSH 630 Global Issues in Occupational Safety and Health (3). Course is designed to introduce the student to international issues in Occupational Safety and Health. The primary focus is for students to understand how culture can affect perceived risk and ultimately risk assessment. Course will be conducted in destination country.

OSH 636 Transportation Safety (3). An introduction to problems and practices of transportation safety-related issues including a review of regulatory compliance.

OSH 637 Biostatistics and Probability (3). The study and application of biostatistics and probability distributions in environmental and health-related sampling. Emphasis is given to hypothesis testing and graphical determination of confidence intervals. This course will also cover the use and application of log scales and their application in log-normal distributions. Prerequisite: PSY 300 or STA 135 or permission of instructor.

OSH 640 Safety and Health Program Management and Training (3). The concepts, relationships and principles of managing the occupational safety and health function and the development of training procedures and practices to integrate that function into the organization.

OSH 644 Graduate Cooperative Education (3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours. Graded pass/fail. Prerequisite: permission of chair.

OSH 645 Loss Control Management and Measurement (3). An analysis of actual or potential exposures to hazards and their resultant losses posed by agents, energy forms, forces and substances in the workplace; measuring the loss exposures created by those hazards; and managing the appropriate counter measures to compensate for perils presented by those losses. Prerequisites: OSH 192.

OSH 646 Fundamentals of Risk Management (3). An overview of risk management: the process of making and implementing decisions that enable an organization to optimize its level of risk. Risk management topics include risk identification, risk assessment, development of appropriate controls, and risk communication.

OSH 650 OSH Organizational Leadership and Management (3). An overview of the safety and health leader's role in accomplishing organizational objectives emphasizing leadership and management. Concepts covered include safety and health-related leadership issues, implementation of codes and standards, integration of leadership with safety engineering and management principles as well as leadership skills including communication, motivation, initiating change, team building, delegation, and credibility.

OSH 654 Advanced Safety and Health Management and Administration (3). Examination of past and current philosophical beliefs, practices and approaches to controlling safety and health hazards, risks exposure, accidents and loss.

OSH 655 Legal Aspects of Safety and Health (3). Course will present an overview of the regulatory process including the influences of the executive, legislative, and judicial branches of government on OSHA and EPA regulations.

OSH 656 Ergonomics and Biomechanics (3). This course is concerned with the health, behavioral and technical sciences and their role in the reduction of worker stress. These factors are thus related to the neuro-muscular and skeletal systems and the mechanics involved in efficient workplace design. Prerequisite: OSH 353 or 453.

OSH 657 Current Literature and Research in Safety and Health (3). Survey of current literature and research in safety and health, including accident causation and prevention, hazard abatement, risk management, and loss control.

OSH 658 Introduction to Occupational Epidemiology (3). Course will give the students an overview of the basic principles of occupational epidemiology necessary to understand the scientific literature. The major types of epidemiologic studies will be described, and students will learn basic epidemiological calculations. Epidemiologic principles of reliability, validity, bias, screening, and surveillance will be discussed.

OSH 663 Applied Workplace Ergonomics (3). This course is designed to provide the student the opportunity to apply the principles of ergonomics to the work environment. It is intended to offer students practical experience in applying ergonomics through the development of an industrial case study. Prerequisite: 656.

OSH 670 Internship in Safety and Health (3). Supervised work experience in safety and health-related operations focusing on the career objectives and educational objectives of the student. Evaluation of the experience made by the department. Graded pass/fail. Prerequisite: permission of chair.

OSH 671 Problems in Safety and Health (1-3). Individual study and research relating to safety and health. Prerequisite: instructor approval of problem before registering for course.

OSH 680 Graduate Seminar in Occupational Safety and Health (3). This course involves on-site analysis of safety and health programs of area industries. Students are exposed to a variety of industrial settings and have the opportunity to interact with practicing safety and health professionals. Extensive weekly travel is required. Students also organize and present a seminar related to occupational safety and health.

OSH 687 Wastewater Treatment (3). A study of the operation and process design of wastewater treatment systems. This course focuses on aerobic biological treatment and process control for the activated sludge system. Topics will include treatment evaluations, trouble shooting, system design, and operational control strategies. Prerequisite: OSH 320 or permission of instructor.

OSH 689 Solid and Hazardous Waste Management (3). Course will provide students with an understanding of hazardous waste laws in the United States and practical strategies for compliance with those laws. It will also introduce industries as well as emerging technologies and philosophies as related to hazardous waste management.

OSH 697 Research in Environmental Health and Safety (3). A course where students research issues and problems related to health, safety, or the environment and to scientifically address solutions to existing and potential problems and hazards that threaten the health and safety in occupational or environmental setting.

OSH 698 Thesis (3).

OSH 699 Thesis (3).

OFFICE SYSTEMS (OSY)

OSY 101 Keyboarding (1). Development of basic touch keyboarding skills for computer or typewriter use.

OSY 140 Beginning Word Processing (1). A course to provide a basic understanding of fundamental word processing concepts. The students will receive hands-on instruction in the use of microcomputer word processing applications packages and have access to a microcomputer laboratory.

OSY 141 Beginning Spreadsheets (1). A course to provide a basic understanding of fundamental spreadsheet concepts. The student will receive hands-on instruction in the use of microcomputer spreadsheet applications packages and have access to a microcomputer laboratory.

OSY 210 Word Processing (3). This course builds on basic keyboarding techniques. The development of occupation-level formatting/production skills is stressed. Prerequisite: keyboarding and microcomputer skill.

OCCUPATIONAL THERAPY (OTR)

OTR 600 Occupational Therapy Foundations I (3). Course is the first of a two course series that covers the basic historical and theoretical foundations of the occupational therapy profession. This course will develop understanding of the philosophy and domain of occupational therapy practice. It will focus on the components of the Occupational Therapy Practice Framework. Prerequisite: admission to the MSOT program or consent of program director.

OTR 603 Occupational Therapy Functional Anatomy (3). Course will provide the student with a detailed understanding of anatomy, physiological processes, and kinesiological assessment related to occupational function. The focus will be on the study of human anatomy and its application to the motion of the musculoskeletal system as it relates to normal activities and dysfunctions. Prerequisite: admission to the MSOT program or consent of the program director.

OTR 606 Occupational Therapy Evaluation Techniques (3). Course will provide an introduction to principles of tests, measurement, and outcomes-based assessment relevant to the practice of occupational therapy. It will include assessment processes and procedures, statistical methods, and test selection and interpretation. Assessment instruments will be introduced including, but not limited to, screening tools, skilled observation, checklists, histories, interviews with the client/family/significant others, and standardized and non-standardized tests and batteries. Using the ICF as an overarching framework, the evaluation process will yield information about the individual's level of function, activity and participation. Students will critique various measurement tools to determine the level of evidence available to support clinical usage. Prerequisite: admission to the MSOT program or consent of the program director.

OTR 610 Occupational Therapy Disease and Performance (3). Course will provide students with an understanding of pathology and general health management of diseases and injuries across the lifespan encountered in a variety of occupational therapy treatment settings. It includes the etiology, symptoms, and the client's physical and psychological reactions to disease and injury. Prerequisite: admission to the MSOT program or consent of the program director.

OTR 613 Occupational Science (2). Course introduces the history and philosophy behind the discipline of occupational science. Students will explore the application of occupational analysis in relation to activities of daily living, work, play, leisure, and social participation. Prerequisite: admission to the MSOT program or consent of the program director.

OTR 620 Occupational Therapy Foundations II (3). Course is the second of a two-course series that covers the basic historical and theoretical foundations of the occupational therapy profession. This course will develop understanding of application of the Occupational Therapy Practice Framework. It will culminate an understanding of the roles and responsibilities of occupational therapists related to other rehabilitation professionals and referral sources. Prerequisite: OTR 600.

OTR 623 Occupational Therapy Culture and Context (1). Course will identify the various roles and functions that impact occupational performance as they related to occupation, health, and culture. It will promote the understanding of how culture influences those roles and the importance of understanding culture to promote health and wellness for various populations. Students will examine the context of local and regional environments and the impact of home, work, and community systems. Prerequisite: OTR 610.

OTR 626 Occupational Development (3). Course is designed to examine occupational development across the lifespan. The course will examine the developmental stages for sensory, motor, cognitive, emotional, and psychosocial development, and its implications for occupational performance. Prerequisite: OTR 613.

OTR 630 Occupational Therapy Biomechanical Evaluation and Interventions (3). This course will focus on the occupational therapy process of evaluating and treating clients with biomechanical impairments that limit the ability to participate in occupations. Theories, principles, assessments, and interventions focus on skills essential for performance of activities and routines of daily living, thus reducing or alleviating aspects of disease that impede client participation. Prerequisites: OTR 603 and 606.

OTR 635 Occupational Therapy Neuroscience (3). Course is an introduction to neuroscience related to occupational performance. Students will explore various aspects of neuropathology and neuroplasticity and be exposed to various intervention approaches. Perquisite: OTR 603.

OTR 640 Clinical Practicum I (1). This is the first of three practicums that make up Level I Fieldwork. The clinical practicum is designed to afford students the opportunity for hands-on assessment, evaluation, treatment planning, intervention and documentation in a traditional setting for occupational therapy. Prerequisite: OTR 600.

OTR 643 Occupational Therapy Neurological Evaluation and Interventions (3). Course introduces students to clinical theories and techniques of assessment and intervention used to remediate or compensate for occupational dysfunction resulting from neurological deficits. Prerequisite: OTR 635.

OTR 646 Administration and Management of Occupational Therapy Services (3). Course is an introduction to the health care delivery system from an administrative and management perspective. Emphasis will be placed on reimbursement, program evaluation, outcome measurement, strategic planning, and entrepreneurship for practice. Prerequisite: OTR 620.

OTR 650 Occupational Therapy Media and Modalities I (3). This is the first of two courses that will focus on occupational therapy strategies used to promote performance and compensation of participation in activities of daily living. The course will emphasize specific treatment media and modalities in clinical practice that will challenge students to identify how occupational-based activities are essential to returning the patient to occupational performance. This course will also provide education in orthotic use and fabrication to assist in the compensation and protection due to disease and disability. Prerequisite: OTR 600.

OTR 653 Pediatric Evaluation and Interventions (3). Course will focus on evaluation and interventions for children from birth to adult to overcome issues related to developmental delays. The course will examine stages of feeding, play, social development, sensory integration, and self-help skills. Prerequisite: OTR 630.

OTR 655 Clinical Practicum II (1). This is the second of three practicums that make up Level I fieldwork. The clinical practicum is designed to afford students the opportunity for hands-on assessment, evaluation, treatment planning, intervention, and document in a setting that is focused on the provision of occupational therapy services for pediatric and developmentally delayed populations. Prerequisite: OTR 640.

OTR 660 Occupational Therapy Evidence-Based Practice (3). Course introduces the student to the concept of evidence-based practice and how to use evidence to make sound practice decisions. Students will also learn the principles of research and how to critically examine current research. Prerequisite: OTR 653.

OTR 663 Psychosocial Evaluation and Interventions (3). Course will focus on the occupational therapy process for clients with psychosocial issues. It will address evaluation, planning and interventions for mental health issues that impact occupational performance deficits across the lifespan. Prerequisite: OTR 643.

OTR 665 Occupational Therapy Media and Modalities II (3). This is the second of two courses that will focus on occupational therapy strategies used to promote performance and compensation of participation in activities of daily

living. The course will emphasize specific treatment media and modalities in clinical practice that will challenge students to identify how occupational-based activities are essential to returning the patient to occupational performance. This course will also provide education in physical agent modalities and the use of assistive technology. Prerequisite: OTR 650.

OTR 667 Community-Based Practice (3). Course will provide in-depth exposure to areas of advanced practice in occupational therapy. The areas of practice examined will include community-based programs, non-medical settings, alternative care, and natural environments. Prerequisite: OTR 646.

OTR 670 Clinical Practicum III (1). This is the third of three practicums that make up Level I Fieldwork. The clinical practicum is designed to afford students the opportunity for hands-on assessment, evaluation, treatment planning, intervention, and documentation in a setting that is focused on the provision of services for the psychosocial and community health populations. Prerequisite: OTR 655.

OTR 672 Level II Fieldwork I (6). This course is identified as Level II Fieldwork according to Accreditation Council for Occupational Therapy Education (ACOTE) guidelines. The Level II Fieldwork experience is the culmination of all previously learned material in academic courses and Level I fieldwork. It is divided into two separate experiences that are a full time 5 days a week for a minimum of 14 weeks experience each. Students will be provided with the opportunity to directly apply OT concepts and skills of a practicing therapist. The goal is to develop competent, entry-level, generalist occupational therapists. Each fieldwork course must be successfully completed within 18 months of didactic coursework for the program. The Level II Fieldwork clinical experience emphasizes the attainment of entry level competencies as an occupational therapist. Students will be assigned to and supervised by a certified Occupational Therapist or certified Occupational Therapist Assistant with a minimum of one year experience at the practice setting. Prerequisite: OTR 670. Corequisite: OTR 674.

OTR 674 Clinical Research I (3). This course is designed to contribute to generalized knowledge of occupational therapy practice by providing students opportunities in investigation, research development, testing and evaluation. In this first course, the student will review the literature and begin to develop a plan and format of which they can pursue answering a clinical question. Prerequisite: Successful completion of all MS OT didactic course work. Corequisite: OTR 672.

OTR 676 Level II Fieldwork II (6). This course is identified as Level II Fieldwork according to Accreditation Council for Occupational Therapy Education (ACOTE) guidelines. The Level II Fieldwork experience is the culmination of all previously learned material in academic courses and Level I fieldwork. It is divided into two separate experiences that are a full time 5 days a week for a minimum of 14 weeks experience each. Students will be provided with the opportunity to directly apply OT concepts and skills of a practicing therapist. The goal is to develop competent, entry-level, generalist occupational therapists. Each fieldwork course must be successfully completed within 18 months of didactic coursework for the program. The Level II Fieldwork clinical experience emphasizes attainment of entry level competencies as an occupational therapist. Students will be assigned to and supervised by a certified Occupational Therapist or certified Occupational Therapist Assistant with a minimum of one year experience at the practice setting. Prerequisite: OTR 672. Corequisite: OTR 678.

OTR 678 Clinical Research II (3). This course is designed to contribute to generalized knowledge of occupational therapy practice by providing students opportunities in investigation, research development, testing and evaluation. In this second course, the student will refine their research question that was developed in Clinical Research I, collect and analyze data and formulate conclusion that impacts practice. Students will also be required to present their research project to faculty, peer and/or at state/national conference. Prerequisite: OTR 674. Corequisite: OTR 676.

PHYSICAL EDUCATION (PHE)

PHE 200 Health Implications for HPE Professionals (3). Course is designed to cover health-related issues that are encountered by physical education/health teachers which include, but are not limited to: disease transmission, effective communication, illegal, prescription, and over-the-counter drug abuse, and misuse, as well as the abuse of alcohol consumption; eating disorders; risk management/liability issues associated with K-12 athletes; head injuries; performance enhancing drugs; and mental health. Prerequisite: permission of program coordinator.

PHE 205 Lifetime Activities (3). At least four of the following sports will be taught: fitness, golf, tennis, bowling, badminton, archery and outdoor leisure activities. Prerequisite: permission of program coordinator.

PHE 206 Team Sports (3). To provide the prospective physical education teacher with information and skill related to at least four team sports.

PHE 285 Football and Basketball Officiating (2). Football and basketball rules and theories of officiating.

PHE 289 Officiating Soccer (1). Course is intended to prepare students for a role as a certified soccer official. Certification is optional. The student will learn the laws of the game of soccer through a United States Soccer Federation certified instructor. The format of the class will be lecture and class participation. Each class will last four hours for four nights, one night per week.

PHE 304 Adapted Physical Education (3). Designed to develop understanding, knowledge and skills that encompass the theory and practice in physical education programs for special populations. Field experience required. Prerequisites: HPE 175, junior or senior standing, or permission of program coordinator.

PHE 306 Dance and Gymnastics (3). The course is designed to provide the prospective physical education teacher with the skills necessary to teach dance and gymnastics at the elementary and secondary school level.

PHE 310 Fundamentals of Athletic Coaching (2). Course is designed to introduce prospective athletic coaches and physical education teachers to the theory and applied practice of athletic coaching.

PHE 312 Coaching Football I (2). Course will present the technique and strategy in the various styles of offense and defense. Laboratory experience will be provided.

PHE 314 Coaching Basketball I (2). The various systems of defense and offense in basketball will be discussed and demonstrated. Laboratory experience will be provided.

PHE 316 Coaching Baseball I (2). The strategy and fundamentals of baseball will be discussed and demonstrated. Laboratory experience will be provided.

PHE 318 Coaching Track and Field I (2). The basic fundamentals of track and field will be presented and demonstrated. Laboratory experience will be provided.

PHE 319 Coaching Soccer (2). This course is designed to introduce basic soccer coaching techniques. During the class students will learn various soccer practice drills, conditioning, and ball handling techniques through actual practice and lecture material. Students will have the opportunity to compare and contrast various styles of soccer, e.g. European, South American and American styles. This class will be taught once a week for two hours.

PHE 330 Movement Concepts and Skill Themes (3). This course is designed for future physical education teachers. This course focuses primarily on "what" to teach in the elementary school and not "how" to teach. This class focuses on understanding quality physical education that is developmentally appropriate for children. Emphasis is on the skill theme curriculum focusing on movement concepts, generic levels of skill proficiency, and skill themes. Some basic motor development, applied scientific principles for movement, and fundamental health and fitness concepts are also included in the content. Prerequisite: HPE 175.

PHE 375 Movement Analysis for Physical Educators (4). This course is designed to develop physical activity analysis skills in preservice physical education teachers utilizing the basic principles of physics, biomechanics, and applied kinesiology. Topics include skeletal, muscular, and nervous system anatomy; basic principles of physics and motion; and teaching principles involved in movement analysis. Three hours lecture plus two hours laboratory per week.

PHE 400 Teaching Physical Education in the Elementary Schools (3). Investigation, appraisal and practice of methods, techniques, and materials for development of motor skill learning in the elementary school child. Prerequisite: EDU 303 or PHE 304.

PHE 405 Physiology of Exercise and Fitness (3). Concepts of physiology as applied to exercise and fitness directed toward the needs of physical education teachers. Prerequisites: HPE 175, all University Studies math/science requirements, and senior standing; or permission of instructor.

PHE 414 Coaching Basketball II (2). An in-depth study of basketball strategy and team play, involving such areas as the fast break, team offense, team defense, presses, and special situations. Also, various teaching, communication, and motivational techniques. PHE 314 is recommended.

PHE 416 Coaching Baseball II (2). A review of baseball fundamentals, strategies, theories of coaching, scouting and the intricacies of offensive and defense play will be stressed. PHE 316 is recommended.

PHE 459 Teaching Adolescent Physical Education (3). Introduces a number of teaching methods and techniques appropriate to middle and secondary physical education. Prerequisite: HPE 175.

PHE 475 Policy and Professional Practice in Athletic Settings (3). A study of legal issues associated with athletic settings, such as tort liability, individual rights, contracts, and federal or state regulations. Risk management and related best practices will be emphasized. Prerequisite: HPE 175 with a *C* or higher.

PHILOSOPHY (PHI)

PHI 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

PHI 103 Critical Thinking (3). Course provides an introduction to reasoning in everyday life. It focuses on recognizing and evaluating arguments in advertising, news, politics, and ordinary conversation. Students will learn how to recognize and avoid informal fallacies and other common errors in reasoning, including use of statistics and misuse of data or incomplete information.

PHI 142 Philosophy-The Big Questions (3). Course will investigate the ways in which philosophers have examined the big questions such as the following: What is a good life? Are there universal truths? Are values absolute or relative? Why am I here? Does life have a purpose? Why do we suffer? Does God exist? What are my responsibilities to others? Who am I? What is consciousness?

PHI 184 Logic, Language, and Truth (3). An introductory course in truth-functional and predicate logic, philosophy of language, and theories of truth. Students will be introduced to the concepts and methods made use of in formal reasoning, with emphasis on deduction and rules of inference. Students will also be introduced to theories of meaning and of truth. Logic games are included.

PHI 201 Introduction to Philosophy (3). An introduction to fundamental questions in philosophy about self-knowledge, moral decision-making, knowledge about the world and others, the limits of knowing, and the perennial search for meaning. Emphasis will be given to the evaluation of arguments, philosophical inquiry, and reflection on the nature of human existence.

PHI 202 Ethics (3). Introduction to classic and contemporary problems of personal and social morality and to the systems and methods proposed by philosophers, past and present, in response to questions of good and evil. PHI 202 will not fulfill the requirements of HON 212.

PHI 203 Symbolic Logic (3). A systematic study of the fundamentals of logic, focusing on the concepts and methods of contemporary logics systems, which will include learning proofs of reasoning using mechanical decision procedures such as truth tables and truth trees.

PHI 221 Philosophy of Religion (3). A study of basic philosophical issues in the consideration of religion, such as the basis for religious belief, the nature of religion, the cogency of talk about God, the meaning of evil. (Same as RGS 321.)

PHI 250 Philosophy of Law (3). Course examines the nature of law and its relationship to justice and morality. Possible topics include the ontology of human dignity; the relationship between law, democracy, and human rights; the nature of law and legal reasoning; natural law theory and legal positivism; retributive justice versus rehabilitation; and law and changes in technology.

PHI 255 Philosophy of Race (3). Course explores the nature of race and its intersection with other areas of philosophy: ontology, epistemology, ethics, and political philosophy. Possible topics include the ontology of race, race and epistemic justice, race and disability, race and religion, womanist philosophy, race and the State, race and gender, and racial virtues.

PHI 257 Feminist Philosophy (3). A survey course covering feminist theoretical perspectives and current themes in feminist research , such as the body and gender, ethics, epistemology, and how gender informs social life and political/ institutional frameworks.

PHI 260 Death (3). Course explores the nature and implications of human mortality. Ethical, metaphysical, and epistemological questions regarding death will be addressed. Possible topics include whether posthumous events should contribute to the assessment of a person's quality of life, whether we have moral obligations to those who have died, whether death is an evil, and whether any religious beliefs concerning a posthumous existence are cogent and/or appealing.

PHI 304 History of Philosophy I: Ancient/Medieval (3). This course examines the birth of Western philosophy in Ancient Greece from its pre-Socratic origins, through Classical and Roman thought and extenuations within Judaic, Christian, and Islamic traditions, and ending with neo-Platonic thought and the medieval period. Prerequisite: any PHI course.

PHI 305 History of Philosophy II: Modern/19th Century (3). Course examines major figures and themes in the development of modern thought, focusing on the Rationalist and Empiricist traditions and the development of modern science, and ends with an examination of the emergence of Idealism and Romanticism in the 19th Century. Prerequisite: any PHI course.

PHI 307 Epistemology (3). A study of issues in knowledge and justification, which will include such topics as the nature of knowledge, skepticism, perception, theories of justification, and the structure of belief. Prerequisite: any PHI course.

PHI 308 Metaphysics (3). A study of the fundamental nature of reality, causation, the external world, free will and determinism, God, the mind-body problem, temporality, identity, substance and theories of possible worlds. Prerequisite: any PHI course.

PHI 310 American Philosophy (3). An examination of the philosophical traditions shaping American culture past and present that will include influences from the Puritan tradition, Slavery, and Native American narratives, and intellectual movements such as Transcendentalism, Pragmatism, and Neo-pragmatism. Prerequisite: any PHI course.

PHI 315 Social and Political Philosophy (3). A study of the theoretical foundations of political and social thought that include theories of the state, justice, and revolution. Philosophers whose work influences our understanding of justice, government, gender roles, work, and other political/ cultural institutions today will be examined.

PHI 322 Philosophy of History (3). A study of some of the basic philosophical theories of history as found in the writings of such thinkers as Augustine, Hegel, Marx, Spengler and Collingwood. Prerequisite: any PHI course.

PHI 325 Philosophy of Art (3). Study of historic and contemporary theories of art that will focus on questions such as what constitutes art, beauty, and artistic activity, and will also explore the role of institutions in relation to art and criticism.

PHI 330 Medical Ethics (3). Study of ethical questions related to availability of healthcare and duties of healthcare workers, patients' rights-including the right to die, and current topics. Prerequisites: ENG 105 or 150 or the equivalent.

PHI 331 History of Philosophy: Belief, Science, and Knowledge (3). Course examines the epistemological viewpoints of a number of thinkers from the history of philosophy. The course will introduce students to important concepts, problems, and arguments from the history of epistemology and will familiarize students with the interpretation of historical philosophical texts.

PHI 332 History of Philosophy: Eastern Philosophy (3). Course examines the viewpoints of a number of thinkers from the history of both western and eastern philosophy. The course will introduce students to important concepts, problems, and arguments from the history of philosophy; consider the approaches to these topics taken in comparative philosophy; and familiarize students with the interpretation of historical philosophical texts.

PHI 333 History of Philosophy: Faith and the Divine (3). Course examines the viewpoints held in the philosophy of religion by a number of thinkers from the history of philosophy. The course will introduce students to important concepts, problems, and arguments from the history of philosophy of religion and will familiarize students with the interpretation of historical philosophical texts.

PHI 334 History of Philosophy: Individuals, Community, and the State (3). Course examines the social and political viewpoints of a number of thinkers from the history of philosophy. The course will introduce students to important concepts, problems, and arguments from the history of social and political philosophy and will familiarize students with the interpretation of historical philosophical texts.

PHI 335 History of Philosophy: Mind and Reality (3). Course examines the metaphysical viewpoints of a number of thinkers from the history of philosophy. The course will introduce students to important concepts, problems, and arguments from the history of metaphysics and will familiarize students with the interpretation of historical philosophical texts.

PHI 340 Special Topics (1-3). A study of a philosophical subject chosen for its particular topical or thematic interest. Topics will vary. May be taken up to three times for credit with the permission of the program director. Prerequisite: any PHI course.

PHI 350 Philosophy of Science (3). Survey course introducing students to descriptions of scientific method and theory construction, which may include topics such as the relationship between theory confirmation, explanation, prediction, and discovery, as well as theories of change and scientific rationality.

PHI 356 Continental Philosophy (3). An introductory survey of philosophical trends in Europe from the end of the 19th Century to the present, which will focus on issues and thinker within the Existentialist and Phenomenological traditions, the new Marxism, structuralism, post-structuralism, and deconstruction. Prerequisite: any PHI course.

PHI 360 Literature and Philosophy (3). Interdisciplinary look at ways in which literature raises philosophical questions and also how philosophical writings articulate a relationship between philosophy and literature. Topics may include the role of imagination and emotion in reasoning, interpretation, rhetoric, and the role of literature in moral reasoning. (Same as ENG 360.)

PHI 372 Philosophy of Cognitive Science (3). A study of philosophical questions raised by advances in cognitive science, and psychology, including the possibility of a language of thought, mental imagery, reductive explanations of the mind and consciousness, artificial intelligence and connectionism, and the application of cognitive science to traditional philosophical questions. Prerequisite: any PHI course.

PHI 376 Environmental Ethics (3). Survey course exploring views of the relationship between human beings and the natural world will examine current questions in environmental studies regarding ethical and epistemological frameworks. Topics may include the Gaia hypothesis, ecofeminism, and deep ecology.

PHI 378 Teaching and Philosophy (3). An examination of the philosophical foundations of pedagogical approaches, this course will also consider ways philosophy might enrich elementary and secondary curriculum.

PHI 380 Philosophy of Language (3). A study of philosophical questions of meaning, truth and reference, including such topics as the nature of propositional attitudes, theories of meaning and reference, internalism and externalism, ordinary language philosophy, and theories of truth. Prerequisite: any PHI course.

PHI 382 Philosophy of Social Science (3). An examination of the structure and nature of the social sciences and their foundation in philosophy, this course will focus on the relationship between social theory/ criticism and practice, in view of social theory as practical knowledge. Prerequisite: any PHI course.

PHI 383 Philosophy of Diversity (3). An introduction to diverse philosophical perspectives in contemporary culture that will focus on issues of race, gender, class, sexual orientation, and identity, drawing from African American, Native American, gender studies, and feminist perspectives.

PHI 392 Professional Engagement (1). Practical course for philosophy majors. Each student will work 25 hours on a project or job that requires utilization of skills taught in philosophy courses. Graded pass/fail. Repeatable up to three hours. Prerequisites: junior or senior standing, PHI 201, and permission by instructor.

PHI 442 Business Ethics and Environments (3). This course involves a study of modern and classical approaches to both business and personal ethics as well as the other major components of the business environment: the political, international, ecological, social and cultural environments. Prerequisites: LST 240, MGT 350, FIN 330, MKT 360, and senior standing. (Same as BUS 442.)

PHI 498 Major Figures (3). An intensive study of a major philosophical thinker and/or thinkers, such philosophers as Plato, Aristotle, Kant, Hegel, Marx, Nietzsche, Heidegger, Wittgenstein, among other, whose spheres of influence have engendered broader philosophical movements. May be taken up to three times for credit, at the discretion of the program director. Prerequisites: PHI 201 and any 300-level PHI course or permission of instructor.

PHI 499 Senior Research Project (3). A research/writing course designed to develop proficiency in research in philosophy and in logical argumentation, culminating in a scholarly paper that will demonstrate these skills.

PHI 550 Directed Study (1-3). Readings or other study in advanced topics. This course may be repeated for credit.

PHI 640 Special Topics (3). An examination of a traditional or contemporary topic in philosophy. May be repeated for credit. Prerequisite: permission of philosophy program coordinator.

PHI 650 Directed Study (1-3). Supervised independent work in philosophy. May be taken more than once for credit. Prerequisite: permission of philosophy program coordinator.

PHI 657 Feminist Philosophy (3). An advanced survey covering feminist theoretical perspectives and current themes in feminist research, such as the body and gender, ethics, epistemology, and how gender informs social life and political/institutional frameworks.

PHYSICS AND ENGINEERING (PHY)

PHY 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail. (Same as EGR 100T)

PHY 103 Physics of Sports (4). Fundamental principles involved in sports. This course considers the physical mechanisms that are involved in a variety of sports. This physics course is intended for non-physics major with a general interest in athletics and recreation. The lab provides students with tools and principles to analyze and measure the mechanics of motion and sports. Three hours of lecture and two hours in lab per week.

PHY 105 The Science of Sound (4). Fundamental principles of acoustics and wave motion. This course considers the generation, transmission and perception of sound and vibration with an emphasis on musical acoustics. The course provides an examination of the physics of vibration and wave motion. It is intended for non-physics majors with an interest in science, music, education, speech, hearing, and acoustical or recording engineering. The lab provides student experience with the tools and principles used in the analysis, production and perception of sound. Three hours of lecture and two hours of lab per week.

PHY 125 Brief Introductory Physics (4). Topics in introductory physics including mechanics, heat, wave motion, electricity, light, modern physics. Combination conceptual and quantitative approach with emphasis on applications not requiring vector analysis. A student may not receive credit for both PHY 125 and either PHY 130 or PHY 132. Four hours lecture per week. Prerequisite: MAT 140 or equivalent. Corequisite: PHY 126.

PHY 126 Brief Introductory Physics Lab (1). Laboratory to accompany PHY 125. Two hours laboratory per week. Corequisite: PHY 125.

PHY 130 General Physics I (3). Elementary mechanics, heat, and wave motion. Fundamental laws of nature, definitions, and physical measurements are stressed. Prerequisite: MAT 140 or equivalent. Corequisite: PHY 131.

PHY 131 General Physics I Laboratory (1). Laboratory to accompany PHY 130. Two hours laboratory per week. Corequisite: PHY 130.

PHY 132 General Physics II (3). Elementary electricity, magnetism, light, and modern physics. Prerequisite: PHY 130 or equivalent. Corequisite: PHY 133.

PHY 133 General Physics II Laboratory (1). Laboratory to accompany PHY 132. Two hours laboratory per week. Corequisite: PHY 132.

PHY 150 Light and Lasers in Action (4). A laboratory course in general physics intended for non-physics majors with an interest in scientific, medical, engineering or education-related fields. This course will use the visual appeal of light and lasers as vehicles for the introduction of fundamental physical principles including energy, waves and fields. It will rely heavily on demonstrations of optical effects with student participation and interaction. Practical applications of the use of light and lasers in cultural and technical aspects of society will be demonstrated and discussed.

PHY 235 Mechanics, Heat and Wave Motion (4). Introduction to classical mechanics. Topics include kinematics, dynamics, energy, momentum, rotational motion, wave motion, and the laws of thermodynamics. Calculus and vector notation used. Must be taken concurrently with PHY 236. Three lectures and two recitation meetings per week. Corequisite: MAT 250.

PHY 236 Mechanics, Heat and Wave Motion Laboratory (1). Laboratory course must be taken concurrently with PHY 235. Two hours laboratory per week.

PHY 255 Electricity, Magnetism and Light (4). Electric and magnetic fields, circuits, electromagnetic oscillations, and optics. Calculus and vector notation used. Must be taken concurrently with PHY 256. Three lectures and two recitation meetings per week. Prerequisite: PHY 235. Corequisite: MAT 308.

PHY 256 Electricity, Magnetism and Light Laboratory (1). Laboratory course must be taken concurrently with PHY 255. Two hours laboratory per week.

PHY 299 Introduction to Research (1-3). Designed primarily for freshman and sophomore level students. The student participates in an on-going research activity or supporting function. The student will average four hours per week in the activity for each hour of credit. May be repeated for a maximum of four hours of credit. Prerequisites: open to students majoring in physics and with the consent of the directing staff member.

PHY 316 Introductory Astrophysics and Space Physics (3). Introduction to astrophysics and space physics. Space physics is concerned with understanding the environment between the sun and the earth's upper atmosphere. Topics include coronal mass ejections, the solar wind, magnetospheric storms, and auroral precipitation. Astrophysics is the study of planetary system formation and evolution, stellar structure and evolution, galactic structure, and cosmology. Phenomena of interest include quasars, black holes, supernovas, and the cosmic microwave background radiation. Prerequisites: PHY 132 or 255. (Same as AST 316.)

PHY 370 Introduction to Modern Physics (3). Concepts of atomic, nuclear, solid state, and particle physics. Philosophical, historical and cultural aspects are discussed. Prerequisite: PHY 132 or 255.

PHY 388 International Experience in Engineering (3). A short-term (10-14 day) study abroad experience highlighting selected historical and modern contributions to engineering and physics from another country and culture. Graded pass/fail. Prerequisite: consent of the instructor.

PHY 450 Laser Physics (3). Fundamental principles of laser operation. Lectures include a survey of different types of lasers and their application in various fields. Prerequisite: PHY 255. Corequisite: PHY 370.

PHY 460 Electricity and Magnetism I (3). Electric fields, potential dielectrics, steady currents, magnetic fields and electromagnetic induction. Three lectures per week. Prerequisites: PHY 255 and MAT 338. (Same as EGR 460.)

PHY 461 Electricity and Magnetism II (3). Magnetic materials, alternating currents, transient phenomena and electromagnetic radiation. Three lectures per week. Prerequisite: PHY 460. (Same as EGR 461.)

PHY 470 Optics (3). Reflection, refraction, thin lenses, interference, diffraction, polarization and selected optical devices. Prerequisites: PHY 132 or 255 and MAT 250.

PHY 475 Solid State Physics (3). Fundamental physical properties of the solid state of matter. Prerequisite: PHY 255 and 256.

PHY 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

PHY 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

PHY 495 Advanced Laboratory I (1-2). A laboratory for advanced students in physics. The experimental program will be planned on an individual basis with experiments chosen from optics, electricity and magnetism, classical mechanics, thermodynamics, atomic, nuclear and solid state physics. Two to four hours laboratory per week. May be repeated for a maximum of three hours. Prerequisites: PHY 255 and 256.

PHY 496 Senior Seminar (3). Capstone course for students completing the undergraduate physics curriculum. Students will be involved in discussions and presentations on a variety of topics in physics. Students will also prepare and deliver written and oral presentations on technical topics. Prerequisite: senior standing or permission from instructor.

PHY 515 Special Topics (3). Topics of current interest in physics and engineering. Delivery methods may include lecture, seminar, directed study, and laboratory. May be repeated for credit as different topics are offered. Prerequisite: permission of instructor.

PHY 520 Independent Study (1-3). Supervised reading course in specialized topics for upper-division students of high standing. May be repeated for a maximum of three hours. Prerequisites: major and permission of instructor.

PHY 530 Mechanics I (3). Dynamics of particles, coordinate transformation, and non-inertial reference systems. Celestial mechanics. Dynamics of systems of particles. Prerequisites: PHY 255 and MAT 338 (or concurrent registration).

PHY 531 Mechanics II (3). General motion of rigid bodies. Lagrangian mechanics, theory of small vibrations and special theory of relativity. Prerequisite: PHY 530.

PHY 535 Introduction to Quantum Mechanics (3). Fundamental course in non-relativistic quantum mechanics. Prerequisite: PHY 370.

PHY 580 Modern Physics I (3). An investigation of the physical phenomena explained since 1900 by the introduction of the discreteness of nature and the wave-particle duality, leading to the development of wave mechanics. Topics include Planck radiation, photoelectric and Compton effects, pair production and annihilation, the nuclear atom and Bohr theory, the deBroglie hypothesis, the Schroedinger equation and applications to atomic physics. Prerequisite: PHY 460 or 530.

PHY 581 Modern Physics II (3). Continuation of PHY 580 including angular momentum theory, perturbation theory, L-S coupling, Zeeman effects, nuclear properties, reactions and structures, particle accelerators and elementary particle physics. Prerequisite: PHY 580.

PHY 583 Applied Optics (3). Fresnel diffraction, polarization, Maxwell's equations, laser theory and application, holography, spatial filtering and applications. Prerequisites: PHY 460 and 470.

PHY 590 Mathematical Methods in Physics and Engineering I (3). Applications of mathematics to physical and engineering problems, curvilinear coordinates, analytic functions, transform theory, convolutions, Fourier series. Prerequisites: MAT 338; EGR 330 or PHY 330 permission of instructor.

PHY 591 Mathematical Methods in Physics and Engineering II (3). Solutions of partial differential equations, special functions, Green's function. Prerequisite: PHY 590 or permission of instructor. (Same as EGR 591.)

PHY 592 Problems in Advanced Physics and Engineering I (3). An applied course for advanced students in physics and engineering. The problems will be planned on an individual basis with topics including Monte Carlo and molecular dynamics techniques, fluidized-bed and numerical fluid dynamics, surface physics, cloud and aerosol physics, crystal growth and analog modeling of experiments. Students will be required to design, implement and test appropriate strategies for the solution of the chosen problem using their knowledge and understanding of basic physics and engineering principles. Prerequisite: CSC 420 or MAT 442 or permission of instructor.

PHY 593 Problems in Advanced Physics and Engineering II (3). A continuation of PHY 592. Prerequisite: PHY 592 or permission of instructor.

PHY 596 The History of Modern Physics (3). A detailed examination of the origin of quantum theory. Consideration is given to the notable works of Planck, Lorentz, Einstein, Stark, Haas, Sommerfeld, Nernst, Bohr and others. Senior standing in physics with a 3.25 average in major. Lectures and conferences.

PHY 599 Senior Research (1-3). Introduction to research practices, periodicals and literature of physics. Problems arranged individually with faculty members. Formal, scientific report of work required. Prerequisites: senior standing and permission of faculty. (Same as EGR 599.)

PLANNING, URBAN AND REGIONAL (PLN)

PLN 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

PLN 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

PLN 507 Land Use Planning (3). Analyze the principles and techniques utilized in the planning process. Emphasis is placed on the practical aspects of planning — the needs, problems and proposed solutions. (Same as GSC 507.)

PLN 521 Geographic Information Systems (4). Techniques course that introduces digital georeferenced information systems, including data capture, editing and encoding techniques, data storage structures, database management systems, data analysis and model development, and information display methods. Three hours of lecture and two hours of laboratory per week. (Same as GSC 521.)

PLN 523 Problems in Urban Geography and Urban Planning (3). Theories, techniques and research in urban geography and planning. Focus placed on the designs and strategies addressing present day urban problems. (Same as GSC 523.)

PLN 607 Land Use Planning (3). Analyze the principles and techniques utilized in the planning process. Emphasis is placed on the practical aspects of planning — the needs, problems and proposed solutions. (Same as GSC 607.)

PLN 621 Geographic Information Systems (4). Techniques course that introduces digital georeferenced information systems, including data capture, editing and encoding techniques, data storage structures, database management systems, data analysis and model development, and information display methods. (Same as GSC 621.)

PLN 644 Graduate Cooperative Education (3). May be repeated for a maximum of six credits. Graded pass/fail. Prerequisite: permission of chair.

PLN 693 Special Problems in Urban Planning (3). Course is designed for students who have an aptitude for research in urban planning. May be repeated one time for credit. Prerequisite: permission of instructor.

POLITICAL SCIENCE (POL)

POL 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Required from all entering freshmen and transfer students with less than 12 hours of earned credit prior to their first semester at Murray State University. Graded pass/fail.

POL 140 American National Government (3). The American political system, its constitution, institutions and processes. An approved social science University Studies elective.

POL 240 State and Local Politics (3). Study of the three branches of state government coupled with an examination of the politics, organizations and functions of counties, townships and special districts.

POL 250 Introduction to International Relations (3). The nature of international society and the forces affecting the behavior of states in their relations with one another. An approved social science University Studies elective. POL 250 will not fulfill the requirements of HON 270.

POL 252 Introduction to Comparative Politics (3). This course provides the student with comparative and evaluative concepts and approaches necessary to developing an intelligent understanding and appreciation of the world's diverse political systems. An approved social science University Studies elective. POL 252 will not fulfill the requirements of HON 272.

POL 261 Introduction to Political Theory (3). Introduction to the concepts, enduring questions, and significant thinkers associated with political philosophy. Specific attention will be given to differing conceptions of human nature, politics, the state, civic obligations and rights, freedom, justice, and democracy.

POL 301 Model United Nations I (1). Course provides students with thorough understanding of the roles and functions of the United Nations System. May be repeated for a maximum of two credit hours. (Fall)

POL 302 Model United Nations II (2). This course, as a continuation of POL 301, provides students with advanced understanding of the roles and functions of the United Nations System. Students may attend regional/national level conferences. May be repeated for a maximum of four credit hours. Prerequisite: POL 301. (Spring)

POL 341 Local Governments in Rural Areas and Small Communities (3). The legal basis, organization, and functions of rural and small town governments in the United States, with special emphasis on administration and problems of non-urban communities.

POL 342 Ethnic Politics (3). An examination of the role played by ethnicity in American politics. The class will explore how racial and ethnic groups shape and are shaped by the American political system.

POL 343 Kentucky Government and Politics (3). A meaningful examination of the political processes and governmental machinery essential to an adequate understanding of government and politics in Kentucky.

POL 344 Media and Politics (3). The roles of media in the American political process.

POL 345 Campaigns and Elections (3). Considers the practical aspects of campaigning for public office on all levels of government including strategy, financing, organization, research, and media.

POL 356 Modern Middle East (3). History of the Middle East from 1700 to present, emphasizing political, social, and economic development of the region. Topics include the decentralization of empires, European imperialism, nationalism, constitutionalism, secularism, and state building. (Same as HIS 356.)

POL 359 Writing and Inquiry in the Social Sciences (3). The course focuses on the inquire process that is used in the social sciences and how the results of that inquiry are reported to others. Students will learn how to recognize, understand, and apply specific style, format, and rhetorical requirements for clear and concise expository writing in the social sciences. Students will create a variety of documents that typically include an essay, an annotated bibliography, and analytic case study, a policy brief, letters, memoranda, a policy or procedure, and the development of a research paper through the research design. This is the writing intensive course for all majors in political science, sociology, international studies, and public administration. Prerequisite: ENG 105 or 150. (Same as SOC 359.)

POL 360 Research Methods (3). Course will introduce students to social science research methods. Emphasis will be placed on the scientific method, research design, the various methods of data collection commonly used in political science and sociology, and data analysis. Prerequisite: PSY 300 or STA 135 and POL 359, or permission of instructor. (Same as SOC 360.)

POL 438 Inequality and Social Policy (3). Course engages in a comparative study of social policies across advanced industrial democracies. The course examines fundamental differences in social policy, with close attention to dimensions of economic inequality and gender inequality. Leading to an investigation of the relative role of partisanship, business interests, social movements, labor unions, international pressures, demographic changes in shaping, and transforming social policy.

POL 440 Political Parties and Interest Groups (3). The nature, development, organization, and functions of American political parties and interest groups.

POL 441 Legislative Process (3). The behavior of American legislative bodies and legislators.

POL 442 Government and Business (3). The role of government and politics in the regulation of business activities and the administration of major legislative enactments.

POL 443 Executive Process (3). An examination of the origin, development, and current status of the executive process with primary emphasis on the American Presidency.

POL 444 Judicial Process (3). A political science course that surveys the nature, functions and sources of law and the role of politics and the courts in the administration of justice. (Same as LST 444.)

POL 445 Constitutional Law I: Developments and Trends (3). A political science course that surveys the development of and historic trends in selected subjects of constitutional law. (Same as LST 445.)

POL 447 Constitutional Law II: Civil Liberties and Civil Rights (3). A political science course that studies the leading court decisions and their impact on the development of American Constitutional Law in the subject areas of civil liberties (Amendment I), civil rights (Amendments IV, V, VI, VIII, and IX), and the equal protection and due process clauses of Amendment XIV. (Same as LST 447.)

POL 448 Healthcare Policy (3). This course is an undergraduate level examination of the components of health care policy; health insurance and benefits planning, negotiation, and delivery; and health promotion within the context of public sector employment in national, state, and local governments.

POL 449 Human Rights (3). Course provides students with an understanding of the development and evolution of human rights and the factors influencing human rights standards globally.

POL 450 Modern Africa (3). A study of Africa since about 1880, including the transformation of African societies and their political development, with emphasis on the contact with other cultures, the growth of nationalism and nationalist movements, and the questions of African unity and neocolonialism. (Same as HIS 450.)

POL 451 Government and Politics of Europe (3). The dynamics of change in the political systems of Europe, focusing on government institutions and the development of the European Union.

POL 453 Government and Politics of Latin America (3). The dynamics of change in the political systems of Latin America, focusing on the problems and patterns of political and economic development.

POL 454 Government and Politics of Asia (3). The governmental institutions and political processes of China, Japan, and other selected states in Asia.

POL 456 American Foreign Policy (3). The formulation and implementation of U.S. foreign policy.

POL 457 International Law and Organizations (3). The origin and development of international law and international organizations. (Same as LST 457.)

POL 458 European Union Politics (3). This course will consist of an examination of the economic and political factors that led to the formation and development of the European Union. Emphasis will be placed on the institutions and policies of the European Union.

POL 459 Politics of China (3). This course introduces students to the political system of the People's Republic of China, its political economy, and its foreign relations, from the Maoist Revolution to the present day.

POL 460 Political Behavior (3). An introduction to major concepts and systems of thought useful in explaining and understanding political behavior.

POL 461 Classical and Medieval Political Thought (3). The development of political thought from the classical Greeks to the Renaissance with emphasis on Plato, Aristotle, Augustine and Aquinas.

POL 462 Modern Political Thought (3). The development of political thought from the Renaissance to the present with emphasis on Machiavelli, Hobbes, Locke, Rousseau, Burke, Marx, and the contemporary malaise.

POL 463 American Political Thought (3). The American political tradition from its colonial origins to the present with emphasis upon the major political writers.

POL 464 International Political Economy (3). Course provides students with an overview of the themes within international political economy, including globalization, trade, economic sanctions, foreign aid, and international development strategies.

POL 465 War and International Security (3). Course examines various issues involved in war and peace including why some states choose force while others do not and what factors promote or prevent war. These questions will be investigated in a general framework using scientific methods rather than focusing on a specific war.

POL 467 Regulatory Policy and Politics (3). An undergraduate level study of political, economic, administrative, and legal aspects of government regulation.

POL 469 Terrorism, Insurgency, and Counterterrorism (3). This course will provide an overview of terrorism, including its psychological and economic roots, the political consequences of terrorism and insurgencies, and analyze how countries work domestically and internationally to combat these activities.

POL 470 Foundations of Public Administration (3). The theory and practice of the administration and management of governmental operations; politics, policy and the bureaucracy.

POL 471 Contemporary Public Policy Issues (3). Consideration of social, economic, and political influences on the formation, direction, and implementation of public policy, with special emphasis on current issues.

POL 472 Public Planning and Evaluation (3). An examination of major planning and evaluation techniques of governmental programs.

POL 473 Public Budgeting and Finance (3). This course examines budgeting as a tool of governmental economic and public policy. Specifically, the course considers the evolution and purposes of budgeting, with special attention given to recent efforts to improve government resource allocation.

POL 476 Law in Public Administration (3). An examination of the role of law in the administrative process. Topics to be covered include administrative rulemaking and adjudication, enabling statutes, open records and open meetings laws, procedural due process, and civil liability and immunity for public employees and governments. (Same as LST 476.)

POL 477 Local Government Administration (3). A study of the economic, political, and social environments of cities and other forms of local governments as well as the impact those environments have on local government administration. The roles and tasks of local government management, as affected by metropolitan conditions and state, regional, and federal governments, are also examined.

POL 479 Public Sector Labor Relations (3). An intensive examination of the emergence of, current Federal and State policies on, and impacts of unionization and collective bargaining in the public sector. Special emphasis is placed on the responsibilities of public employees and public administrators in their respective roles in contract bargaining and administration. The course includes multiple simulation exercises and workshops on labor-management practices.

POL 480 Topical Seminar in Political Science (3). Inquiry into selected topics and problems in the field of political science. May be repeated for a maximum of six hours provided topics vary.

POL 481 Public Sector Human Resource Management (3). An overview of public sector human resource and human capital management in the federal, state, and local governments, including such topics as types of personnel systems; recruitment and selection; compensation and benefits; training and development; performance management; legal compliance; diversity; and labor-management relations.

POL 482 Land Use and Planning Law (3). An undergraduate level examination of the legal, political, and economic aspects of efforts to control the use of land. The course will cover constitutional, statutory, and common law issues regarding nuisance suits, private covenants, subdivision controls, zoning and zoning procedure, planning processes, and the exercise of eminent domain. (Same as LST 482.)

POL 483 Comparative Public Administration (3). A comprehensive comparative study of public administration in a variety of different political, legal, and economic systems.

POL 484 Comparative Public Policy (3). A comprehensive comparative study of public poliy in a variety of different political, legal, and economic systems.

POL 485 Local Government Law (3). An undergraduate level study of basic standards of law pertaining to various forms of local government, including municipalities, counties, special districts, public authorities, and school districts. (Same as LST 485.)

POL 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. To be eligible, a student must be a POL major or minor with a junior or senior status and an overall GPA of 2.5. A student must have at least nine hours in POL courses (POL 140 and six hours from POL 240, 250, 252, and 261) with a GPA of 2.8. Six hours of the POL courses must be completed at MSU. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

POL 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. To be eligible, a student must be a POL major or minor with a junior or senior status and an overall GPA of 2.5. In addition, the student must have at least nine hours in POL courses (POL 140 and six hours from POL 240, 250, 252, and 261) with a GPA of 2.8. Six hours of the POL courses must be completed at MSU. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of chair.

POL 495 Special Problems (1-3). Supervised readings or research in selected subjects designed to supplement regular course offerings. Requires chair's approval. Restricted to junior and senior students. May be repeated up to six hours. Only three hours may count toward major. Prerequisites: Fifteen hours of POL courses with a minimum overall GPA of 3.0 and a minimum GPA of 3.25 for POL courses taken for the major or minor, and chair's approval.

POL 499 Senior Seminar in Political Science (3). Capstone course for all majors in Political Science and International Studies. It is a writing intensive course in which a discipline-based research paper is refined and orally defended. Students also develop job and graduate education search skills as well as complete program assessment instruments. Prerequisites: senior standing and completion of POL 360, or permission of the instructor.

POL 642 Government and Business (3). The role of government and politics in the regulation of business activities and the administration of major legislative enactments.

POL 648 Health Policy (3). Course addresses how public policy development and analysis have an impact on the public's health. The course is designed to provide professionals with the skills for collecting, analyzing, and communicating information on public health policy issues using approaches that would be useful in the policy making arena. Students will learn what policy is, who the policymakers are in public health, who the actors are who are affected by public health policy, and the major influences in determining what policy gets implemented, including the science underlying policy proposals. (Same as HEA 648.)

POL 659 Intergovernmental Relations (3). A seminar on the evolution, growth, and present nature of federal, state, and local interrelationships, with an emphasis on grants-in-aid and their implementation.

POL 660 Research Methods (3). Examines the process of research in public affairs, with an emphasis on quantitative methods and techniques. Required of all M.P.A. students.

POL 667 Regulatory Policy and Politics (3). A study of political, economic, administrative, and legal aspects of government regulation. The course is intended to prepare practitioners for work in the field of regulatory policy.

POL 670 Foundations of Public Administration (3). A graduate-level introduction to the study of public administration, covering substantive topics in the field as well as the political dimensions of public service and the ethical issues faced by government practitioners. Emphasis is placed on the development of the discipline as a field of inquiry. Must be taken in the first semester of coursework in the M.P.A. program.

POL 671 Public Policy Analysis (3). Problems and methods in perception of public problems, determination of goals, generation and evaluation of alternative policy practices and programs, and explanation of policy choices. Emphasis on political and analytical methods of examining policy making and policy outcomes. Includes a survey of literature dealing with theories of the policy process.

POL 672 Public Planning and Evaluation (3). An intensive, graduate-level examination of major planning and evaluation techniques for government programs.

POL 673 Public Budgeting and Finance (3). An intensive, graduate-level overview of public agency and governmental budgeting and finance at the federal, state, and local government levels. This course examines budgeting as a tool of governmental economic and public policy. Specifically, the course considers the evolution and purposes of budgeting with special attention given to recent efforts to improve government resource allocation.

POL 674 Public Organizations (3). An analysis of roles, responsibilities, and practices of the public manager in governmental organizations, with an emphasis on managing as a governmental actor in pursuit of the public interest, in compliance with law, and in response to a variety of elected officials; managing in highly constrained and political environments; and managing in inter-sectoral and networked arenas. Theories of bureaucratic behavior and public management are analyzed and evaluated.

POL 677 Local Government Administration (3). An intensive study of the economic, political, and social environments of cities and other forms of local governments and the impact those environments have on local government administration. The roles and tasks of local government management, as affected by metropolitan conditions and state, regional, and federal governments, are also examined.

POL 678 State and Regional Government, Politics and Administration (3). Comparative study of state and regional governments, administration, policies, and problems. Empirical research concerning structures, institutions, and political processes and the relationship between them and the policy outputs is examined and analyzed. Contemporary issues are examined from a comparative perspective to determine explanations for the variation among executives, legislatures, and bureaucracies in addressing or resolving these issues.

POL 679 Public Sector Labor Relations (3). An intensive examination of, current Federal and State policies on, and impacts of unionization and collective bargaining in the public sector. Special emphasis is placed on the responsibilities of public employees and public administrators in their respective roles in contract bargaining and administration. The course includes multiple simulation exercises and workshops on labor-management practices.

POL 680 Topical Seminar in Public Administration (3). Inquiry into selected topics and problems in the field of public administration. May be repeated for a maximum of six hours provided topics vary.

POL 681 Public Sector Human Resource Management (3). An intensive, graduate-level overview of public sector human resource and human capital management in the federal, state, and local governments, including such topics as types of personnel systems; recruitment and selection; compensation and benefits; training and development; performance management; legal compliance; diversity; and labor-management relations. Students address the literature in one of these areas.

POL 682 Land Use and Planning Law (3). A comprehensive examination of the legal, political, and economic aspects of efforts to control the use of land. The course will cover constitutional, statutory, and common law issues regarding nuisance suits, private covenants, subdivision controls, zoning and zoning procedure, planning processes, and the exercise of eminent domain.

POL 683 Comparative Public Administration (3). A comprehensive comparative study of public administration in a variety of different political, legal, and economic systems.

POL 684 Comparative Public Policy (3). A comprehensive comparative study of public administration in a variety of different political, legal, and economic systems.

POL 685 Public Administration Capstone (3). A course integrating the theories and methods of public administration in a major research project related to a substantive management or analytic problem in the public sector. Students must propose, execute, and publicly defend their project after completing a major review of public administration literature. Normally this course shall be taken in the last semester of graduate work with the M.P.A. program. Required for all M.P.A. students. Prerequisites: POL 660, 670, 671, 673, 674, and 681.

POL 686 Law in Public Administration (3). An examination of the role of law in the administrative process. Topics to be covered include administrative rulemaking and adjudication, enabling statutes, open records and open meetings laws, procedural due process, and civil liability and immunity for public employees and governments.

POL 687 Local Government Law (3). Study of basic standards of law pertaining to various forms of local government, including municipalities, counties, special districts, public authorities, and school districts. Statutory, constitutional, and common law standards of law applicable to local governments will be examined. The course is intended to prepare local government practitioners for the legal challenges that they will face in their careers.

POL 690 Administrative Internship (1-6). A full-semester directed internship with an agency concerned with the administration of public affairs. Graded pass/fail. Prerequisites: completion of nine hours from the following: POL 660, 670, 671, 673, 674, or 681; 3.0 GPA in all graduate work, and permission of chair.

POL 695 Special Problems (1-3). Supervised readings or research in selected subjects designed to supplement regular course offerings. Prerequisites: completion of nine hours from the following: POL 670, 671, 673, 674, or 681; 3.25 minimum GPA, and permission of chair.

POSTSECONDARY EDUCATION (PSE)

PSE (CSP) 615 Introduction to Student Affairs in Higher Education (3). The historical and philosophical development of the student affairs profession will be explored and discussed. Major topics include an in-depth study of the departments that typically constitute the division of student affairs. This includes history, function, trends, issues and significant personnel. Class content will be presented in seminar format.

PSE (CSP) 616 College Students in the United States (3). The characteristics of the contemporary college student in the United States will be examined. Major topics will include an examination of the motivations for entering institutions of higher education, developmental theory related to college students, problems and challenges specific to the American concept of making higher education accessible to a large percentage of the population, and the impact of contemporary economic and social trends on the college population.

PSE (CSP) 630 Globalization and Internationalization in Higher Education (3). Course serves as the introduction to the principles and practices of globalization and internationalization within the field of higher education. In addition to preparation for the international education specialist, the course offers the aspiring higher education generalist an overview of global issues and context in extending international education opportunity and knowledge to both international and domestic students in the United States. The course addresses the major components of international programs administration and campus internationalization.

PSE 700 History and Foundations of American Higher Education (3). Course provides a historical overview of the U.S. system of higher education, with an emphasis on the development of colleges and universities, and how these developments have shaped current policies and practices in higher education. Curricular, administrative, and policy issues will be explored.

PSE 710 Higher Education and the Law (3). Course examines legal issues relevant to American colleges and universities to provide educational leaders with the fundamental knowledge of higher education law for administrators. Key legal principles that impact professional practice in higher education that may be discussed include the legal governance of higher education, academic freedom, affirmative action, and other legal issues pertinent to faculty, staff and students. Prerequisite: permission of the instructor.

PSE 720 Internship I (3). Course provides a comprehensive examination of the nature of Higher Education through an internship in a Student Affairs setting. The student will complete a semester internship approved setting. Supervision will be by the site supervisor and the instructor. Field experience is required. Prerequisite: PSE 615 and 616.

PSE 730 Internship II (3). Course provides a comprehensive examination of the nature of Higher Education through an internship in a Student Affairs setting.

The student will complete a semester internship approved setting. Supervision will be by the site supervisor and the instructor. Field experience is required. Prerequisite: PSE 720 and permission of the instructor.

PSE 740 Contemporary Issues in Postsecondary Education (3). The purpose of this course is to investigate contemporary issues impacting higher education. Current trends and innovation are critical themes for educational leaders to explore. Special topics in higher education explored in the course may include funding, policy, access, technology, learning initiatives and special populations.

PSE 750 Academic Program Management and Evaluation (3). Course introduces students to the subject of managing and evaluating academic programs in a higher education setting. Faculty credentialing and the program assessment practices will be examined.

PSE 755 Postsecondary Instructional Support Systems (3). Course examines the comprehensive nature of the instructional support system as a vital component in the evolving P-20 learner-centered environments of education. Theory and effective practice are used to guide the discussion and investigate the issues. Students investigate and seek potential solutions to authentic problems facing educational leaders such as diversity needs of students, instructional support, advising strategies, enrollment management, recruitment and retention, placement testing, career development, residential life, and student activities.

PSE 760 Organization and Operations in Postsecondary Education (3). The focus of this course is the management and planning functions within higher education institutions. Students will examine the competencies and training necessary to address key operational and leadership roles specific to the allocation and management of resources to meet the mission of the institution. Resources other than financial will be included, and special emphasis will be given to maintenance of facilities, institution and community resources, personnel, and time.

PSE 765 Community College Leadership (3). Concepts and practices related to decision-making, governance, administrative structure, operations, and other leadership functions are the focus of this course. The mission, development, and structure of the community college are explored, along with current trends and innovations influencing the institutions. Practical applications in community college leadership will be investigated while allowing students to develop knowledge based on grounded in theory and research.

PSE 770 Academic Leadership in Higher Education (3). Course will focus on various roles and responsibilities of faculty members and individuals within academic leadership positions. The administrative contexts and organizational cultures within which they work will be analyzed, along with the career patterns of the academic person.

PSYCHOLOGY (PSY)

PSY 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

PSY 180 General Psychology (3). A basic course introducing the student to psychology as a science that can be applied to practical problems and everyday issues by learning the methods, concepts, and terminology of the discipline. Note: This course is a prerequisite to all other courses in psychology.

PSY 190 Research Skills for Psychology (1-3). Course provides students with practical experience in the techniques and problems associated with research in psychology. Emphasis is placed on learning skills associated with conducting research on psychological topics. Arrangement for faculty supervision is required prior to enrolling. May be repeated to a maximum of nine hours. No more than three hours count toward the psychology major or minor. Graded pass/fail. Prerequisites: PSY 180 or HON 180; approval by faculty sponsor and the department chair.

PSY 199 Developing Psychological Skills (1). An applied course for students interested in enhancing their psychological skills. This course is recommended for persons in performance fields (e.g., psychology, physical education, social work, nursing, performing arts, business, etc.) who wish to improve their mental skills such as emotional and attentional control. Letter-graded course.

PSY 205 Introduction to Writing in the Psychological Sciences (3). An introduction to locating, writing, and critiquing scientific information in the field of psychology. Overarching themes include effective written communication, scientific literacy, and adherence to the ethical tenets of writing in the psychological sciences. Restricted to students majoring in psychology. Prerequisite: PSY 180, or HON 180, ENG 105 or ENG 150, declared major in psychology or permission of the instructor.

PSY 210 Career Planning Seminar (3). Seminar for psychology majors, focusing on career exploration, employment opportunities, the job search process, graduate school, and related issues. Recommended for students in their sophomore or junior year. Letter-graded course. Prerequisite: PSY 180 or HON 180 and sophomore standing or higher.

PSY 221 Psychology of Human Sexuality (3). A presentation of the psychological aspects of human sexuality as well as an exploration of contemporary psychological research and theory in the field. Topics are addressed from various perspectives (behavioral, social, cultural and biological) and include homosexuality, pornography, sexually transmitted disease, early sexual learning, adult sexual lifestyles and sexual dysfunction and treatment. Prerequisite: PSY 180 or HON 180.

PSY 222 Sport Psychology (3). This course is a survey of theory and research regarding the psychological aspects of sport and physical activity. Topics addressed include history of sport psychology, research methods and testing, learning, personality, attention, arousal, intervention, motivation, attribution, aggression, leadership, group dynamics, and audience effects as they relate to athletes, coaches and officials. Prerequisite: PSY 180 or HON 180.

PSY 223 Psychology of Sport Fans (2). This course will be a survey of theory and research regarding the psychological and sociological significance of sport fandom and spectating. Topics addressed will include the prevalence of sport fandom, factors affecting involvement in sport as a fan and spectator, spectator aggression, the psychological impact of spectating, and the societal impact of spectating. Prerequisite: PSY 180 or HON 180.

PSY 228 Close Relationships (3). A survey of the psychological constructs involved in close relationships using both classic and modern research. Students will examine the elements, processes, and phases of both intimate and non-intimate relationships. Prerequisite: PSY 180 or HON 180.

PSY 229 Psychology of Social Influence (3). A survey of the psychological constructs, historical and modern research, and applications associated with social influence. Topics include the power of relationships, persuasion, attitude, marketing, and the formation and maintenance of cult behaviors. Students will learn to apply influence techniques and strategies used in both social venues and advertising/marketing. Prerequisite: PSY 180 or HON 180.

PSY 245 Law and Psychology (3). An overview of the area of forensic psychology. Topics covered include aspects of criminal behavior, the insanity defense, competency, commitment of the mentally ill, and professional issues. Prerequisite: PSY 180 or HON 180.

PSY 260 Lifespan Development (3). A survey course of theory and research examining the changes and consistencies associated with human development from conception to death. Infancy, childhood, adolescence, and early, middle, and late adulthood will be examined. Prerequisite: PSY 180 or HON 180.

PSY 261 Child Psychology (3). A study of the biological, social, affective and cognitive aspects of the development of children from conception to adolescence. The implications of this development for present and future behaviors are presented. The research, principles, concepts and theories of child psychology are emphasized. Prerequisite: PSY 180 or HON 180.

PSY 262 Adolescent Psychology (3). A study of the biological, social, affective and cognitive aspects of the development of adolescents from puberty to young adulthood. The relationship of these developmental aspects to the

individual's past, present and future behaviors are stressed. The research, theories, concepts and principles pertaining to adolescent psychology are presented. Prerequisite: PSY 180 or HON 180.

PSY 264 Psychology of Aging (3). The study of the biological, cognitive, affective and social aspects of the aging process. The normal and pathological conditions of aging are emphasized. The interaction of the aged and society is also considered. Prerequisite: PSY 180 or HON 180. (Same as GTY 264.)

PSY 265 Psychology of Death (3). A study of the place of death in the process of human development. Two viewpoints will be stressed: death of self and death of others. Emphasis will be given to the cultural, social, biological and affective aspects related to the final stage of life. Customs, medical practices, financial concerns, legal matters and scientific issues will be considered. Prerequisite: PSY 180 or HON 180. (Same as GTY 265.)

PSY 300 Principles and Methods of Statistical Analysis (3). An introduction to descriptive and inferential statistics as used in the behavioral sciences and human services. Computer-based techniques of statistical analysis are emphasized throughout the course. Prerequisites: Prerequisites: MAT 117, 120, 130, 135, 140, 145, 150, 220, 230, 250, 308, 309, or 330.

PSY 301 Principles and Methods of Psychological Research (3). An introduction to research techniques and resources in the field of psychology, covering scientific foundations of psychology; empirical research methods, both experimental and non-experimental; data analysis and report writing; literature search procedures; ethical issues. Prerequisites: PSY 180 or HON 180; PSY 205 and PSY 300 (pre- or corequisite) and the completion of six additional hours of PSY courses.

PSY 302 Topical Seminar (3). A particular topic or combination of topics will be covered when there is sufficient student interest. Students will be expected to contribute to discussions on the basis of readings in the selected areas. May be repeated. Prerequisite: PSY 180 or HON 180.

PSY 303 Social Psychology (3). A survey of current theory and research regarding social behavior. Topics addressed include person perception, self-perception, attitude change, influence, pro-social behavior, transgressive behavior and group phenomena. Prerequisite: PSY 180 or HON 180.

PSY 307 Abnormal Psychology (3). Introduction to the definition, classification, causes and treatment of abnormal behavior. Research methodologies and findings receive emphasis equal to that of "clinical" or applied considerations. Prerequisite: PSY 180 or HON 180.

PSY 310 Health Psychology (3). An exploration of theories, research, and interventions that emphasize interactions among biological, psychological, and social influences on physical health and health behavior. Topics include theories of health behavior, stress, coping, and psychology's role in medicine. Prerequisite: PSY 180 or HON 180.

PSY 321 Sensation and Perception (3). A study of the sensory systems, psychophysical methods, and principles of perception that contribute to conscious experience. Prerequisite: PSY 180 or HON 180.

PSY 322 Motivation and Emotion (3). Presentation of basic concepts of motivation and emotion. Prerequisite: PSY 180 or HON 180.

PSY 325 Introduction to Clinical Psychology (3). An introduction for undergraduate students to the field and profession of clinical psychology. Topics covered include the historical and cultural context of the field, its scientific and theoretical aspects, the nature of psychological assessment, and the various intervention approaches in current use. Prerequisite: PSY 180 or HON 180.

PSY 326 Psychology of Language (3). A survey of psychological research on language behavior and the role of language in social and cultural contexts. Emphasis on understanding language processes in both the adult speaker and the child acquiring language. Prerequisite: PSY 180 or HON 180.

PSY 327 Problem-Solving and Decision-Making (3). An introduction to behavioral decision making theory, research. Topics include the roles of memory and knowledge organization in critical thinking, logic and reasoning in problem-solving, decision-making under uncertainty, heuristics and biases, and multidisciplinary applications. Prerequisite: PSY 180 or HON 180.

PSY 331 Experimental Analysis of Behavior (3). An introduction to core concepts and principles of behavior analysis. Overarching themes include philosophical assumptions of behavior analysis, operant and respondent conditioning, and verbal behavior. Prerequisite: PSY 180 or HON 180.

PSY 332 Behavioral Measurement and Assessment (3). An introduction to behavioral measurement, behavioral assessment, and single care experimental designs. Overarching themes include designing, implementing, and evaluating various behavioral measurement systems, with particular attention placed on functional behavioral assessment. Prerequisite: PSY 180 or HON 180.

PSY 333 Applied Behavior Analysis (3). An introduction to fundamental elements of behavior change and specific behavior change procedures. Emphasis will be placed on designing, implementing, and evaluating the effectiveness of various behavior change procedure. Prerequisite: PSY 331 or PSY 332.

PSY 334 Behavioral Approaches to Autism Spectrum Disorder (2). An overview of the etiology, clinical description, and behavioral treatments of autism spectrum disorder. An emphasis will be placed on applied behavior analytic assessments and interventions that target behavioral deficits and excesses common in this population. Prerequisite: PSY 331 or PSY 332.

PSY 335 Seminar in Ethics and Professional Conduct in Behavior Analysis (1). A survey and discussion of the professional conduct of behavior analysts and the ethical standards of the field. Emphasis is placed on the Behavior Analyst Certification Board's Professional and Ethical Compliance Code for Behavior Analysts. Prerequisite: PSY 331 or PSY 332.

PSY 360 Directed Individual Study (1-3). Individual programs involving readings or conducting a research project in psychology. **Note:** Arrangement for faculty supervision is required prior to enrolling. May be repeated to a maximum of nine hours. No more than three hours count toward the psychology major. Does not count toward psychology minor or University Studies requirements. Prerequisites: approval by a faculty sponsor and the department chair.

PSY 373 Psychology of Consumer Behavior (3). A survey of current psychological theory and research regarding behavior of consumers. Topics addressed include perception, cognition, learning and memory, emotion and motivation, intentions, buying behaviors, effects of social contexts, effects of cultural contexts, sales interactions and applications to not-for-profit settings. Prerequisite: PSY 180 or HON 180.

PSY 390 Animal Behavior (3). This course is a survey of categories of behavior and the variables that influence these behaviors across species. Prerequisite: PSY 301 or permission of instructor.

PSY 402 Senior Seminar in Psychology (3). This course draws together the knowledge and analytical skills developed during the psychology major course of study and provides students with the opportunity to apply them to the study of a particular topic or combination of topics. Students will be expected to contribute to discussions on the basis of readings in the selected areas. Prerequisites: PSY 300 and 301; completed or concurrent enrollment in PSY 260, 303, 307, 414, and 415; senior standing.

PSY 403 History and Systems of Psychology (3). A survey of the systems and theories of psychology with emphasis on their historical development. Modern psychology is studied in the context of its philosophical roots and the evolution of the other sciences. Prerequisites: PSY 300 and 301; completed or concurrent enrollment in PSY 260, 303, 307, 414, and 415; senior standing.

PSY 404 Drugs, Alcohol and Behavior (3). This course provides a survey of the social, biological and psychological aspects of substance abuse, chemical dependency and addictive disorders. Prerequisite: PSY 180 or HON 180.

PSY 405 Industrial and Organizational Psychology (3). A survey of current theory and research regarding human behavior in industrial and organizational settings. Topics addressed include selection and placement, training and development, motivation, job satisfaction and performance, leadership, work environment, human factors, engineering and safety. Prerequisite: PSY 180 or HON 180.

PSY 406 Personality (3). The organization of the psychological characteristics which contribute to the uniqueness of the individual. Prerequisite: PSY 180 or HON 180.

PSY 408 Applied Research Design and Analysis (3). An advanced course designed to develop a comprehensive, integrated, and applied knowledge of issues surrounding the design, implementation, analysis, and evaluation of psychological research. Topics covered include research ethics, reliability and validity, descriptive and experimental design issues, and advanced statistical techniques. Students will be expected to design, conduct, and report the results of an original research project. Prerequisites: PSY 300 and 301; completed or concurrent enrollment in PSY 260, 303, 307, 414, and 415; senior standing.

PSY 414 Psychology of Learning and Memory (3). Concerned with the principles and concepts of animal and human learning, and their bases in research. The student is introduced to learning theories. Prerequisites: PSY 300 and 301 (or concurrent enrollment), or consent of instructor.

PSY 415 Physiological Psychology (3). An introduction to physiological psychology as the study of the relationships between biological events and behavior. The structure and function of the human nervous system are studied. Prerequisites: BIO 101 or 221 and PSY 300 (or concurrent), or permision of instructor.

PSY 460 Directed Individual Study II (3). Advanced individual programs involving readings or conducting a research project in psychology that involves the creative application of psychological concepts. Students are expected to design, conduct, and report the results of an original project. Arrangement for faculty supervision is required prior to enrolling. Prerequisites: PSY 300, 301 and 360; completed or concurrent enrollment in PSY 260, 303, 307, 414, and 415; senior standing and approval by faculty sponsor and the department chair.

PSY 471 Behavior Modification (3). This course presents assumptions, concepts and methods of behavior modification. Emphasis is on broad psychological theory and application to human problems. Prerequisite: PSY 180 or HON 180 or permission of instructor.

PSY 487 Internship (3). An internship related to the professional objectives of the student for which he/she may receive academic credit and possible monetary compensation. Arrangements for faculty supervision is required prior to enrolling. Prerequisites: PSY 300 and PSY 301; completed or concurrent enrollment in PSY 260, 303, 307, 414, and 415; senior attending; supervision is required by the department chair.

PSY 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

PSY 499 Senior Thesis (3). An undergraduate research thesis for outstanding senior majors only. Prerequisites: PSY 300 and 301; completed or concurrent enrollment in PSY 260, 303, 307, 414, and 415; senior standing; and permission of the department chair upon nomination by a faculty member.

PSY 600 Statistics (3). Basic concepts of statistics are stressed. Specific topics include techniques dealing with single distributions, some correlational methods, probability, and an introduction to inferential statistics. Students enrolled for graduate credit will be required to fulfill additional requirements.

PSY 602 Graduate Seminar (1-3). Topical seminars in psychology. May be repeated to a maximum of six hours. Prerequisite: permission of instructor.

PSY 604 Drugs, Alcohol and Behavior (3). This course provides a survey of the social, biological and psychological aspects of substance abuse, chemical dependency and addictive disorders.

PSY 605 Industrial and Organizational Psychology (3). A survey of current theory and research regarding human behavior in industrial and organizational settings. Topics addressed include selection and placement, training and development, motivation, job satisfaction and performance, leadership, work environment, human factors, engineering and safety. Students enrolled for graduate credit will be required to fulfill additional requirements.

PSY 606 Personality (3). The organization of the psychological characteristics which contribute to the uniqueness of the individual. Students enrolled for graduate credit will be required to fulfill additional requirements.

PSY 608 Applied Research Design and Analysis (3). An advanced course designed to develop a comprehensive, integrated, and applied knowledge of issues surrounding the design, implementation, analysis, and evaluation of psychological research. Topics covered include research ethics, reliability and validity, descriptive and experimental design issues, and advanced statistical techniques. Students will be expected to design, conduct, and report the results of an original research project. Students enrolled for graduate credit will be required to fulfill additional requirements.

PSY 610 Graduate Seminar in General Experimental Psychology (3). A forum for discussing a wide range of issues related to research, academics, and other aspects of graduate school and careers in psychology. Students learn about requirements of the Master's Degree in General Experimental Psychology and research interests of the faculty. The course meets one day per week, for one hour and is graded pass/fail.

PSY 620 Graduate Seminar in Professional and Ethical Issues (1). A survey and discussion of the professional aspects of clinical psychology and the ethical standards of the field. Emphasis is placed on the ethical principles and statements of the American Psychological Association in regard to the practice of psychology, the conduct of research, and the use of psychological tests. Prerequisite: psychology graduate program.

PSY 621 Biological Bases of Behavior (3). An advanced-level survey of the biological processes that underlie behavior. Prerequisite: psychology graduate program or permission of instructor.

PSY 622 Cognitive Bases of Behavior (3). An advanced-level survey of the cognitive processes that underlie behavior. Prerequisite: psychology graduate program or permission of instructor.

PSY 623 Social Bases of Behavior (3). An advanced-level survey of the social processes that underlie behavior. Prerequisite: psychology graduate program or permission of instructor.

PSY 624 Developmental Bases of Behavior (3). An advanced-level survey of the developmental processes that underlie behavior. Prerequisite: psychology graduate program or permission of instructor.

PSY 645 Clinical Measurement and Evaluation I (3). Emphasis is placed on administration, scoring and clinical interpretation of a variety of intelligence tests. Report writing and research underlying intelligence tests and psychological evaluations are presented. Prerequisite: clinical psychology graduate program or permission of instructor.

PSY 651 Correlational Research Design and Statistics (3). An integrated treatment of advanced correlation and regression research designs and analyses. Topics include parametric and nonparametric measures of correlation and association; chi-square goodness-of-fit and tests of independence; simple and multiple regression.

PSY 652 Univariate Research Design and Statistics (3). Advanced experimental design and research methodology is combined with a detailed treatment of analysis of variance.

PSY 655 Topical Seminar in Research Design and Analysis (3). Selected topics in research design and data analysis. May be repeated for a maximum of six credit hours. Prerequisite: Permission of instructor.

PSY 662 (681) Advanced Adolescent Psychology (3). Analysis and appraisal of scientific studies dealing with the problems characteristic of the adolescent period. Observations and library research projects supplement class assignments.

PSY 664 Psychopathology (3). Theories and research pertaining to the etiologies, symptoms and prognosis of various behavior disorders are discussed. Prerequisite: clinical psychology graduate program or permission of instructor.

PSY 665 Clinical Measurement and Evaluation II (3). Emphasis on the theory and application of personality tests used in clinical settings. Practice in the administration, scoring and interpretation of various clinical instruments will be afforded. Prerequisites: PSY 645 and permission of instructor.

PSY 666 Advanced Clinical and Ethics Seminar (1-2). This course provides group discussion of active clinical cases, with attention paid to increasing diagnostic accuracy and sophistication, learning varied therapeutic approaches and becoming proficient in clinical interventions with demonstrated empirical support. Emphasis is placed on the understanding and resolution of legal and ethical issues that arise in clinical work. This course may be repeated for a maximum of four hours of credit. Graded pass/fail. Prerequisite: clinical psychology graduate program.

PSY 667 Practicum in Psychology (3). The student will work under close supervision in a clinical installation. Problems concerning psychopathology, diagnostics and psychotherapy will form the core of the work. This course may be repeated for a maximum six semester hours of credit. Prerequisites: PSY 620, 645, 664, 665, and 670 with a grade of *B* or above in each; an overall GPA of 3.0; and permission of instructor.

PSY 668 Advanced Practicum (1-3). The student will work under supervision of a licensed psychologist in a mental health facility. Emphasis is placed on the application of assessment and psychotherapy techniques with families, adults and children. This course may be repeated for a maximum of six hours of credit. Prerequisites: PSY 645, 664, 665, 667, and 670, with a minimum GPA of 3.0; at least two of the following: PSY 671, 672, 682, or 686; and consent of the instructor. Limited to students enrolled in the MSU master's degree program in clinical psychology.

PSY 670 Psychotherapeutic Procedures (3). Theories, practice and research are reviewed, with special emphasis on therapeutic procedures. Prerequisite: clinical psychology graduate program or permission of instructor.

PSY 671 Behavior Modification (3). An exploration of the learning foundations of behavior therapy together with a review of the methods, applications and research concerning behavior therapy. Prerequisites: permission of instructor.

PSY 672 Family Therapy (3). An advanced clinical course with emphasis on the major family therapy theories, ethical issues, and consideration of cultural factors in working with families. Practice will be afforded for students in the application of assessment and therapeutic procedures with families. Prerequisites: PSY 664, 670, previous or concurrent enrollment in PSY 667, and permission of instructor.

PSY 673 Acceptance and Mindfulness-Based Therapies (3). An advanced clinical course focused on acceptance and mindfulness-based theories, processes, procedures, and assessments. Students will gain conceptual knowledge of course concepts via readings and discussion with an equal emphasis placed on experimental contact with course concepts via clinical role-plays and demonstrations. Prerequisites: PSY 664, 670, and permission of instructor.

PSY 674 Adult Trauma Therapies (3). An advanced clinical course with emphasis on trauma exposure, pathology, and psychological treatments for adult survivors of trauma. Students will learn and practice assessment and therapeutic procedures for adult trauma survivors. Prerequisites: PSY 664, 670, and permission of instructor.

PSY 682 Child Clinical Psychology (3). An advanced course with emphasis in developmental theories in relation to childhood psychopathology, therapeutic procedures with children, and specialized assessment techniques. Prerequisites: PSY 664, 670, or permission of instructor.

PSY 683 Tests and Measurements (3). The selection, administration and uses of psychological tests are discussed, with emphasis on application in educational settings. (Same as CNS 683.)

PSY 684 Directed Individual Study (1-3). Individual programs involving readings or conducting a research project in psychology. Note: Arrangements for faculty supervision are required prior to enrolling. May be repeated to a maximum of nine hours. Prerequisites: approval by a faculty sponsor and the departmental chair.

PSY 686 Group Psychotherapy Techniques (3). Emphasis on theory and application of the therapeutic techniques with groups. Prerequisite: permission of instructor.

PSY 688 Multivariate Research Design and Statistics (3). A survey of multivariate statistical techniques, including multiple correlation and regression, canonical correlation, multivariate analysis of variance, discriminant function analysis, and factor analysis. Computer-based techniques of statistical analysis are emphasized. Prerequisite: PSY 652 or permission of instructor.

PSY 691 Principles of Learning (3). Techniques and principles of human and animal learning behavior, and an introduction to theories. Experimental evidence will be stressed.

PSY 698 Thesis (3).

PSY 699 Thesis (3).

READING (REA)

REA 096 Fundamental Reading Skills (1). Designed to prepare students for college level reading through practice in reading comprehension and vocabulary strategies. Emphasis is placed on applying analytical and critical reading skills to a variety of texts. The course is required for students with reading ACT scores of 16 or below. Advanced placement into a higher level reading course is possible through Murray State University's Center for Academic Success reading assessment exam. Credit earned in this course may not be counted toward graduation requirements. Graded pass/fail. Prerequisite: Reading ACT of 16 or below or or KYOTE Reading score of 19 or below.

REA (ENG) 112 Fundamental Writing Skills I (1). A reading and writing skills course that emphasizes college reading, group discussion, and writing application. Does not count toward an English major, minor, or University Studies requirements. Corequisite: ENG 105 or consent of program director.

REA 404 (ELE 307) Teaching Elementary Language Arts (3). An exploration of the content, methods, and materials for teaching the language arts at the elementary level. Emphasis is on integrating the language arts across the curriculum. Field experiences required. Corequisite: REA 406. Prerequisite: EDU 303.

REA 405 (ELE 305) Children's Literature for Early and Developing Readers (3). A critical study of the quality literature in a variety of genres for early and developing readers in grades P-5. This course is designed to help further teachers' knowledge of the importance of books and reading in the life of the young child and to develop a knowledge and appreciation of the wide variety and scope of recreational and information materials available for primary through grade 5. Field experiences required. Prerequisite: EDU 303.

REA 406 (306) Literacy Development in the Elementary School (3). An introduction to the teaching of reading and writing in the elementary school. Emphasizes the role of children's literature in reading and writing development. Field experiences required. Corequisite: REA 404. Prerequisite: EDU 303.

REA 407 Middle School Reading (3). Course provides an overview of research-based literacy practices appropriate for teaching students in the middle grades. Emphasis is placed on teaching strategies designed to enhance comprehension and vocabulary development for students across the curriculum. Field experiences required. Prerequisites: MID 342 and admission to Teacher Education.

REA 412 Assessment and Strategies for Struggling Readers (3). A practicum providing classroom experiences in applying current assessments, methods, and materials in teaching reading to individuals and/or groups who are struggling with reading. This course addresses the use of reading assessments to determine classroom intervention and instructional strategies. It provides foundational information about stages of reading acquisition, factors that impact reading success or failure, and the nature of reading difficulties. Instructional strategies focus on building vocabulary skills, phonics, phonemic awareness, fluency, using teacher modeling, and building comprehension monitoring skills. Prerequisites: REA 406 and admission to Teacher Education.

REA 427 Teaching Content Area Literacy in the Secondary School (1). Designed to help the secondary school teacher teach literacy in the content areas. Topics covered are literacy process, word recognition skills, comprehension, diagnostic prescriptive instruction and reading in the content areas.

REA 612 Foundations of Literacy (3). An advanced course in reading and writing instruction designed to enable classroom teachers to model and implement a variety of research-based instructional strategies and activities in an authentic instructional context.

REA 618 Content Area Literacy K-12 (3). This course builds upon theoretical perspectives and strategies for developing the literacy abilities of students in grades K-12 in the content areas. Attention is given to ways of making the most effective use of textual materials across the curriculum. A component of the course includes projects and/or activities which relate to an academic area of study or instructional responsibility.

REA 623 Enrichment in Reading (1-3). Provides an opportunity for advanced study of topics not covered in depth in other reading courses. Each topic involves work completed prior to class sessions, and the completion of a product appropriate to the topic's content. Check with instructor before enrolling for specific dates of activities. Prerequisite: REA 612 or permission of instructor.

REA 624 Kentucky Reading Project (3). This yearlong professional development initiative increases students' ability to design standards-based literacy activities, implement a balanced literacy approach, and encourage family involvement in literacy. Students participate in a two-week summer institute and four follow-up sessions during the academic year. They present their literacy action projects at a statewide share fair in the spring. Prerequisite: permission of instructor.

REA 626 Word Study: Phonics, Spelling, and Vocabulary (3). This course is designed to help teachers and reading specialists assess the word knowledge of students and to make informed decisions regarding instruction based on that assessment. This course will provide hands-on opportunities to make conceptually based word study lessons to meet developmental needs in phonics, spelling, and vocabulary. Prerequisite: REA 612.

REA 627 Teaching Reading in the Secondary School (3). Designed to help the secondary school teacher teach reading in the content areas. Topics covered are reading process, word recognition skills, comprehension, diagnostic prescriptive instruction, and reading in the content areas.

REA 628 Literacy Assessment (3). Designed to enable classroom teachers and reading specialists to implement a variety of technology-based assessment tools and strategies, to facilitate learning, provide appropriate instruction, make language learners aware of their own strength and needs as readers, writers, listeners, and speakers, and enhance teacher and curriculum development. Assessment strategies include: anecdotal records, checklists, interviews, conferences, observations, performance events and exhibitions, open-ended questions, self-assessment/reflection, running records, miscue analysis, and oral language assessment. Emphasis is on ways to work with teachers in classrooms and professional development to bring about educational reform and improvements in teaching and literacy instruction. Prerequisite: REA 612.

REA 638 Assessment and Instruction of Children with Reading Difficulties (3). A study of the causes of reading difficulties and procedures used to support P-12 students with reading difficulties. Approaches reading difficulty from a holistic view. Attention is given to technology-based assessment strategies, curriculum materials, and remedial procedures for correction. Prerequisite: REA 612**.**

REA 639 Supervised Practicum in Reading (3). Designed for teachers, clinicians, literacy coaches, and reading specialists. Emphasis will be placed on designing and supervising a reading program in a public or private setting. Repeatable for up to six hours of credit. Prerequisites: REA 612, 628, and 638.

REA 648 Research in Reading (3). Independent study, under the guidance of a supervising faculty member, which addresses an issue, problem or question pertinent to reading/literacy development. The issue, problem or question is to be selected by the student and approved by the instructor prior to the study. Prerequisites: REA 612 and 628 or REA 638.

RECREATION (REC)

REC 108 Golf (1).

REC 112 Open Water Scuba Diving I (2).

REC 113 Yoga for Wellness (1). Introductory level class teaching the basics of Hatha Yoga and how incorporating the practice of yoga with other healthy lifestyle choices can enhance wellness. Class will meet twice weekly for one hour. Graded pass/fail.

REC 118 Tai Chi Chuan (2).

REAL ESTATE (RES)

RES 132 Real Estate Principles I (3). A study of the basic essentials involving real estate transaction, terms, law, financing, and the general operation of the numerous specialties of the real estate business. License law requirements and professional ethics are considered.

RES 134 Real Estate Marketing I (3). An introduction to real estate market analysis and marketing techniques. Emphasizes the study of basic essentials of listing, prospecting, qualifying clients, showing of real estate, advertising and the organization of time.

RES 136 Real Estate Appraising (3). Analyzes the basic principles of property use and value, and the locational factors affecting valuation. Treats the theory and practice of real estate appraisal, introduces the cost, market and income approaches, the appraisal process and the techniques of area and site analysis. Report writing and the appraisal report are covered as is the scope of real estate appraising and the ethics of the professional appraiser. Prerequisite: RES 132.

RES 226 Real Estate Finance (3). The study of the money and capital markets and institutions as they influence real estate finance, mortgage banking, government activity in the financing of real estate, interest rate changes and their influence, and the major real estate financing instruments. Prerequisite: RES 132 or permission of instructor.

RES 242 Real Estate Law (3). Comprehensive survey of the law of realty as it effects the real estate professional. A study which involves historical and recent developments in legislation and court precedent affecting real estate, with emphases in license law, real estate commission rules and regulations and professional ethics. Prerequisite: RES 132 or permission of instructor. (Same as LST 242.)

RES 246 Advanced Appraising (3). A continuation of RES 136, Real Estate Appraising. Prerequisite: RES 136, or permission of instructor.

RES 338 Real Estate Brokerage Management (3). A compilation of the planning, procedures and techniques needed to establish a successful real estate brokerage management system. This course is intended to meet brokers' licensing requirements pursuant to the Kentucky Real Estate Commission and Kentucky Administrative Regulations 201 KAR 11:450.

RES 342 Real Estate Law II (3). This course is a comprehensive survey of the law of realty as it affects the real estate professional. A study which involves historical and recent developments in legislation and court precedent affecting real estate, with emphasis in license law, real estate commission rules and regulations and professional ethics. Prerequisite: RES 242.

RELIGIOUS STUDIES (RGS)

RGS 100 Comparative Mythology (3). Introductory survey of approaches to the study of mythology, of common themes in mythology, and the analysis and exegesis of mythological texts from multiple regions, societies, religious groups, and time periods. Possible topics include the place of mythology in religion and the interaction between mythology and literature, art, and culture.

RGS 200 Introduction to Religious Studies (3). A introduction to the major issues, topics, and concepts used in the study of religion with attention to the way scholars have analyzed and explain religion. This course also looks at how issues, topics, and concepts have developed in some of the major world religions.

RGS 221 (321) Philosophy of Religion (3). A study of basic philosophical issues in the consideration of religion, such as the basis of religious belief, the nature of religion, the cogency of talk about God, the meaning of evil. (Same as PHI 321.)

RGS 300 Foundations of Judaism and Christianity (3). Introduction to the development of distinctive traits and traditions of Judaism and Christianity; cultures, beliefs, practices, institutions, and experience from biblical times to the present.

RGS 301 Western Religious Thought in the Modern World (3). Response of Western religious thinkers to major challenges to traditional religious faith posed by the emergence of modern intellectual, social, political norms. This course may be repeated, subject to approval of religious studies coordinator.

RGS 302 Medieval Europe (3). A survey of the major events in Western history from the Fall of Rome to the Renaissance, with special emphasis on those political, economic, social and cultural-intellectual forces and institutions that helped form the modern world outlook. (Same as HIS 302.)

RGS 306 Europe in Renaissance and Reformation (3). A survey of the development of Western Europe, emphasizing the Protestant and Catholic Reformations, the Crisis of the seventeenth century, and France under Louis XIII and XIV. (Same as HIS 306.)

RGS 309 Survey of World Religions (3). A study of the historical development of Christianity, Islam, Buddhism and other world religions, with emphasis placed upon their similarities and differences. (Same as HIS 309.)

RGS 316 The Bible as Literature (3). A study of the Bible as a literary source. Prerequisites: ENG 101 and 102 or ENG 105 or 150. (Same as ENG 316.)

RGS 317 Literature and Religion (3). Course that explores the intersections between literature and religion within larger cultural contexts. Depending on individual research needs and the interest of the group, mandatory field experiences may be scheduled. Prerequisites: CIV 201, 202; HUM 211, 212 or equivalent. (Same as ENG 317.)

RGS 322 History of Religion in the United States (3). The historical development of organized religion in America, with emphasis placed upon the relationships between religion and other features of American society. (Same as HIS 322.)

RGS 350 Special Topics (3). A study of religion by examining a subject chosen for its particular topical or thematic interest. Specific topics will vary according to student and faculty interests. May be repeated for a maximum of nine credit hours.

RGS 354 Ancient Near East (3). A survey of Near Eastern history from prehistoric times to the end of the Persian Empire. Included are the emergence and development of civilizations in Mesopotamia, Asia Minor, Syria, and the Levant; the origins and influence of Near Eastern religions including polytheistic cults, Judaism, and Zoroastrianism; and the development of societies from city-states to large territorial empires. Special attention will be given to the art, literature, philosophy, and material culture of the civilizations within the region. **(**Same as HIS 354.)

RGS 355 A Global History of Islam to 1800 (3). Course explores the emergence and expansion of Islam from the seventh to the eighteenth century. Topics will include the rise of Islam within its Middle Eastern context, the development of the caliphate, the question of succession, Middle Eastern experience of the Crusades, and the diverse expressions of Islam as it expanded throughout Asia, Africa, Europe, and the Americas. Islam will be studied as a global religion, examining the major movements and trends within Islamic theology, sciences, philosophy, art, and architecture. (Same as HIS 355).

RGS 356 The Art of Non-Western Cultures (3). Study of the arts of Asia, Oceania, Africa, and the Pre-Western Americas. (Same as ANT, GDS 356.)

RGS 362 Ancient Egypt (3). A survey of Egyptian history from prehistoric times to the Late Period. Included are developments during the pre-and proto-dynastic periods; the formation and general history of the Old, Middle, and New Kingdoms; and the collapse of Egyptian society leading to the Persian conquest. Topics covered will include Egyptian religious beliefs, organization, daily life, and contributions to world culture. (Same as HIS 362.)

RGS 363 Ancient Greece (3). A survey of Greek history from prehistoric times to Alexander the Great. Included are developments during the Bronze Age Minoan and Cycladic cultures, Mycenaean civilizations, the origin and formation of the Greek city-state, and the history of individual city-states such as Athens and Sparta. Special attention will be given to Greek art, literature, and philosophy, as well as the impact of Greek culture on later civilizations. (Same as HIS 363.)

RGS 364 Ancient Rome (3). A survey of Roman history from prehistoric times to the Third Century Crisis. Included are the origins of the city of Rome, the Roman monarchy, the origin and the formation of the Roman Republic, Republican society and philosophy, the transition from Republic to Empire, and the impact of Rome on the territories and peoples it conquered. Special attention will be given to Roman artistic, literary, and philosophical influences, as well as the impact of Roman culture on later civilizations. (Same as HIS 364.)

RGS 395 Archaeology of Religion (3). A survey of the archaeological evidence for religions throughout the world, from the earliest expressions of spirituality to the modern world religions. Emphasis is placed on the archaeological evidence for recognizing religious expressions in general, and for the emergence of modern world religions. Archaeological interpretations of New World, African, and Australian religions will be considered in comparative perspective. Fieldwork to a house of worship or cemetery will be required. Prerequisite: ARC 150 or permission of instructor. (Same as ARC 395.)

RGS 400 Seminar (3). Selected topics. May be repeated for a maximum of six credit hours. Prerequisite: advanced undergraduate standing or permission of instructor.

RGS 410 Directed Study (1-3). Course involves readings or other study in advanced topics, deconstruction of sacred texts, analyses of historical/theological issues, and comparisons and contrasts of the world's religions. May be repeated for a maximum of six credit hours. Prerequisite: permission of instructor.

RGS 415 Science and Religion (3). A survey of the relationship between science and religion in Western culture from ancient Greek times to the 20th century, with particular emphasis on how science has been influenced by both religious faith and religious institutions. (Same as HIS 425)

RGS 417 Medieval Art (3). Topics in the history of art from the Early Christian through the Gothic period. Prerequisite: ART 211 or permission of instructor. (Same as ART 416.)

RGS 420 Sociology of Religion (3). A study of the interrelationships of society, culture and the institution of religion. Prerequisite: SOC 133 or permission of instructor. (Same as SOC 420.)

RGS 425 Art of Asia (3). A history of the art of India, Central and Southeast Asia, China, Korea, and Japan. Prerequisites: Both ART 211 and 212, or ART 356, or permission of instructor. (Same as ART 425.)

RGS 449 Islam in the Modern World (3). Beginning with the 18th century, the course will cover reform movements, then look at Muslim responses to Western and modern influence in the Islamic world. Finally, the course will examine the rise of radical and moderate trends in Islam. The geographical reach of this course is Eurasia and Africa. Special attention will be paid to political Islam and Islamic terrorist organizations. (Same as HIS 449.)

RGS 459 Genocide in World History (3). This course is a survey of the causes, course, and consequences of genocide throughout world history from the ancient world to the present. It will explore case studies from different areas of the world across time. Special attention will also be given to the issues of religion and religious identity, memory, reconciliation, and justice. (Same as HIS 459.)

SCIENCE (SCI)

SCI 101 Introduction to Science I, Physical Systems (4). An inquiry-based and multidisciplinary course that introduces concepts in chemistry, geosciences, and physics. This course concentrates on physical systems and reflects the National Science Teacher Education Standards.

SCI 102 An Introduction to Science II, Biological Systems (4). An inquiry-based and multidisciplinary course that introduces concepts in biology, chemistry, and environmental science. This course concentrates on ecological systems and reflects the National Science Teacher Education Standards.

SCI 301 Understanding Scientific Communication (3). Course concentrates on the methods for preparation and presentation of scientific papers, posters, and oral communication. Students will utilize a data set to produce a publication-quality manuscript, a poster suitable for a scientific meeting; and a minute presentation such as would be given at a scientific meeting. Topics covered include abstracts, nature of scientific writing, structure and organization of scientific publication, use of literature, graphics and graphic design, and methods of polishing the oral and poster presentations. (Same as GSC 301.)

SECONDARY EDUCATION (SEC)

SEC 420 Practicum in Secondary Schools (3). A concentrated practicum experience for upper division students, which will include planned and supervised mini-teaching experiences with middle and/or senior high students as well as laboratory experiences in the development of teaching strategies and curriculum materials. (54 hours of field placement in a public school classroom.) This course encompasses practicum experience for Art P-12; Biology 8-12; Career and Technical Education 5-12 (Business/Marketing, Family and Consumer Sciences, and Engineering Technology); Chemistry 8-12; Economics 8-12; English 8-12 (TESOL P-12); French P-12; Geoscience/Earth Science 8-12; German P-12; Health and Physical Education P-12; History 8-12; Japanese P-12; Mathematics 8-12 (vocal/instrumental); Music P-12; Physics 8-12; and Political Science 8-12. Credit cannot be earned for both SEC 420 and SEC 620. Must be taken two semesters before student teaching. Prerequisites: EDU 303 and admission to Teacher Education.

SEC 421 Student Teaching in the Secondary School (7-14). Student teaching in the secondary school should allow the individual to participate in the work and duties of the school that are generally expected of the classroom teacher. Student teachers will be supervised by a public school teacher as well as a university coordinator. (Will involve 7 or 14 weeks of placement in a public school classroom.) Graded pass/fail. Prerequisites: admission to Teacher Education and Student Teaching.

SEC 422 Extended Practicum (4). Course will provide opportunities for supervised direct involvement with classrooms in the public school setting. Students will implement strategies and procedures used in the education of students. 116 hours of field experience required. Field hours may include experiences at the elementary, middle, or secondary school setting. This course encompasses practicum experience for Art P-12; Biology 8-12; Career and Technical Education 5-12 (Business/Marketing, Family and Consumer Sciences, and Engineering Technology); Chemistry 8-12; Economics 8-12; English 8-12 (TESOL P-12); French P-12; Geoscience/Earth Science 8-12; German P-12; Health and Physical Education P-12; History 8-12; Japanese P-12; Mathematics 8-12 (vocal/instrumental); Music P-12; Physics 8-12; and Political Science 8-12. Prerequisites: EDU 405, SEC 420, and admission to Teacher Education.

SEC 620 Practicum in Secondary Schools (2). A concentrated practicum experience for students enrolled in the Career and Technical Education master's degree leading toward initial certification which will include planned and supervised mini-teaching experiences with middle and/or senior high students as well as laboratory experiences in the development of teaching strategies and curriculum materials. (20 hours of field placement in a public school classroom included.) Credit cannot be earned for both SEC 420 and SEC 620. Prerequisite: CTE 503.

SPECIAL EDUCATION (SED)

SED 300 Educating Students with Disabilities (3). This course introduces students to state and federal laws impacting the education of students with disabilities, prepares them to work collaboratively with other professionals and parents, and teaches them a variety of effective instructional techniques/strategies. It also increases their awareness of the special organizations, associations and other resources that will assist them in meeting their professional needs, the needs of families, and the needs of students with disabilities. Field experience required.

SED 310 (410) Characteristics of and Strategies for Teaching Students with Mild Disabilities (3). Course includes an overview of the educational and social characteristics of children and youth with mild disabilities. It focuses on the development of specific competencies in instruction and curriculum requisite for the development of a personalized educational program for children and youth with mild disabilities. Context includes behavioral objectives, task analysis, precision teaching and use of technology relevant to curriculum and instruction. Field experience required. Prerequisite: SED 300.

SED 350 Roles and Procedures in Special Education (3). Includes an overview of the legal requirements in the process of determining eligibility and delivery of special education services including the individual education plan (IEP) component of federal and state laws. Participants will gain skill in writing individual education plans for students with mild disabilities and information regarding service delivery models. Field experiences required. Prerequisite: SED 300.

SED 404 Special Education Procedures and Strategies in IECE (3). Students will develop skills in writing Individual Education Programs and Individualized Family Service Plans. Students will be introduced to relevant special education legislation, laws and policies. Students will develop skills in matching intervention strategies to the strengths and needs of young children with disabilities and their families. Students will acquire skills in the development and implementation of the Individual Education Program and the Individualized Family Service Plan in a variety of settings. Field experiences required. Prerequisites: SED 526 and admission to Teacher Education.

SED 406 Procedures for Classroom Management and Discipline (3). The content of this course provides educators with the information and skills needed to increase their knowledge of advanced methods, and techniques of classroom management procedures. Field hours are required.

SED 407 Transdisciplinary Assessment of Individuals with Moderate/Severe Disabilities (3). This course involves procedures for assessment of the behavioral and educational performance of individuals with moderate to severe disabilities, task analysis, sequencing behavioral skills and designing individual instructional programs. Students will be provided experience in conducting assessments, developing individual education plans and use of program evaluation techniques related to individuals with moderate to severe disabilities.

SED 408 Functional Behavior Analysis (3). The content of this course provides the student experience in understanding why individuals behave the way they do and how behavior may be taught, changed, and modified. Topics will include behavior management, training strategies, implementation, data-based programming, and field-based teacher research methods. Field hours are required.

SED 409 Instructional Procedures-Students with MSD (3). Course involves preparation in the use of specific methods needed to teach children and youth with moderate to severe disabilities. Adaptations, modifications, and technology used in educational programming as well as communication systems and self-care techniques will be included. Field experiences required. Prerequisite: admission to Teacher Education.

SED 421 Student Teaching in Special Education (7). Student teaching in the special education classroom should allow the individual to participate in the work and duties of the school that are generally expected of the classroom teacher. Student teachers will be supervised by a public school teacher as well as a university coordinator. This will involve seven weeks of placement in a public school classroom. Graded pass/fail. Prerequisites: admission to Teacher Education and student teaching.

SED 425 Content Area Literacy for Students with Mild Disabilities (3). This course is designed to emphasize the detection and remediation of reading difficulties that are typical for students with mild disabilities. Students will be shown how to recognize and remediate reading difficulties. This course would be appropriate for any education major. Field experiences required. Prerequisite: admission to Teacher Education.

SED 455 Practicum (3). Course will provide opportunities for supervised direct involvement with individual children. Students will implement strategies and procedures used in the education of students with mild disabilities. Field experiences required. Prerequisites: SED 410.

SED 526 Education of Young Children with Disabilities (3). Course provides information related to the study of young children with disabilities or who are at risk for disability in terms of their personal, family, and educational needs. Field experiences required.

SED 531 Nature and Needs of Individuals with Moderate to Severe Disabilities (3). Survey of classification, identification, diagnostic techniques and intervention procedures used in the education and training of individuals with moderate to severe disabilities.

SED 537 Diagnostic Methods (3). Instruction which leads to demonstrated competence with instruments utilized in assessment and programming. Field hours are required. Prerequisite: admission to Teacher Education.

SED 554 Classroom Management of Individuals with Mod/Sev Disabilities (3). Study of the techniques and methods necessary for the organization and operation of educational programs for individuals with moderate to severe disabilities. Included are specialized teaching techniques such as precision teaching and behavior management applied to the learning environment as well as scheduling approaches, curriculum models and commercially available materials.

SED 602 Family-Professional Partnerships (3). The course content will focus on the family as an aid in the program or education of their child. Family characteristics will be investigated and related to the implications for meaningful inclusion of the family in the education of a child with a disability. Differential programs for families will be overviewed. Field hours are required.

SED 603 Special Education Law and Procedures (3). Course is designed to familiarize graduate students with the laws and procedures that are required in the process of determining eligibility and delivery of special education services. Students will learn the roles of participants in "Admissions and Release Committee" (ARC), the procedural safeguards, and the order of events in the special education process as determined by federal and state law and procedures. Appropriate for all certified teachers, school psychologists, and administrators serving students with disabilities.

SED 604 Special Education Procedures and Strategies for IECE (3). Students will develop skills in writing Individual Education Programs and Individualized Family Service Plans. Students will be introduced to relevant special education legislation, laws and policies. Students will develop skills in matching intervention strategies to the strengths and needs of young children with disabilities and their families. Students will acquire skills in the development and implementation of the Individual Education Program and the Individualized Family Service Plan in a variety of settings. Field experiences required.

SED 605 Characteristics and Needs of Children and Youth with Mild Disabilities (3). This course surveys the etiologies, characteristics, and learning styles of children and youth with mild disabilities. State and federal definitions for each category of disabilities under the learning/behavior disability certification will be examined. This course should proceed SED 625.

SED 606 Procedures for Classroom Management and Discipline (3). The content of this course provides educators with the information and skills needed to increase their knowledge of advanced methods, and techniques of classroom management procedures. Field hours are required.

SED 607 Transdisciplinary Assessment of Individuals with Moderate/Severe Disabilities (3). This course involves procedures for assessment of the behavioral and educational performance of individuals with moderate to severe disabilities, task analysis, sequencing behavioral skills, and designing individual instructional programs. Students will be provided experience in conducting assessments, developing individual education plans and use of program evaluation techniques related to individuals with moderate to severe disabilities.

SED 608 Functional Behavior Analysis (3). The content of this course provides the student experience in understanding why individuals behave the way they do and how behavior may be taught, changed, and modified. Topics will include behavior management, training strategies, implementation, data-based programming, and field-based teacher research methods. Field hours are required.

SED 609 Instructional Procedures-Students with MSD (3). This course involves preparation in the use of special methods needed to teach children and youth with physical and sensory disabilities. Adaptations, prosthetic devices, and technology used in educational programming as well as communication systems, and self-care techniques will be included. Prerequisite: admission to Teacher Education.

SED 613 Advanced Behavior Support (3). This course is designed to provide an in-depth study of the field of educating children and youth with emotional disturbances and behavioral disorders. The course will include extensive examinations of disability etiologies, theoretical educational approaches, screening and assessment instruments and techniques, educational placement considerations, program development considerations, and ongoing evaluation based on student performance.

SED 614 Advanced Instructional Technology (3). This course includes instruction in technology that is requisite for the Individual Education Program (IEP) for student with mild disabilities. This includes, but is not limited to, assistive technology, technology as a means to meet the needs of different learner types, and students as users of technology.

SED 615 Collaboration Skills for Educators (3). Designed to develop knowledge, skills and abilities relative to collaboration and teamwork. Provides educators with information and skills necessary to collaborate and consult with other professionals, families, and support agencies regarding the design and implementation of educational programs for students with and without disabilities. Field hours are required. Prerequisite: SED 603.

SED 625 Instructional Techniques for Children and Youth with Mild Disabilities (3). Course content focuses on instructional techniques requisite for the development of an individualized educational program (IEP) for children and youth with mild disabilities. Specific methods, media, and materials in the areas of reading, writing, math, and problem solving will be examined. Students will learn to develop a sequence of instruction from the student's present level of performance to annual goals matching instruction to the student's learning style. Prerequisites: SED 603 and 605.

SED 626 Education of Young Children with Disabilities (3). Study of young children with disabilities or who are at risk for disability in terms of their personal, family and educational needs. Field experience required.

SED 631 Nature and Needs of Individuals with Moderate to Severe Disabilities (3). Survey of classification, identification, diagnostic techniques and intervention procedures used in the education and training of individuals with moderate to severe disabilities.

SED 636 Issues and Trends in Special Education (3). Individual programs of study on current issues and trends in special education.

SED 637 Advanced Diagnostic Procedures (3). Instruction which leads to demonstrated competence with instruments utilized in assessment and programming. Field hours are required.

SED 640 Practicum (4-6). Makes provisions for students to participate in all activities and duties generally expected of an interdisciplinary early childhood education teacher or an educator working with students with disabilities. Supervision by the faculty member teaching the course will be provided. The university supervisor will observe students to evaluate their performance based on the appropriate program standards. A graduate portfolio is submitted a the end of practicum. Graded pass/fail.

SED 645 Strategies for Students with Autism (3). Study of the techniques and methods necessary for the organization and operation of educational programs for individuals with autism spectrum disorders. Emphasis will be placed on research-based strategies to enhance communication, learning, and methods for teaching more conventional behaviors.

SED 650 Administration of Special Education Programs (3). This course provides an overview of the history and current status of the organization, administration and supervision of special education programs. Emphasis is on the tasks of organization, administration and supervision, focusing on program planning and development, fiscal management, cooperating agencies, specialized facilities and equipment, legislative provisions, problems of supervision, and instruction in the development, adaptation and evaluation of instruction, curricula, methods, materials, and resources.

SED 651 Social Competence for Safe Environments (3). This course is designed to facilitate an understanding of the priority role that social competence should take in the school and post-school success of children and youth with severe behavior problems. Theories underlying social skills acquisition and practical approaches for implementation will be emphasized. Training strategies dis-

cussed will be applicable to a variety of educational environments, including residential, day-treatment, alternative education programs, public, and private schools. Field hours are required.

SED 652 Assessment and Program Planning for Infants, Toddlers and Preschoolers and Families (3). Students will develop skills in formal and informal assessment practices for young children birth through preschool. They will develop knowledge and skills in developmental screening, curriculum-based assessment, program evaluation, and evaluation for determining eligibility for special education services. Field experiences required.

SED 653 Methods and Materials for Infants, Toddlers and Preschoolers (3). This course explores the importance of understanding the nature of young children (birth to five years) and how they learn. The course will emphasize adaptation of curriculum and intervention approaches. The course includes teaching strategies and materials selection and use. Field experiences required.

SED 654 Classroom Management of Individuals with Mod/Sev Disabilities (3). Study of the techniques and methods necessary for the organization and operation of educational programs for individuals with moderate to severe disabilities. Included are specialized teaching techniques such as precision teaching and behavior management applied to the learning environment as well as scheduling approaches, curriculum models, and commercially available materials.

SED 655 Special Education Transition (3). The focus of this course is to support successful transition from school to community life. This includes transitions from different grade levels as well as from public schools to private life.

SED 657 School Safety and Classroom Management (3). Course provides educators with the information and skills needed to create conditions that promote and maintain positive, safe, and healthy school culture, climate, and environments. Educators will also increase their knowledge of advanced strategies and techniques for classroom, school-wide, and district level, positive behavior management procedures. Field hours are required.

SED 660 Problems in Special Education (3). This is an advanced seminar dealing with special topics. Course may be repeated as additional topics are offered.

SED 685 Positive Instructional Behavior Supports (3). To gain expertise in teaching students with emotional behavioral disorders. Attendance at Kentucky Department of Education's Behavior Institute is required.

SED 690 Exit Seminar in Special Education (1). Provides opportunity for students to conduct a self-analysis of knowledge, skills and abilities relative to the graduate program completed. This is accomplished by a review of past textbooks and notes, small group discussions, simulations, role-playing as well as finalizing of the eligibility portfolio. Course is repeatable up to two hours. Prerequisites: SED 605 and be within six hours or less of completing the program.

SED 695 Independent Study (3-6). The independent study is available for selected students who desire to investigate an area not covered in the course work in special education. A final written paper will be submitted to the faculty member directing the study. Prerequisite: advance written proposal approved by the faculty member directing the study.

SOCIOLOGY (SOC)

SOC 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Graded pass/fail.

SOC 133 Introduction to Sociology (3). This course will introduce students to sociology and the sociological perspective by focusing upon contemporary societies. Through a study of key concepts such as culture, society, group behavior, population, family, stratification, community, social institutions, and change, students will be given the tools by which to understand better their society and others around the world. SOC 133 will not fulfill the requirements of HON 133.

SOC 231 Social Problems (3). This course is intended to provide the student with a conceptual framework within which to examine social problems. The class will examine the links between technological development, population growth, environmental degradation, social change and disorganization, social inequality, deviance and crime. An approved social science University Studies elective.

SOC 250 Global Sociology (3). This course will provide students with a better appreciation of the value of the sociological perspective in understanding different societies and cultures. The course will focus upon demographic factors shaping societies, values and norms, social inequality, and agents of social changes such as globalization.

SOC 269 Popular Culture (3). Course examines the production, effects, a d meaning of popular television, movies, music, art, sports, and other cultural goods using sociological theory. Questions of how popular culture influences our perceptions of race, class, and gender are critically analyzed.

SOC 300 Social Theory (3). A study of the great classical tradition in sociological theory and the expression of this tradition in contemporary theory. The course will include (but not be limited to) such theorists as Weber, Marx, Durkheim, and Spencer.

SOC 305 Social Issues (3). This seminar will cover an important topic or related topics. Both student and faculty interest will determine the topic. Students will both contribute and lead discussions of the readings. Research paper is required. May be repeated for a maximum of nine credit hours.

SOC 315 Addiction: Treatment and Society (3). An overview of current theories, models and definitions of addictive disorders, with focus on both the addictive and recovery processes. The role of the social worker/helping professional in identification, intervention and treatment will be stressed. The needs of special populations, diverse populations and family and adolescent issues will be addressed. Prerequisite: junior standing. (Same as SWK 315).

SOC 325 Sociology of Food (3). Course will highlight the social and cultural dimensions of the human food system, from production to consumption. Topics include an examination of food production over time, analysis of food's role in religious observances, food taboos, food and social stratification, gender roles, food and body images.

SOC 331 The Family (3). This course will examine the contemporary family system in America. To gain an understanding, an historical perspective on the family will be provided along with some cross-cultural data on other family systems. Contemporary research findings will be presented on such topics as subcultural variations, gender roles, power, romantic love and mate selection, marriage and divorce, and alternative family structures.

SOC 332 Sociology of Childhood (3). Course places children at the center of inquiry, while recognizing that the meaning of childhood changes over time and place, and between social contexts and social groups. It examines how children are not just socialized by adults, but also shape their own (and adult) experiences. It will also examine various social problems as they relate to children and youth.

SOC 333 Sociology of Education (3). This course examines educational institutions, practices, and social issues. It examines the ways in which schools are embedded within historical, political, economic, and cultural contexts; the complexity of relationships with families/communities that they serve; and the role that education plays in stratification, social mobility, and social reproduction.

SOC 334 Sociology of Migration (3). Course uses a critical theoretical framework to examine migration, immigration, and emigration. Topics include: diverse factors and processes that influence crossing borders, immigration policies and rights, impact of migration on place of origin and destination, and mobility. Students also consider the impact of migration on transnational networks; intersections of race, class, gender, and sexuality with migration; and transcultural identities.

SOC 335 Sociology of Organizations (3). Theories of formal and informal organizations, bureaucratic systems, alternative systems, and organizational change. Special emphasis will be placed on the relationship between the

organization and its environment as well as potential solutions to organizational challenges.

SOC 336 Society and Individual (3). Course provides an examination of the sociological perspective on the relationship between the individual and social institutions. In particular, the course focuses on collective influences on the person, and the role the person plays in sustaining collective conditions. Topics for study include aggression, altruism, attitude formation, conformity, intimacy and self-esteem. Recent research findings will be emphasized.

SOC 337 Social Inequality (3). An examination of the distribution of class, status and power in society. The course will focus upon theories of stratification, contemporary class systems, class differences in values and life styles, social mobility, consequences of stratification, and evolution of modern stratification.

SOC 338 Criminology (3). An exploration of the body of knowledge regarding crime as a social phenomenon. Special focus is given to the study of crime patterns, theories of crime causation, and differences in crime types. The connections between crime, other social processes, the law, and policies of corrections are also explored.

SOC 339 Rural Sociology (3). Deals with the principles underlying the organization, structure and processes of rural life. Demographic and institutional aspects of rural communities will be given particular emphasis.

SOC 340 Medical Sociology (3). An examination of sociological perspectives on systems of medical care; particular emphasis will be placed upon the structure and organization of health care institutions and societal responses to problems of illness and disease. (Same as GTY 340.)

SOC 341 Aging and the Life Course (3). Course examines the ways in which aging and the life course are embedded in and shaped by historical, cultural, and institutional contexts. Specific topics that may be covered include diversity in the aging experience, social support networks, intimacy and sexuality in the aging process, intergenerational equity issues, retirement, economic issues, health issues, and death and dying.

SOC 343 Race and Ethnicity (3). Identity, goals, and organization of racial and ethnic groups; dynamics of racism and ethnocentrism; and processes of communication, conflict, and accommodation. (Same as ANT 343.)

SOC 346 Urban Sociology (3). A study of the origin, growth, and structure of the urban community. Particular attention will be paid to the nature of and possible solutions to problems that come in the wake of rapid urbanization in both the developed and developing world.

SOC 347 Sociology of Mental Health and Illnesses (3). Course examines mental health and mental illnesses from a sociological perspective. Special attention given to demographic characteristics associated with mental illness and how the definition of mental health illness is shaped by history, institutions, and culture.

SOC 355 Sociology of Gender (3). Course examines the central role that gender and gender inequalities play in individuals' lives and the organization of society. It introduces key concepts and theories in the sociological study of gender, considers the intersections between gender and other axes of identity (race, class, etc.), and explores how gender operates within various social institutions.

SOC 359 Writing and Inquiry in the Social Sciences (3). The course focuses on the inquire process that is used in the social sciences and how the results of that inquiry are reported to others. Students will learn how to recognize, understand, and apply specific style, format, and rhetorical requirements for clear and concise expository writing in the social sciences. Students will create a variety of documents that typically include an essay, an annotated bibliography, and analytic case study, a policy brief, letters, memoranda, a policy or procedure, and the development of a research paper through the research design. This is the writing intensive course for all majors in political science, sociology, international studies, and public administration. Prerequisite: ENG 105 or 150. (Same as POL 359.)

SOC 360 Research Methods (3). Course will introduce students to social science research methods. Emphasis will be placed on the scientific method, research design, the various methods of data collection commonly used in political science and sociology, and data analysis. Prerequisite: PSY 300 or STA 135 and SOC 359, or permission of instructor. (Same as POL 360.)

SOC 365 Qualitative Research Methods (3). Course is an introduction to the practice of qualitative research. Students in this course will be introduced to key issues concerning the qualitative approach to sociological research, methods for qualitative data collection, and qualitative date analysis. Students will apply their knowledge by conducting their own original, sociological qualitative research.

SOC 370 Political Sociology (3). An examination of the central problems of concern to sociologists working in the field of politics. Theories and approaches to understanding the nature of political power, the cultural dimension of politics, and the dynamics of political change will be introduced. Special attention will be given to the ways political power intersects with structures of class, gender, and race in the United States. Other topics will include the politics of the world-system, the security state, and global economic crises.

SOC 380 Society and Technology (3). This course will examine how technology, ranging from simple to complex, both shaped by society and culture. Controversies that stem from various technologies will be examined, such as bioethical issues, privacy, and the environment.

SOC 400 Senior Seminar (3). This course is a capstone course for all graduating majors in sociology. It is a writing-intensive course in which a discipline-based research paper is refined and orally defended. The writing emphasis is based on knowledge students gain from SOC 300 and 360. Students also develop skills for job searches, acquire information about graduate school, and complete the program assessment instrument.

SOC 420 Sociology of Religion (3). A study of the interrelationships of society, culture and the institution of religion. (Same as RGS 420.**)**

SOC 430 American Culture (3). This course analyzes the culture of American society focusing upon American values, cultural symbols, production and distribution of culture, cultural conflicts within American society, and culture and change.

SOC 432 Social Movements and Protests (3). The sociological analysis of protest and social movement organizations that challenge political institutions and other forms of institutional and cultural authority. Strategies and tactics of various types of social movements both domestic and transnational will be addressed.

SOC 435 Sociology of Work (3). This course will examine the nature of work in contemporary societies by focusing upon the impact of specialization and bureaucratization; it will examine the different types of work; workers' response to the workplace; impact of work on family, health; role of age, gender, race in the workplace; and finally, the future of work. Prerequisite: six hours of sociology.

SOC 436 Sociology of Sport (3). Theories, methods and substantive issues in a sociological approach to sports. Prerequisite: six hours of sociology.

SOC 438 Sociology of Deviant Behavior (3). Sociological frame of reference for studying deviant behavior, with emphasis placed upon problems of definition, social processing and evaluation of significant theory and research in deviant behavior. Prerequisite: six hours of sociology.

SOC 440 Sociology of Corporate and Political Deviance (3). Discusses and analyzes on both national and global levels the social, economic, political, structural and cultural causes and consequences of corporate and political deviance. Examples include consumer fraud, environmental crime, corruption of the mass media, fraudulent banking practices, identity theft, and computer crime.

SOC 441 Sociology of Youth Violence (3). Discusses and analyzes the social, economic, and cultural causes social consequences of youth violence. Examples include the emergence of international youth gangs, interpersonal youth violence, with attention to how they variously inform the socio-legal concept of "justice."

SOC 442 Law and Society (3). An analysis of legal institutions from a socio-cultural perspective, with emphasis placed on the interrelationships among social change, social problems, social policy and law.

SOC 445 Media and Crime (3). Course uses the sociological perspective to understand the complex relationship between media and crime. The course content will critically assess crime-related media in the United States, analyze media representations of race, gender, and social class, and explore the theories of mass media efforts. Special attention will be given to understanding the power of mass media in constructing dominant views on crime and the criminal justice system.

SOC 455 Environmental Sociology (3). Course will focus upon key theoretical approaches and research in the field of environmental sociology as well as the effects of population and economic growth along with technology, upon the environment. Environmental issues and disasters will be studied focusing upon the role of social organization, culture, values, and social inequality.

SOC 465 Globalization (3). An examination of the political, economic, social and cultural forces related to our globalizing world. Theories and approaches to defining and understanding globalization will be introduced. Topics will include global institutions, immigration, labor, crime, environmental problems, and social movements.

SOC 480 Special Topics in Sociology (3). An undergraduate-level overview of a specific topic in sociology. May be repeated for a maximum of six hours provided topics vary.

SOC 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of chair.

SOC 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: consent of chair.

SOC 490 Directed Studies (1-3). Selected topics in sociology as arranged by the students and a professor. Prerequisite: consent of chair.

SOC 499 Senior Honors Thesis (3). An undergraduate research thesis for outstanding senior majors only. Prerequisite: permission of the department upon nomination of a faculty member.

SPANISH (SPA)

SPA 101 Fundamental Communication in Spanish (3). Basic Spanish in which students learn to describe themselves to someone from another culture; to express preferences, abilities, needs, and obligations; to ask for information; to describe people, places, and things in their world; and to report their typical activities to a Spanish speaker.

SPA 102 Social Interactions in Spanish (3). Expanding upon skills built in SPA 101, students move toward increasing linguistic and social awareness of Spanish-speaking cultures. Students learn to use past tenses to talk about typical activities or to tell a story; to expand their basic vocabulary and ability to communicate in simple Spanish; and to demonstrate basic understanding of aspects of Spanish- and Latin-American cultures that may differ from their own. Prerequisite: SPA 101 or equivalent.

SPA 103 Elementary Spanish Conversation I (1). Designed to provide additional structured practice in the language for students enrolled in SPA 101. Emphasis is on the development of the speaking skill. Cannot be used for major, minor, or B.A.

SPA 104 Elementary Spanish Conversation II (1). A continuation of SPA 103. For students enrolled in SPA 102.

SPA 105 Introduction to Hispanic Culture (3). A survey of the contemporary culture of Spain and Spanish America with emphasis on values, behavioral characteristics, and social and political structures and achievements. Conducted in English.

SPA 106 Basic Spanish and Culture for Agriculture (3). An introductory course with an emphasis on agricultural terminology designed for basic communication in Spanish between agricultural employers and their Spanish-speaking employees. It includes a study of Hispanic culture and the contribution of migrant workers to the U.S. agricultural industry. Students may not receive credit for both SPA 106/AGR 109 and SPA 107. (Same as AGR 190.)

SPA 107 Basic Spanish and Culture for Occupational Safety and Health (3). An introductory Spanish course with an emphasis on terminology designed for basic communication in Spanish between occupational safety and health professionals and native Spanish-speaking workers. It includes a study of Hispanic culture and the contributions of Hispanic workers to the U.S. labor force. A field visit outside of class time may be required. Students may not receive credit for both SPA 107 and SPA 106/AGR 190.

SPA 108 Basic Spanish and Culture for Healthcare Professionals (3). An introductory Spanish course with an emphasis on terminology designed for basic communication in Spanish between healthcare professionals and native Spanish-speaking patients and their families who have little or no command of English. It includes a study of Hispanic culture in order to aid communication.

SPA 110 Basic Conversational Spanish (3). A conversation-oriented introduction to pronunciation, essential structures, and vocabulary. Designed to enable students to communicate in simple Spanish in everyday situations in Spanish-speaking countries. Pronunciation, listening comprehension, speaking and simple reading and writing of material related to conversational situations are included. No continuation offered. Not applicable toward Spanish major or minor. Only taught abroad.

SPA 201 Intercultural Communications in Spanish (3). Students strengthen their basic language skills while continuing to broaden cultural awareness of Spanish-speaking societies. Students relate experiences, produce brief reports on course topics, and express opinions concerning a variety of themes. Students learn to communicate on a more complex level in Spanish. Taught in Spanish. Prerequisite: SPA 102 or equivalent.

SPA 202 Practical Applications in Spanish (3). Students advance their speaking, writing, reading, and listening language skills in this interactive course focused on the practical application of the language in contemporary Spanish-speaking countries. Activities include role-play, projects, reports, and discussions of texts. Taught in Spanish. Prerequisite: SPA 201 or equivalent.

SPA 203 Spanish for the Working World (3). A continuation from SPA 201, this course is a practical application of Spanish for the working world together with grammar review and with emphasis on communication skills on the formal level. Includes further practice in listening, conversation, reading and writing. Students may be required to attend and write a report on two approved cultural events or complete alternative cultural assignments. Taught in Spanish. Students may receive credit for SPA 202 or 203, but not both. Spanish 203 counts toward the minor and the major. Prerequisite: SPA 201 or equivalent.

SPA 210 Intermediate Spanish Conversation (3). A course designed to develop the vocabulary and oral communication skills of the student with a background of one year of college Spanish or equivalent. Emphasis will be placed on bringing the student into contact with Spanish native speakers and various aspects of their culture. Either SPA 210 or 211 may count as an elective for the major or minor. Only taught abroad. Prerequisite: SPA 102 or equivalent.

SPA 211 Introduction to Spanish Culture (3). Focuses on the contemporary cultural character of Spain. Combines traditional class work with carefully planned excursions to cultural centers. Also designed to increase linguistic proficiency and is conducted in basic Spanish.

SPA 220 Spanish for Law Enforcement Professionals (3). Course is designed to develop the specific vocabulary and oral communication skills essential for a student who is intending to pursue a career in law enforcement and has a background of one year college Spanish or equivalent. SPA 220 will be taught only in study abroad programs in Mexico. Prerequisite: SPA 102 or equivalent.

SPA 230 Spanish for Medical Professionals (3). Course is designed to develop the specific vocabulary and oral communication skills essential for a student who is intending to pursue a career in medicine or nursing, and who has a background of one year of college Spanish or the equivalent. SPA 220 will be taught only in study abroad programs in Mexico. Prerequisite: SPA 102 or equivalent.

SPA 301 Conversation and Composition I (3). Intensive practice in speaking and writing based on a variety of topics and materials. Prerequisite: SPA 202 or equivalent.

SPA 302 Conversation and Composition II (3). Additional practice in speaking and writing based on a variety of topics and materials. Prerequisite: SPA 301 or permission of instructor.

SPA 306 Introduction to Literature in Spanish (3). A course designed to develop skills in reading, writing and oral expression which will prepare students to study authentic literature in Spanish. In addition, the rudiments of literary analysis and/or theory will be introduced through a variety of texts which might include short story, poetry, theater and film. Prerequisite: SPA 301.

SPA 310 Conversation and Composition Abroad (3). Intensive practice in speaking and writing based on the student's interaction with native speakers and the international setting. Only taught abroad. Counts toward the major and minor approved electives. Prerequisite: Two years of college Spanish or equivalent.

SPA 311 Business Spanish (3). Designed for students with interest in international business who have had at least two years of college Spanish or equivalent. The course integrates oral and written business communications, with an emphasis on the vocabulary of business in the Spanish-speaking world. Prerequisite: SPA 202 or equivalent.

SPA 314 Advanced Spanish Culture Abroad (3). Taught in Spanish and taught abroad, focuses on culture in Spanish speaking countries. The course may include carefully planned excursions to a number of specific cultural sites in conjunction with reading about the sites and the intellectual history and milieu behind their conception. The student will explore the history, art, architecture, literature, politics, and music of the host country. This course will only be taught on study-abroad programs in Spanish-speaking countries. Prerequisite: SPA 202 or equivalent, or consent of instructor.

SPA 315 Global Cinema in Spanish (3). A study of Spanish-language cinema, examining significant directors and film movements. This class includes a two-hour per week film screening in addition to class meeting. The course is conducted in Spanish. Prerequisite: SPA 301 or 331.

SPA 323 Spanish Culture and Civilization (3). A cultural survey of Spanish history with emphasis on twentieth-century Spain. Classes conducted in Spanish with extensive use of visual aids. Prerequisite: SPA 301 or permission of instructor.

SPA 324 Mexican Culture History (3). Introduction to Mexican culture from a contemporary and a historical perspective taught in Spanish. Focus will be on the area's geography, history, social and political institutions, and the cultural achievements of its people. It will also explore the values and behavioral characteristics of Mexican people in order for students to better adjust to residence abroad. Course will be taught in Mexico. Prerequisite: SPA 301 or equivalent.

SPA 325 Spanish-American Culture (3). A cultural survey of Spanish-American history with emphasis on twentieth-century Spanish America. Taught in Spanish with extensive use of visual aids. Prerequisite: SPA 301 or permission of instructor.

SPA 329 Mexican Literary Texts in Context (3). Will be taught on summer abroad programs in Mexico only. It is an introductory course on Mexican literature taught in Spanish. Authentic texts might include poetry, short story, drama or excerpts from long works and might be from any literary period. An effort will be made to take advantage of residence in Mexico through visits to sites that are related to the literature. Prerequisite: SPA 202, 203, or permission of instructor.

SPA 330 Spanish Literary Texts in Context (3). Will be taught on summer abroad programs in Spain and Latin America only. It is an introductory course in Spanish literature taught in Spanish. Authentic texts might include poetry, short story, drama or excerpts from long works and might be from any literary period. An effort will be made to take advantage of residence in Spain through visits to sites that are related to the literature. May be repeated for a total of six credit hours. Prerequisite: SPA 202, 203 or consent of instructor.

SPA 331 Advanced Language Practice (3). Course will offer students the opportunity to expand their cultural and linguistic knowledge of Spanish-speaking cultures through a central conceptual framework, such as an international conference, an apartment building, a hotel, or a business. Students will engage in extensive role-play and creative exercises to establish contexts, choose fictive identities, and improvise a series of encounters. Prerequisite: SPA 301.

SPA 332 Phonetics (3). A study of the vocal apparatus, phonetic transcription, and analysis of the contrast between Spanish and English phonology with individual work designed to improve pronunciation. Prepares prospective teachers to teach correct pronunciation effectively. Prerequisite: SPA 202 or permission of instructor.

SPA 401 Survey of Spanish Literature (3). A panoramic study of the literature of Spain from the Middle Ages to the present. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 402 Survey of Golden Age Literature. (3) Spanish literature of the sixteenth and seventeenth centuries. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 403 Survey of Spanish-American Literature (3). A panoramic study of the literature of Spanish America from pre-Columbian times to the present. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 404 Don Quixote (3). Prerequisites: SPA 302 and SPA 301 or 306.

SPA 411 Spanish-American Short Story (3). The origin and development of the short story in Spanish America, with emphasis placed upon the twentieth century. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 419 European Cinema (3). Survey of European (including British) film by French, English, German, and Spanish directors in the original languages with English subtitles except for the English language films. Selected films will be organized around social themes, which will then be viewed from different national perspectives. The common discussion section on one day will be conducted in English to be accessible to students of all languages; the second discussion section will be conducted in Spanish. Students are required to attend film viewings in a separate lab section. Prerequisite: SPA 302 or permission of instructor.

SPA 421 Topics in Spanish Literature (3). Course content will vary according to the needs of the Spanish program. May be repeated to a maximum of six credit hours. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 422 Topics in Spanish American Literature (3). Course content will vary according to the needs of the Spanish program. May be repeated to a maximum of six credit hours. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 430 Advanced Conversation and Composition (3). Designed for students with at least two years of college Spanish or equivalent. The main purpose is to develop greater fluency and better pronunciation. Oral and written reports will be required. Emphasis will be placed on idiomatic structures and vocabulary building. Prerequisite: SPA 301 or permission of instructor.

SPA 431 Advanced Translation and Interpretation in Spanish (3). Course provides the academic resources and practical skills necessary to provide cross-cultural, professional translation and interpretation from Spanish to English and from English to Spanish in a variety of professional fields, such as: business, healthcare, and criminal justice, among others. A field visit to a professional setting where interaction with native speakers is possible. Prerequisite(s): SPA 301, 302, 331, GLT 401 or permission of instructor.

SPA 441 Topics in Spanish Cultural Studies (3). Course content will include a variety of factors that contribute to and reflect the cultural life, social themes, and national perspectives of Spanish society. The course content will include literature and may include media and/or film. Students will write a research paper. May be repeated for a maximum of six credit hours. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 445 Survey of Spanish Poetry (3). Course will explore Spanish poetry through a variety of authors and works within the genre. Prerequisite: Spanish 302 and SPA 301 or 306, or consent of instructor.

SPA 450 Literary Masterpieces in Spanish (3). A general survey of the literary periods, major authors, and initial acquaintance with their work. May be repeated for a maximum of six credit hours. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 451 Directed Study (1-3). Independent work in the area of language, culture or literature, designed to meet the needs and interest of individual students. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 460 Studies in a Genre (3). The course will explore a particular genre, e.g., the novel, novella, drama, poetry, short story, and the theory behind the respective genre and an examination of a variety of works within that genre. May be repeated as a second course for up to six credit hours provided that the second course covers a different genre. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 505 Nineteenth-Century Spanish Literature (3). Romanticism through Naturalism. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 507 Twentieth-Century Spanish Literature (3). A survey of representative authors. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 512 Spanish-American Novel (3). Representative works from the major literary movements and most regional types will be studied. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 521 Topics in Spanish Literature (3). Topics will vary according to the needs and interests of students. May be repeated to a maximum of six credit hours. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 522 Topics in Spanish-American Literature (3). Topics will vary. May be repeated to a maximum of six credit hours. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 531 Advanced Grammar (3). A specialized study contrasting Spanish and English grammatical structures and usage. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 532 Phonetics (3). A study of the vocal apparatus, phonetic transcription and analysis of the contrast between Spanish and English phonology with individual work designed to improve pronunciation. Prepares prospective teachers to teach correct pronunciation effectively. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 551 Directed Study I (1-3). Course work designed to meet specific needs and interests on an individual basis. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 552 Directed Study II (1-3). Prerequisites: SPA 302 and SPA 301 or 306.

SPA 555 Study Abroad (3-9). Credit given to students for approved travel and study in Spain and Spanish America. Repeatable up to nine hours. Prerequisite: junior standing or above.

SPA 621 Topics in Spanish Literature (3). Topics will vary according to the needs and interests of students. May be repeated for a total of six hours of credit. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 622 Topics in Spanish-American Literature (3). Topics will vary. May be repeated for a total of six hours of credit. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 631 Advanced Grammar (3). A specialized study contrasting Spanish and English grammatical structures and usage. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 651 Directed Study I (1-3). Course work designed to meet specific needs and interests on an individual basis. May be repeated for a total of six hours of credit. Prerequisites: SPA 302 and SPA 301 or 306.

SPA 652 Directed Study II (1-3). Prerequisites: SPA 302 and SPA 301 or 306.

SPA 655 Study Abroad (3-9). Credit given to students for approved travel and study in Spain and Spanish America. Repeatable up to nine hours.

STATISTICS (STA)

STA 135 Introduction to Probability and Statistics (4). Elementary probability, the binomial, normal, student's and chi-square distributions, random sampling, regression and correlation. Prerequisite: ACT math standard score of at least 20 or MAT 097.

STA 235 Introduction to Probability and Statistics II (3). A study of applied statistical techniques, including re-expressing data, categorical data analysis, regression inference, analysis of variance, multiple and non-linear regression, and nonparametric analysis, from a conceptual standpoint. Prerequisite: STA 135 or consent of instructor.

STA 430 Explorations in Statistics (1-4). A guided investigation of selected topics in probability and statistics. May be repeated for a maximum of six hours of credit. Prerequisite: permission of instructor.

STA 450 Introduction to Engineering Statistics (3). Probability, population and sample distribution, sampling, hypothesis testing, regression on one variable, and quality control. Prerequisite: MAT 308 or consent of instructor.

STA 540 Mathematical Statistics I (4). Introduction to probability theory and statistical inference. Combinatorics, conditional probability independence. Discrete and continuous random variables and their distributions. Expected value and moments of distributions. Estimation theory and properties point estimators. Confidence intervals. Basic theory of hypothesis testing. Testing means and proportion. T-tests. Descriptive statistics. Prerequisite: MAT 308 or permission of instructor.

STA 541 Mathematical Statistics II (3). Additional topics in probability theory and statistical inference. Bayes' Theorem, functions of random variables, order statistics. Bayesian inference, F-tests, chi-square tests, contingency tables, regression and correlation. Prerequisite: STA 540.

STA 554 Statistical Methods (3). A survey course in statistical methods for advanced undergraduate students with no prior training in statistics. The course covers techniques commonly used for data analysis in many scientific fields. Topics included are probability distributions, sampling, variance, estimation, hypothesis testing, contingency table, regression and analysis of variance. (Does not apply toward any degree in mathematics or a minor in mathematics.)

STA 565 Applied Statistics I (4). A study of applied statistical techniques including correlation, regression, analysis of variance and non-parametric methods with a view toward applications. A statistical computer package will be used when appropriate, but no computer background is required. Prerequisite: an undergraduate course in statistics or consent of instructor.

STA 566 Applied Statistics II (3). A continuation of STA 565. Includes further topics in analysis and variance, non-parametrics and multivariate analysis. Prerequisite: STA 565.

STA 567 Introduction to Time Series Analysis (3). An introductory time series analysis course that introduces students to classical and modern time series models. Time series analysis comprises methods for analyzing time series data in order to extract meaningful statistics and other characteristics of the data. Time series forecasting is the use of a model to forecast future events based on known past events: to predict data points before they are measured. This course serves junior and senior mathematics majors, mathematics minors, and other interested students. A student taking this course should have a background in statistical methods. Prerequisite: STA 565 or permission of instructor.

STA 568 Bayesian Methods (3). A study of Bayesian data analysis methods including Bayesian inference, hierarchical modeling, model checking, model building, Bayesian computation, and convergence monitoring and diagnostics. A Bayesian statistical computing package will be used when appropriate. Prerequisites: STA 540 or 565 or consent of instructor.

STA 569 Topics in Statistics (3). Selected topics in probability and statistics. Prerequisite: permission of instructor.

STA 633 Teaching Probability and Statistics (3). An exploration of topics in probability and statistics from the viewpoint of future/current secondary and community college teachers of mathematics and statistics. Such topics include descriptive statistics, correlation and regression, uses and abuses of statistics in real life, traditional and simulation-based approaches to teaching statistical inference, common misconceptions in probability, and the AP Statistics curriculum. (This course does not offer graduate credit for those people seeking a master of science degree in mathematics or chemistry or a master of arts degree in mathematics.) Prerequisite: permission of instructor.

STA 640 Mathematical Statistics I (4). Introduction to probability theory and statistical inference. Combinatorics, conditional probability independence. Discrete and continuous random variables and their distributions. Expected value and moments of distributions. Estimation theory and properties point estimators. Confidence intervals. Basic theory of hypothesis testing. Testing means and proportion. T-tests. Descriptive statistics. Prerequisite: MAT 308 or permission of instructor.

STA 641 Mathematical Statistics II (3). Additional topics in probability theory and statistical inference. Bayes' Theorem, functions of random variables, order statistics. Bayesian inference, F-tests, chi-square tests, contingency tables, regression and correlation. Prerequisite: STA 540 or 640.

STA 654 Statistical Methods (3). A survey course in statistical methods for advanced undergraduate students and graduate students with no prior training in statistics. The course covers techniques commonly used for data analysis in many scientific fields. Topics included are probability distributions, sampling, variance, estimation, hypothesis testing, contingency table, regression, and analysis of variance. (Does not apply toward any degree in mathematics.)

STA 660 Biostatistics (3). A study of applied statistical techniques including correlation, regression, analysis of variance, categorical data analysis, and non-parametric methods with a view toward applications in clinical research and health related sampling. A statistical computing package will be used when appropriate. A student may not receive credit for both STA 565 and 660 or STA 665 and 660. This course does not offer graduate credit for students seeking a Master of Science in mathematics or chemistry, or a Master of Arts in mathematics. Prerequisite: an undergraduate course in statistics or consent of instructor.

STA 665 Applied Statistics I (4). A study of applied statistical techniques including correlation, regression, analysis of variance and non-parametric methods with a view toward applications. A statistical computer package will be used when appropriate, but no computer background is required. Prerequisite: an undergraduate course in statistics or consent of instructor.

STA 666 Applied Statistics II (3). A continuation of STA 665. Includes further topics in analysis and variance, non-parametrics and multivariate analysis. Prerequisite: STA 565 or 665.

STA 667 Introduction to Time Series Analysis (3). Linear time series models; moving average, autoregressive and/or ARIMA models; estimation, data analysis and forecasting with time series models; forecast errors and confidence intervals. Prerequisites: STA 565, STA 665, or consent of instructor.

STA 668 Bayesian Methods (3). A study of Bayesian data analysis methods including Bayesian inference, Hierarchical modeling, model checking, model building, Bayesian computation, and convergence monitoring and diagnostics. A Bayesian statistical computing package will be used when appropriate. Does not count towards a M.A. in Mathematics degree. Prerequisite: STA 565 or 665 or STA 540 or 640 or consent of instructor.

STA 669 Topics in Statistics (3). Selected topics in probability and statistics. Prerequisite: consent of instructor.

STEM LEADERSHIP (STM)

STM 901 Professional Studies in STEM Education I (3). A field- and research-oriented practicum at Breathitt Veterinary Center, Hancock Biological Station, MARC Center, or another approved MSU area. This course provides practical experience in an area of science, technology, engineering or mathematics designed to complement the main research efforts and expertise of the student. Prerequisite: completion of ADM 800.

STM 902 Professional Studies in STEM Education II (3). A field- and research-oriented practicum at Breathitt Veterinary Center, Hancock Biological Station, MARC Center, or another approved MSU area. This course provides practical experience in an area of science, technology, engineering or mathematics designed to complement the main research efforts and expertise of the student. Prerequisite: completion of ADM 800.

STM 904 Contemporary Issues in STEM Policy and Education (3). The purpose of this course is to investigate contemporary issues impacting STEM areas. Special topics explored in this course may include public policy, regional, national, or global trends, and educational practice. Prerequisite: completion of ADM 800.

SOCIAL WORK (SWK)

SWK 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. Introductory seminar for all first-semester social work majors. Graded pass/fail.

SWK 102 Introduction to the Human Services (3). The course is designed to provide an overview of the human services field and to present similarities and differences between majors that prepare graduates for human services. Topics include education for the field, licensing requirements and practice settings. The course will help students explore social work and related fields in order to make the best choice of major. Open to all students who have not completed a social work course above the 200-level. This course will not take the place of SWK 190 for social work majors.

SWK 120 Building Foundations for Successful Parenting (1). Course designed to give students an understanding of the skills necessary for a successful experience in the area of foster care and adoption services. The course includes content on Kentucky's standards of practice as well as federal legislation with regard to the safety, well-being and permanency of children in and out of home care; strengths and needs; grieving; the cycle of need; and, partnership efforts necessary between birth parents, foster parents, adoptive parents, social workers, therapists and others involved in the support and care of a child. Graded pass/fail.

SWK 121 Child Sexual Abuse Issues for Foster and Adoptive Parents (2). Course designed to give students an understanding of the specialized insights and skills necessary for working with children and birth families where there has been sexual abuse. Graded pass/fail. Prerequisite: SWK 120.

SWK 190 Introduction to Social Work (3). A course designed to provide an overview of the field of social work and the various methods and areas of social work practice. Current response to human needs as well as trends and issues affecting the profession of social work will be explored. Prerequisite: ENG 105; SOC 133 as pre- or corequisite.

SWK 201 Social Work and Social Welfare (3). An introduction to the institution of social welfare and the profession of social work; includes the historical development of conflicting social philosophies and modern social welfare programs, as well as the historical development of the profession of social work. Prerequisites: ENG 105, POL 140, and SOC 133.

SWK 225 Human Diversity (3). This course is designed to give students an understanding of the concept of human diversity. It includes content on race, ethnicity, culture, class, gender, sexual orientation, religion, physical and mental ability, age and national origin. Prerequisite: ANT 140 or SOC 133 as pre- or corequisites.

SWK 230 Social Work in a Multicultural Society (3). Course focuses on racial and ethnic minorities such as the African American and Hispanic experience in the United States viewed specifically through the lens of the Kentucky experience. Oppression, economic and social class, education and family life will be emphasized, as will societal barriers to success. This course is designed to help students be successful in an increasingly diverse society.

SWK 301 Human Behavior and the Social Environment I (3). Focus on developmental processes (biological, psychological, and social) throughout the life span of individuals (pre-birth to old age) while emphasizing the interdependence between people and the environment in which they live. In addition, students learn to critically analyze theories related to human development and human behavior. Builds on general education courses including psychology, sociology, anthropology, and biology. Prerequisites: PSY 180, SOC 133, SWK 190, and 225 as pre- or corequisites.

SWK 302 Human Behavior and the Social Environment II (3). Primary focus is on models, theories, and knowledge related to larger systems such as families and other small groups, organizations, communities, and political systems. Prerequisites: PSY 180, SOC 133, SWK 190, and 225 as pre- or corequisites.

SWK 303 Principles and Methods of Research (3). An introduction to quantitative and qualitative methods of research designed to enable students to understand the critical and scientific methodologies their discipline uses to discover knowledge and ascertain its validity. Ethical issues and program evaluation will also be discussed. Enrollment will be limited to social work majors and social welfare minors or by permission of instructor.

SWK 304 Quantitative Analysis (3). Basic concepts of statistics are covered including descriptive and inferential statistics, up to and including linear regression. Students also learn to use a statistical package to enter data and calculate statistics. Prerequisite: ACT math standard score of at least 20 or MAT 097.

SWK 305 Services to Older Americans (3). An examination and study of the social problems experienced by older Americans and the modes of social intervention employed by society, through the Aging Network, to assist the aging and the aged. Prerequisite: junior standing. (Same as GTY 305.)

SWK 306 Social Work with African American Males (3). Course focuses on social work with African American males over the lifespan. Course will use the strengths perspective framework to focus on African American males as well as to the issues and challenges encountered by African American males in the United States. Emphasis will be given to issues such as racial profiling, incarceration of African American males, and equal access.

SWK 307 Social Work with African American Families (3). Course examines the changing dynamics within American society as related to African American families. Special attention will be given to key issues and challenges to the African American community through an examination of the intergenerational African American family.

SWK 308 Interviewing Skills for the Human Services (3). Designed for those not majoring in social work, demonstration and practice of basic helping skills for those students who will work in human services agencies or other school, community, faith-based, or missionary settings. In a laboratory-like interaction, students practice the skills related to successful interviewing of clients. This course will not take the place of SWK 311 for social work majors.

SWK 310 Social Work Practice I (3). This is the first course in the social work practice sequence and presents the generalist model with emphasis on work with individuals and families. Social Work Practice I is designed to introduce the student to the skills and processes of social work. Content will include the theoretical and philosophical bases of the generalist model, intervention processes, and the legal and ethical parameters of practice. Fundamental principles of interviewing and record-keeping will be presented. The focus of the course is on the ethical application of practice theory. Participation in experiential activity and demonstration of basic helping skills are expected. Prerequisites: SWK 190, 201, 225, and 301 or 302.

SWK 311 Social Work Practice Skills (3). Presents a laboratory-like interaction, which builds on the theoretical information presented in SWK 310. Fundamental principles of interviewing and record-keeping will be presented. The focus of the course is on the ethical application of practice theory. Participation in experiential activity and demonstration of basic helping skills are expected. Prerequisites: SWK 190, 201, and 225.

SWK 312 Social Work Practice II (3). This is the second course in the social work practice sequence and continues the study of social work practice with an emphasis on social work with families and groups. It is designed as an intermediate level investigation and study of the practical application of the generalist model within a group framework. Content will include conceptual framework and techniques of group work. This course may not be taken concurrently with SWK 313. Prerequisites: admission to the social work program; SWK 302 and 310.

SWK 313 Social Work Practice III (3). This is the third course in the social work practice sequence and continues the study of social work practice with an emphasis on social work with organizations and communities. It is designed as an intermediate level investigation and study of practical application of the generalist model within an organization and community framework. Content will include conceptual framework and techniques of social work in organizations and communities, models of organizational and community practice, and evaluation of practice. This course may not be taken concurrently with SWK 312. Prerequisites: admission to the social work program; SWK 302 and 310.

SWK 315 Addiction: Treatment and Society (3). An overview of current theories, models and definitions of addictive disorders, with focus on both the addictive and recovery processes. The role of the social worker/helping professional in identification, intervention and treatment will be stressed. The needs of special populations, diverse populations and family and adolescent issues will be addressed. Prerequisite: junior standing. (Same as SOC 315.)

SWK 316 Substance Abuse in Older Adults (3). This course provides students with an understanding of the biological, psychological, and social etiology of substance use and addiction in older adults. It will focus on assessment of older individuals with potential substance abuse and on the available forms on interventions. Gender, health-specific, cross-cultural, and polypharmacy issues will be addressed. Implications for social work intervention at micro, mezzo, and macro levels will be examined. Prerequisite: junior standing or instructor permission.

SWK 336 Family Violence (3). A comprehensive examination of the effects of violence on the American family, and the ways in which social service agencies and practitioners respond to the unique needs created by this social problem. Prerequisite: junior standing.

SWK 337 Social Work with Active Military, Veterans, and Military Families (3). Course is designed to help students understand the military culture and the particular issues facing veterans and their families during deployment and during reentry into the community. Particular attention will be paid to post-traumatic stress disorder, suicidality, domestic violence, and homelessness among veterans. Prerequisite: SWK 310.

SWK 338 Social Work in the Church Setting (3). Course is designed to help students understand the church as a practice setting for social work and to acquire the skills necessary to work in and with local churches to meet the needs of people locally and around the world. Particular attention will be placed on the role of values and volunteerism in this practice setting. Prerequisites: SWK 102 or SWK 190.

SWK 346 International Social Work (3). This course provides an examination of global interdependence and professional action in the context of social work history, values, policy, practice, and education in a global perspective. International aspects of domestic practice and policy, professional exchange, international development practice, and policy formulation and advocacy at the global level are also covered.

SWK 347 Social Work Practice in Rural Areas (3). This course explores the particular challenges associated with rural social work. Many of the social issues and problems associated with urban populations are also found in contemporary rural America. This course describes and analyzes current trends in rural social work practice and considers the most effective ways to serve rural communities.

SWK 348 Technology in Human Services (3). This course explores the integration of technology and human services. This course describes and analyzes

current trends in the use of technology in human services and considers the most effective ways to utilize technology to serve underserved communities and populations.

SWK 350 Social Welfare Policies and Services (3). This course examines historical and contemporary legislative and political responses to the social and economic problems that confront society. A major focus is on the preparation of students, as generalist social workers, to systematically analyze social welfare policies and effectively impact the development of social policy. Prerequisites: ECO 140, POL 140, and SWK 201.

SWK 355 Perspectives on Women (3). Introduction to the study of women's issues in contemporary society. The course will include an overview of the history of the feminist movement and its role in human liberation. The socialization of women and their status in relationship to economic, social and political institutions will be emphasized. Particular attention will be given to these issues as they relate to women of color, older women and lesbian women. Prerequisite: junior standing or permission of instructor.

SWK 365 Crisis Intervention (3). This course will focus on the techniques and management skills employed by social workers in dealing with emergency and crisis situations. Short-term, limited goal interventions will be emphasized. Prerequisite: SWK 310 or permission of instructor.

SWK 370 Gerontological Social Work Theory (3). Course will examine the broader context of the social/cultural meaning of aging in contemporary American society and what social work professionals must know in order to provide social services to those classified as elderly. The emphasis in this course will be on social gerontological theories relevant to work with older people.

SWK 371 Biopsychosocial Aspects of Aging (3). The focus of this class is on the biological, psychological, social aspects of aging, and human development in the second half of the life cycle. The changing meaning of aging and its implications for social work practice will be emphasized.

SWK 375 Social Work in Health Care Settings (3). A study of the role and scope of social services in health care settings. Focus will be placed on the multidisciplinary team approach to service delivery. Prerequisite: SWK 310 or permission of instructor.

SWK 385 Social Work in Mental Health Settings (3). A study of the role and scope of social services in behavioral health settings. Focus will be placed on the interdisciplinary team approach to service delivery. Prerequisite: SWK 310 or permission of instructor.

SWK 395 Substance Abuse Prevention (3). This course is designed to provide an overview of substance or drug abuse and the various strategies used in preventive efforts. The role of prevention in the continuum of care will be examined from a historical perspective. A variety of problems associated with substance abuse, including legal, health and impairment problems, will be explored. Prerequisite: junior standing.

SWK 396 Issues Facing the Minority Elderly (3). The focus of the course is on the issues related to racial and ethnic group membership faced by minority elderly. Content will include a discussion of appropriate theories of aging as well as services available to this population and barriers to serving the minority elderly. Prerequisite: junior standing.

SWK 405 Child Abuse and Neglect (3). This course is designed to provide a comprehensive introduction to child abuse and neglect from a social work perspective. The course will focus on the extent of the problem, its effects on children, treatment issues, the social worker's role in a multi-disciplinary team approach to intervention and advocacy for individuals and families. This course is the first of two specific course requirements for the Public Child Welfare Certification Program available through Murray State University's Social Work Program and the Kentucky Cabinet for Families and Children. Prerequisite: permission of instructor.

SWK 410 Enhancing Safety and Permanency (3). Course prepares undergraduate students in the College of Health Sciences and Human Services to develop knowledge and skills in the delivery of services to children and youth in foster care and other out of home care situations in the context of an ecological and family solutions framework. Prerequisite: SWK 120.

SWK 415 Child Abuse Interventions (3). This course is designed to provide a comprehensive introduction to practice skills and treatment interventions related to social work with abused and neglected children and their families. This course will focus on the development of specific practice skills in collecting data and assessing situations with a variety of client types. This course is the second of two specific course requirements for the Public Child Welfare Certification Program available through Murray State University's Social Work Program and the Kentucky Cabinet for Families and Children. Prerequisites: SWK 405 and permission of instructor.

SWK 424 Case Management: Theory and Practice (3). This course will address the theory and practice of effective case management and the skills necessary to assess the client situation and to optimize client functioning. This course will focus on a diverse population of vulnerable clients across various practice settings. The settings emphasized include medical/health, educational, psychiatric, and services to the elderly. Policy issues will be addressed, as they relate to advocacy, service planning, and program design. Prerequisite: SWK 310.

SWK 425 HIV Disease: The Individual and Society (3). This course is an overview of HIV disease and its impact on individuals and society. This course will focus on the history of the illness, as well as, current medical and epidemiological information. Current treatment, legal and ethical issues, social responses, and personal and societal values will be explored. Prerequisite: junior standing.

SWK 426 Spirituality and Social Work Practice (3). Course is designed to assist students in understanding the role of spirituality in a person's life and how to engage in spiritually sensitive practice. Time will be spent exploring how the social worker's spirituality influences their practice and the importance of including information regarding client spirituality when completing an assessment.

SWK 427 Professional Practice in Drug Court (3). Course will provide students with an understanding of the ethics in practice with drug court clients, and will deal with other professional issues including worker client boundaries, the role of worker self awareness in providing treatment, and dealing with community values related to drug court clients. Students may be asked to attend local drug court functions.

SWK 428 History and Philosophy of Drug Court (3). Course will provide students with an understanding of the role of drug court in Kentucky, national trends related to the establishment of drug courts, the history of drugs court in the state, and an understanding of the philosophy of drug court. Students may be asked to attend local drug court functions.

SWK 429 Behavioral Issues in Drug Court Practice (3). Course will provide students with an understanding of the behavioral issues present by drug court clients, including those issues caused by the effects of alcohol and other pharmacological substances. Students may be asked to attend local drug court functions.

SWK 431 Adult Protection (3). Course will provide students with an understanding of adult protective services, an institutional response to caring for vulnerable adults in society. The content of the class will be based on Kentucky laws, policies and procedures.

SWK 432 Foster Care and Adoption (3). Course will provide students with an understanding of the role of foster care in society, the role of protective services in monitoring foster care, and policies and procedures governing adoption.

SWK 435 Social Work and Human Rights (3). A social work program elective that looks at the history of human rights throughout the world and how history affects present efforts to create a more just society and world. Class will focus on present-day human rights issues around the world and at home using social work values and the Universal Declaration of Human Rights as a model. Prerequisite: Social Work major of permission from instructor.

SWK 442 Immigration and Social Work: A Global Perspective (3). Course will provide students with an understanding of the process of transnational migration and its impact, the varied life contexts that necessitate migration and the consequences to individuals, families, sending and receiving countries. The implications for social work at micro, mezzo, and macro levels and current global concerns with immigration will be addressed.

SWK 460 Topical Seminar (3). Seminar dealing with various social work topics. Topics may differ from semester to semester depending on program curricular needs and demonstrated interest of students. May be repeated for a maximum of nine credit hours when topic differs. Prerequisite: junior standing.

SWK 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: permission of social work program director.

SWK 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Prerequisite: permission of social work program director.

SWK 498 Senior Seminar (3). The final social work practice course designed to prepare students for beginning professional entry-level generalist practice. This course will explore issues related to agency based work environments, service delivery in a generalist framework, current issues in the field, and focus on the professional use of self as well as professional writing in the field of social work. This course is taken in the final semester before SWK 499. Prerequisites: formal admission to the social work program, SWK 310, SWK 311, and either SWK 312 or SWK 313 (which may be taken concurrently).

SWK 499 Field Practicum (12). Internship in a community social service agency. Field practicum is designed to give students an educational work experience in which they apply generalist social work practice theory and skills. Concurrent field seminar class meets regularly on campus to explore current issues related to service delivery to individuals, families, groups, organizations and communities. Field practicum requires a full semester (500 clock hours) of full-time agency-based work. No student is guaranteed an internship since the agencies make the final decision about suitability. All academic coursework must be completed prior to enrollment in this class. Students must have professional liability insurance before beginning this class. Prerequisites: formal admission to the social work program, consent of field education review committee and SWK 498.

SWK 500 Independent Study (3). Faculty supervised independent study and investigation of selected topics related to the student's academic and/or career goals. This course cannot be used as a social work elective. Course may be repeated for a maximum of nine hours of credit if topics/investigations vary. Prerequisites: social work major with advanced standing, social welfare minor, and others with permission of instructor; permission of program director.

THEATRE (THD)

THD 101 Dance Appreciation (3). Orientation to dance as an art form: historical and aesthetic perspectives, basic dance elements, and the relationship to other arts and to the culture. Lectures, films, demonstrations and practical dance experience.

THD 103 Theatre Foundations (1). Preparation in audition techniques, resume, and portfolio presentation.

THD 104 The Theatrical Experience (3). Critical analysis of the theatre as an art form. Emphasis is on the play in production, not the play as literature. A student cannot have credit for both this course and HON 163.

THD 105 Introduction to Acting (3). The fundamentals of the craft of acting for the beginning/amateur adult actor will be taught. The course highlights introductory techniques to make a non-theatre major's performance more natural and spontaneous. Students will be required to see the productions presented by the Department of Theatre during the semester they are enrolled in the course. This course will not fulfill any requirements for a theatre major, but can be used in both theatre and musical theatre minors.

THD 106 Theatre Production Practicum (1). Six credits of THD 106 are required for theatre majors prior to graduation. Theatre minors must enroll for two semesters prior to graduation. Successful completion of the course requires participation at all auditions during the semester enrolled and completed acting or crew assignments during the semester enrolled. Letter-graded course. Prerequisite: theatre major or minor.

THD 107 Summer Theatre Production (3). A practical experience in which participant work in a summer theatre as an actor, crew member, manager, or other production responsibility. Students work directly with the department faculty in pre- and post-production events for the course.

THD 110 Movement for the Actor (3). Introduction to basic physical skills needed for acting: relaxation, flexibility, manipulation of the body at rest and in motion.

THD 111 Acting I (3). An introduction to a Stanislavski-based approach to relaxation, concentration, script analysis, scoring techniques, and character development. Prerequisite: theatre major or minor.

THD 112 Musical Theatre Production Practicum (1). Successful completion of the course requires participation at all musical theatre auditions during the semester enrolled and full completion of acting or crew assignments during the semester enrolled. Letter-graded course. Prerequisite: musical theatre major or minor.

THD 118 World Theatre (3). Introduction to the development, expansion, and adaptation of theatre around the world through historical reference, understanding of the world's artistic elements, and cultural requirements that have made certain forms of theatre successful through the ages. Students will be required to attend MSU Department of Theatre main stage productions.

THD 120 Play Analysis (3). Study and application of the basic concepts and skills needed to successfully comprehend and approach a play in production.

THD 140 Stagecraft (3). Course will be an introduction to the basic techniques of scenic construction and backstage procedures. Practical work on productions is required outside of lecture.

THD 142 Costume Construction (3). An introduction to the techniques employed in costume construction. The class focus is on building costumes and sewing projects.

THD 210 Voice and Diction (3). Introduction to an organic and healthful approach to relaxation, breath support, vocal projection, and clarity of diction.

THD 220 Creative Drama (3). Theatre games, group expression, improvisation, and storytelling will be examined. Using drama to educate children will be the emphasis for the class.

THD 221 Performance Theory (3). A study of acting, directing, and design theorists from ancient times to the contemporary era. This is a lecture/discussion course that is team-taught by faculty in the disciplines of acting, directing, and design. Students will be required to attend all productions offered by the department during the semester the course is taught. Prerequisite: THD 120.

THD 225 Children's Theatre Touring Company (3). Audition-based touring organization. Performances will take place at K-12 institutions each semester. May be repeated once for credit towards the theatre major. Prerequisite: audition entry to the company.

THD 230 Stage Management (3). Examination of theoretical and practical aspects of working as a stage manager.

THD 241 Theatrical Makeup (3). The basic principles of stage makeup are explored through lecture demonstration and application.

THD 250 Basic Theatre Design (3). Fundamental techniques and theories of design for the stage in the areas of scenery, costuming, lighting, and sound will be introduced. This course is a lecture/discussion-based course. It will be team-taught by faculty in the theatre discipline of design. Students will be expected to attend all productions offered by the department each semester the course is taught and will respond to the productions in writing. Prerequisite: THD 120.

THD 260 Music Theatre Dance I (3). Exploration of choreographers and their styles as they relate to musical theatre genres. Practical dance experience is utilized in the course.

THD 262 Jazz Dance I (3). Study of the theory, technique, and history of jazz dance. Practical dance experience is utilized in the course.

THD 263 Theatre History and Literature I (3). A introduction to Western theatre history and literature from the Greek civilization to the English Renaissance.

THD 264 Theatre History and Literature II (3). Continued introductory study of Western theatre history and literature from the English Restoration to the modern era.

THD 270 Stage Combat (3). Students will study the techniques of staging moments of physical violence on stage. Emphasis on safety and performance. Students are required to attend all Murray State University Theatre Department season productions. Prerequisites: THD 110 and 111.

THD 275 Acting for Film, Television, and Commercials (3). An introductory course focused specifically on acting for film, television, and commercials. The course is focused on auditioning and acting techniques for the camera, as well as standard terminology and jargon actors need to know when working in film, television, and commercials. Prerequisites: THD 111 and 120.

THD 310 Acting II (3). A continuation of a Stanislavski-based approach to acting including in-depth scene work in modern are introduced and utilized along with formal script analysis and scoring techniques as they relate to the actor-audience relationship. Prerequisites: THD 111 and 221.

THD 312 Advanced Movement for Actors (3). A study of period movement techniques, stage combat and other advanced physical acting techniques. Students will be expected to participate in each class period with the instructor leading exercises and various other techniques. Students will be expected to attend all productions offered by the department each semester the course is taught will respond to the productions in writing. Prerequisite: THD 110.

THD 320 Playwriting (3). A study of the principles and practices of dramatic construction of play scripts. Prerequisite: THD 120.

THD 322 International Studies in Theatre (3). Study of current theatrical productions in a foreign country. A residency outside of the United States is required for this course. Prerequisite: permission of instructor.

THD 330 Theatre Management and Arts Leadership (3). A study of theatre management techniques focusing on arts leadership skills and theories.

THD 341 Advanced Theatrical Makeup (4). A practical study of advanced makeup for the stage. Prerequisite: THD 241.

THD 346 Acting Shakespeare (3). Advanced study of Shakespeare's work as it relates to acting. Scripts analysis, interpretation, and Shakespeare's scripts in performance will be emphasized. Prerequisites: THD 120, 310.

THD 350 Scene Design (3). Aesthetics of set design as it relates to the stage. Emphasis is placed on principles and theories of design. Practical work on university theatre productions is required. Prerequisite: THD 250.

THD 351 Lighting Design (3). Aesthetics of lighting design as it relates to the stage. Emphasis is placed on principles and theories of design. Practical work on university theatre productions is required. Prerequisite: THD 250.

THD 352 Costume Design (3). Aesthetics of costume design as it relates to the stage. Emphasis is placed on principles and theories of design. Practical work on university theatre productions is required. Prerequisite: THD 250.

THD 355 Design and Production for TV and Film (3). Aesthetics of design as it relates to the camera. Emphasis is placed on principles, theories and implementation of scenic, lighting, and costume design. Practical work on university theatre productions is required. Prerequisite: THD 250.

THD 358 Sound Design for the Theatre (3). An introduction to the theoretical and practical processes of sound design for the theatre. Recording techniques, design techniques, sound reinforcement and other aspects of sound design for the stage will be discussed. This course is a lecture course. Students will be expected to attend all productions offered by the department each semester the course is taught and will respond to the productions in writing. Prerequisites: THD 140 and 250.

THD 360 Music Theatre Dance II (3). Study of music theatre dance as it relates specifically to musical theatre in performance. Prerequisites: MUS 127 and THD 111, or permission of instructor.

THD 362 Jazz Dance II (3). Continued study of jazz dance as it relates to THD 262. Prerequisite: THD 262.

THD 389 Musical Theatre Performance I (3). A study of principles of musical theatre performance. The course includes acting techniques, and musical preparation, culminating in a student showcase performance. Prerequisites: THD 111 and MUS 127.

THD 392 Professional Theatre Engagement (1-3). Practical engagement course for theatre majors and minors. Each student will work 45 hours on an approved project utilizing skills related to Theatre studies. Graded pass/fail. Course is repeatable for up to six credit hours. A total of two credit hours count towards graduation. Prerequisites: junior or senior standing and permission of instructor.

THD 400 Special Topics (3). Studies in theatre arts or dance topic not offered in the curriculum on a regular rotation. Only one THD 400 course will count towards a theatre major or minor's graduation requirements, but additional hours may be counted as free elective hours. Prerequisite: permission of instructor.

THD 410 Acting III (3). A study of acting styles for period literature. Prerequisites: THD 111 and 221.

THD 422 Contemporary Theatre (3). A study of contemporary theatre trends, practitioners, and literature from 1970 to the present.

THD 430 Directing I (3). Principles and methods of stage direction, script analysis, and the directing concept as they relate to play production. Prerequisite: THD 111, 120, and 250.

THD 465 Directing II (4). Practical application of principles learned in THD 430. Prerequisite: THD 430.

THD 466 Theatre Literature (3). Examination of theatre literature from the ancient times through the contemporary era. Emphasis will be placed on major historical periods of theatre arts from the ancient Egyptians to Contemporary Western Theatre literature. This course will be a lecture/discussion format. Students will be expected to attend the productions offered by the department each semester the course is taught and will respond to the productions in writing. Prerequisite: THD 120.

THD 590 Directed Independent Study in Theatre Arts (3). Individual projects of special interest under the direct supervision of a theatre or dance faculty member. Prerequisites: senior standing and consent of the chair of the department.

TEACHER LEADER (TLE)

TLE 600 (EDU 600) Foundations of Teacher Leadership (3). Course is designed as the beginning core course in the Teacher Leader graduate program. Candidates will examine the concept of teacher leader, its definition and potential influence on the student, school, and community. Candidates will build on their knowledge of diverse backgrounds and perspectives to bolster effective partnerships among colleagues in order to establish a shared focus on the continuous improvement of student learning. Field experiences required.

TLE 620 (EDU 639) Educational Improvement through Research (3). A course designed to develop capacities in educators regarding the collection, analysis and interpretation of data for decision-making, including the design and implementation of basic action research to explore innovative teaching and learning models that promote student learning. Candidates will explore ways to share the results of their analysis and engage stakeholders as evidence of leadership. Field experiences required.

TLE 630 (ADM 624) Teacher Leadership in the Schools and Community (3). Course is study of families and communities and their relationship to the school program. An analysis of proven collaboration and communication processes and principles and their use in improving strategies to strengthen student achievement. Field experiences required. Prerequisites: admission to Teacher Leader graduate program and TLE 620.

TLE 640 (EDU 640) Teacher Leadership Showcase (3). Course provides culminating experiences for the Teacher Leadership graduate degree program. Candidates will reflect on their program experiences, document their professional growth as teacher leaders, and present the impact of their leadership on the overall school community based upon their own research and growth. Field experiences required. Prerequisite: TLE 620.

TLE 740 Instructional Improvement and Mentoring (1-3). The purpose of this course is to develop mentoring strategies appropriate to assist new educators in the transition to teaching and to improve their instructional practice. This course is designed to support teachers and administrators engaged in mentoring, including, but not limited to, student teacher supervision, the Kentucky Principal Internship Program, and the Kentucky Teacher Internship Program. Graded pass/fail. Repeatable up to six hours. Prerequisite: permission of instructor. (Same as ADM 740.)

TEACHING ENGLISH TO SPEAKERS OF OTHER LANGUAGES (TSL)

TSL 330 (332) Foundations of Teaching Methods and Technology for English Learners (3). Course provides an in-depth exposure to methodology, activities, and materials integrated with technology appropriate for English learners in preschool through secondary school contexts. This course covers a range of instructional and classroom management techniques appropriate for stand-alone or pull-out ESL/EFL instruction. Corequisite: ENG 228 or equivalent.

TSL 331 Strategies and Materials for Teaching English Learners (3). Course helps students deepen their knowledge on teaching methods and develop field-specific strategies and skills to design activities and materials appropriate for teaching English learners in preschool through secondary school contexts. The course provides a range of meaningful hands-on materials and activities that students can adopt for their future teaching context. Field experience required. Prerequisite: TSL 330 or equivalent.

TSL 409 Acquisition of Languages in Children and Adolescents (3). This course examines theories and perspectives on the language acquisition process in children and adolescents. Special emphasis includes a review of language acquisition research in school contexts and an examination of the relationship between various theories of acquisition and instruction. Prerequisite: ENG 310.

TSL 410 ESL Assessment, Placement, and Advocacy (3). Students will understand and practice various types of assessment particular to English language learners in the public school context, including administration and interpretation of standardized language proficiency and placement tests, tracking student language progress with respect to curricular standards, and creation of traditional and alternative language assessment instruments. Emphasis is also placed on developing skills to communicate student and family needs and progress to communities both inside and outside the school context. A field experience is required. Prerequisite: TSL 331 or 332.

TSL 421 Research in Second Language Learning and Teaching (3). Course explores various research topics and methods concerning second language acquisition in multilingual settings. It provides students with useful tools for reaching language learning in school, home, and community and gives them opportunities to examine and reflect on the roles of micro-interactional contexts and macro-social issues in learning a second language. By addressing a variety of language research issues that prove useful to language teaching at various levels and institutions, the course will help students close the gap between theory and practice in the area of language, culture, and education. Corequisite: TSL 409 or instructor permission.

TSL 480 Effective Pedagogy: Differentiation, Assessment, and Advocacy (3). Teacher candidates will apply content knowledge, educational philosophies, learning theories, differentiated instruction, classroom management strategies, effective assessment practices, instructional technology, co-teaching strategies, student advocacy, and content-area literacy. Emphasis will be place on roles of teachers, students, parents, school, and community as educational partners. Candidates will design and implement culturally relevant, developmentally-appropriate instruction for all students. This course is paired with a program-specific mega-practicum course. Prerequisites: EDU 380 or equivalent course with a *B* or higher. Admission to Teacher Education for certification track students.

TSL 600 Methods and Materials for Teaching ESL/EFL (3). Knowledge derived from the linguistic sciences about the nature of language and how it is learned serves as the basis for the exploration and evaluation of various methods, techniques and approaches to the teaching of English as a second or foreign language.

TSL 605 Writing and the Teaching ESL/EFL Writing (3). Course will explore writing and the acquisition of writing skills in a second/foreign language with specific attention to methods and techniques for teaching writing to all levels of English language learners. Students will apply this knowledge through extensive writing and analysis of writing in order to improve their expertise and understanding of writing approaches.

TSL 609 Foundations of Second Language Acquisition (3). An overview of the foundational concepts, theories, and methodology in the field of second language acquisition (SLA) in its historical and analytical aspects, treating issues and topics significant to SLA in depth. Prerequisite: ENG 310 or 618 or equivalent.

TSL 610 Applied Linguistics and Professional Practices (3). A specialized application of subareas of applied linguistics with emphasis on the impact of theories of linguistics on ESL/EFL pedagogy and preparing students to be critical consumers of applied linguistics research. Topics of focus include issues in research design and methodology, the ethics of teaching, and skills needed to participate as an active ESL/EFL professional. Prerequisite: TSL 609.

TSL 615 Course and Syllabus Design in ESL/EFL (3). Building on concepts in TSL 600, the course examines differing viewpoints of the global objectives of language programs and courses. Prerequisite: TSL 600**.**

TSL 620 Computer Assisted Language Learning (3). An introduction to computer assisted language learning (CALL), an overview of its specialized vocabulary and a review of research regarding its effectiveness.

TSL 623 Testing and Evaluation in Second Language Teaching (3). A review of a number of current methods for classroom/standardized language testing and evaluation.

TSL 634 Language and Culture (3). A study of the relationship among language, society and the individual's concept of reality. The course examines a variety of ethnographic concepts and findings as they relate to language and language learning in its broadest context. The course will also examine sociolinguistics, the relationship between culture and language, and the implications for second language teaching and the development of intercultural competence. (Same as ENG 634.)

TSL 653 Integrated ESL/EFL Skills Seminar (3). An exploration of advanced methods of teaching ESL/EFL integrating all language production and reception skills and linguistic structural knowledge within a content/theme-based pedagogical framework, specifically addressing how grammar is incorporated within a multidimensional model of ESL/EFL instruction. A field experience is required. Must be taken during the final semester of study in the M.A. in TESOL. A field experience is required.

TSL 680 Practicum (3). An intensive observation/learning experience in a classroom setting through which students reflect on and begin to apply the skills and methodological approaches learned throughout the program. Prerequisite: TSL 600.

TSL 690 Internship: Teaching Focus (3). A supervised teaching position in an educational institution or industry in the United States or abroad which allows the intern to gain experience over a period of at least four weeks. The employer participates in formal evaluation of the intern's performance. Must be taken during the final semester of study in the M.A. in TESOL.

TSL 691 Internship: Research Focus (3). A supervised research position, designed for students with prior or current teaching experience, that allows the intern to gain experience in advanced research skills. May receive an *R* grade if work needs to be continued for one additional semester. Prerequisite: Must have teaching experience; TSL 610; approval by the TESOL Committee based on a superior score of the TSL 610 final project and research proposal, using an external rubric; and recommendation of TSL 610 professor.

TSL 692 Internship: Materials Design Focus (3). A supervised project developed position designed for students with prior or current teaching experience, that allows the intern to gain experience in the development of course material worthy of possible publication. May receive an *R* grade if work needs to be continued for one additional semester. Prerequisite: Must have teaching experience; TSL 615; approval by the TESOL Committee based on a superior score of the TSL 615 final project and materials proposal, using an external rubric; and recommendation of TSL 615 professor.

TELECOMMUNICATIONS SYSTEMS MANAGEMENT (TSM)

TSM 100T Transitions (1). Course is designed to assist students in their transition to Murray State University. Content includes orientation to the specific area or major(s) and minor(s) within the academic program; university procedures, policies, and resources; strategies for personal and academic success, and extracurricular opportunities. Only one transitions course will count toward graduation. A student (transfer or regular) who has not enrolled in and earned 12 hours prior to his/her first semester at Murray State University must take Transitions. Graded pass/fail.

TSM 118 Telecommunications Electronics I (3). A theoretical overview of the electronic building blocks involved in the field of telecommunications. Prerequisite: ACT standard score of at least 20 or MAT 097.

TSM 121 Telecommunications Electronic Principles (3). An overview of the processes and theory utilized in the field of telecommunications. Prerequisite: Mat 140.

TSM 132 Network Technical Support (3). Primarily lab-based course, studying microcomputer concepts, with emphasis on network technician practices. Students learn to operate, install, configure, troubleshoot, upgrade, and maintain microcomputers and gain an introductory understanding of computer networks. Two hours lecture and two hours lab.

TSM 133 Telecommunications Technology and Methods (3). An overview of the technology and managerial considerations of the telecommunications systems management field, including history, job market, educational requirements, microcomputer concepts and basic networking concepts. Two hours of lecture and two hours of lab per week.

TSM 134 Introduction to Telecommunications Systems Management (2). An overview of the telecommunications industry including history, fundamentals, regulations, the marketplace, educational requirements, and job/career opportunities. The class will focus on telecommunications terminology, overviews of specific technologies and their business application.

TSM 135 Introduction to Network Technology (2). An overview of the technology and managerial considerations of the telecommunications systems management field, including history, job market, educational requirements, microcomputer concepts and basic networking concepts.

TSM 218 Telecommunications Electronics II (3). A continued theoretical overview of the electronic building blocks involved in the field of telecommunications. Prerequisite: TSM 118.

TSM 219 Electronic Skills Lab (3). Electrical, electronic and related mechanical drafting; printed circuit board layout and masking techniques; introduction to CAD techniques; industrial documentation procedures. Four contact hours. (Fall)

TSM 232 Operating Systems (3). A study of operating systems and network administrative functions necessary to implement and maintain modern Local Area Networks (LAN). Topics include operating system installation and configuration, optimization, and administrative tasks. Two hours of lecture and two hours of lab per week. Prerequisites: TSM 135; ENG 096 or ACT score of at least 18 and Reading ACT score of at least 20 or successful completion of ESS 120 and REA 096.

TSM 233 Network Services (3). A lecture-lab class providing the student in-depth analysis and evaluation, name resolution, directory services, IP management, email and web services and service availability. Two hours of lecture and two hours of lab per week. Prerequisite: TSM 232.

TSM 241 Networking Fundamentals (3). A study of fundamentals of networking including the topics of switches; routers; Ethernet; VLANs; sub-netting; routing and routed protocols; access-control lists; and device operating systems and management. Students will be able to design and implement simple wired networks and internetworks upon completion of this course. Two hours of lecture and two hours of lab per week. Prerequisite: TSM 232.

TSM 301 Physical Network Theory (3). A review of the electronic theory utilized in the field of telecommunications and current industry standards governing commonly implemented physical network systems. Prerequisite: MAT 130 or 140; PHY 125 and 126 or PHY 132 and 133 or EMT 110.

TSM 320 Introduction to Wireless Technology (3). An introduction to the rapidly changing field of wireless technology, including the topics of wireless access technologies and fundamentals, network mobility management and handoff, cellular, WLAN, broadband WiMax, and mobile satellite services and applications. Prerequisite: TSM 301.

TSM 321 Wireless Communications I (3). Introduction to wireless cellular communications fundamentals including coverage and traffic analysis, as well as an overview of mobile communication networks components. Prerequisite: TSM 320.

TSM 322 Wireless Communications II (3). Course provides a comprehensive technical foundation in IS136, GSM, CDMA, EDGE, CDMA2000 and higher generations of wireless technologies and applications. Prerequisite: TSM 321.

TSM 323 Wireless Mobile Internet (3). Course will develop a comprehensive understanding of the wireless internet describing the standard activities and the current status of wireless IP (Internet Protocol), and detailing network models and specific associated techniques. Prerequisite: TSM 321.

TSM 331 Digital Electronics (4). A study of Boolean algebra, binary number systems, and small- and medium-scale digital integrated circuits. Emphasis is placed upon the TTL and CMOS logic families. Three hours lecture and two hours lab. Prerequisite: TSM 210.

TSM 332 Microprocessors (4). A study of advanced digital systems and their relationships to microprocessor-based systems, general microprocessor architecture, and an in-depth study of a Motorola 6800-family microprocessor. Three hours lecture and two hours lab. Prerequisite: TSM 331. (Fall)

TSM 340 Information Security Management (3). An overview of the problems, techniques, and practices associated with establishing and maintaining information security. Prerequisite: TSM 241.

TSM 341 Communications Electronics I (4). An introduction to communications electronics including AM transmission and reception, single-sided-band communications, and FM transmission and reception. Three hours lecture and two hours lab. Prerequisites: MAT 130 and TSM 210.

TSM 342 Communications Electronics II (4). A continuation of TSM 341 including pulse and digital communications, television, telephone systems, microwave communications, fiber optic systems, transmission lines, wave propagation, and antennas. Lecture and laboratory. Prerequisite: TSM 341. (Spring)

TSM 343 Protocol Analysis (3). A lecture-lab course analyzing the operation and behavior of Internet and network protocols with emphasis on the TCP/IP suite of protocols. Two hours of lecture and two hours of lab per week. Prerequisite: TSM 232 and 241.

TSM 351 Principles of Information Security (3). An introduction to information assurance and the study of principles and mechanisms of network security. The topics include security architecture and services, symmetric and asymmetric

encryptions, IP and web security, public-key infrastructure and authentication service. Prerequisite: CSC 232 and STA 135 (or CIS 243).

TSM 352 Systems Security (3). A study of security issues associated with network operating systems. Two hours of lecture and two hours of lab per week. Prerequisite: TSM 343 and 351.

TSM 353 Network Security (3). A study of the techniques for securing data networks. Two hours lecture and two hours lab per week. Prerequisite: TSM 343 and 351.

TSM 360 Virtualized Enterprise Systems (3). Class involves the virtualization technologies used in enterprise networks including virtualized approaches to data storage, processing, networking, applications, and user access. Management and security of the virtualized environment is also addressed. Using virtualization technology to overcome challenges associated with building and maintaining highly scalable and resilient enterprise networks to support mission critical applications and dynamic user demands is emphasized. Prerequisites: TSM 233 and TSM 343.

TSM 380 Internship (3). These students, upon approval of the TSM faculty, are placed with cooperating firms to receive on-the-job training in telecommunications systems management. Work experience supervised by faculty; written reports are required. Graded pass/fail. Prerequisite: Permission of program director.

TSM 388 International Experience in Telecommunications (3). A study abroad experience, which includes a short-term trip, highlighting selective historic and modern contributions to telecommunications from another country and culture. Graded pass/fail. Prerequisite: permission of instructor.

TSM 397 Undergraduate Research in TSM (3). Research projects arranged individually with faculty members who agree to direct the research. A written plan of research must be filed with the instructor within two weeks of the beginning of the semester. A written summary of the research performed, data obtained, and conclusions following from the work must be submitted not later than the final week of classes. May be repeated for a maximum of nine credit hours. Prerequisites: junior standing and permission of the instructor.

TSM 411 Network Design, Operations and Management (3). Advanced study of network design, operations, and management from a technical point of view. As the capstone to the undergraduate TSM program, the course examines the technologies, tools, and procedures available to network managers as well as the principles of project justification and management. Students will learn to do requirements analysis, estimate cost, and calculate return on investment. Issues of efficiency, performance, reliability, risk management, disaster recovery, and security will be addressed. The course includes a major network design project. Prerequisites: CIS 317 and senior standing.

TSM 421 Mobile Satellite Communications (3). Course will examine elements of the architecture of mobile satellite service networks. Air interface, systems for processing and completing telephone and data calls, and the regulatory issues that hamper the creation of a viable business will be integral components of the course. Prerequisite: TSM 321.

TSM 440 Information Assurance Policy and Management (3). Advanced study of information assurance policy and management, and security auditing. The end-to-end process of information assurance policy development, implementation, management, and audit is examined including the impact of national policy and regulation, with the objective of establishing and maintaining the confidentiality, integrity , and availability of digital information. Prerequisite: TSM 351.

TSM 441 Advanced Information Security (3). Advanced topics in information assurance including computer and network forensics, malicious software (malware), and cryptography systems. Course provides the students with an advanced understanding of the vulnerabilities, threats, defenses, and incident response procedures involved in the safeguarding of modern information, networks, and computer systems. Prerequisite: TSM 352.

TSM 443 Voice and WAN Systems (3). A study of telephone systems including PSTN architecture, private exchanges and transmission and switching technologies. Emphasis is placed on the design and support of telephony and WAN systems in the enterprise, but regulatory and market issues are also considered. Two hours lecture and two hours lab per week. Prerequisite: TSM 343.

TSM 444 Enterprise Networks (3). Advanced topics in the theory, design, and performance of computer networks. The topics include quality of service support, high-speed network architectures, traffic management, transmission systems, queuing analysis, and emerging network technologies. Prerequisites: TSM 343 and 443.

TSM 450 Telecommunications Policy and Strategies (3). Course will cover social, ethical, legal, strategy, technical, and professional issues encountered in a business environment in the information age. The students will discuss telecommunications policy and regulations in the United States and other nations, and how these regulations impact the telecommunications industry. Prerequisite: senior standing or permission of the instructor.

TSM 488 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours from any 488/489 courses. Graded pass/fail. Prerequisite: TSM 241.

TSM 489 Cooperative Education/Internship (1-3). A meaningful, planned, and evaluated work experience related to the career and educational objectives of the student for which he/she may receive academic credit and possible financial remuneration. May be repeated for a maximum of six hours. This is a graded class. Prerequisite: approval by academic advisor.

TSM 517 Systems Planning (3). The primary focus of the course is to understand the development of a systematic planning cycle for implementing and maintaining an organization's Information Technology (IT)/Information Systems (IS). Specifically to understand the complex but direct relationship between "business planning" commonly called the "Corporate Strategic Plan (CSP)" and "systems planning" also call "Information System Plan (ISP)". Students will explore the theory and practice of IS planning through case study analysis. Students will understand how IT/IS projects and the planning involved in the projects implement the ISP. Prerequisite: CIS 317.

TSM 571 Problems in TSM (3). Individual study and research pertaining to special problems in telecommunications system management. Prerequisite: permission of instructor.

TSM 601 Telecommunications Principles (3). A graduate level introduction to the underlying principles of telecommunications. This course presents the problems and solutions involved in communicating over extended distances. Topics include: fundamental physical and electronic concepts; information theory; types of media; requirements and capacity calculations; modulation and multiplexing methods; standards and architectures; modern applications and issues. Throughout the presentation of the technical fundamentals, discussion will focus on relevant management issues such as cost, infrastructure, support, and business advantage. (Same as CIS 601.)

TSM 602 Telecommunications Systems (3). A graduate level introduction to modern telecommunication systems. This course presents systems oriented approaches for rapid and reliable communication over extended distances. Topics include: local area network topology, structure, and operating systems; backbone architectures; wide area networks; telephony; the Internet; security and privacy issues. Throughout the presentation of telecommunications hardware and software systems, discussion will focus on relevant management issues such as cost, efficiency, and business models. Prerequisite: TSM 601.

TSM 603 Telecommunications Project Management (3). Introductory project management course where students acquire key project competencies. Students will learn how to apply the competencies to implement project management processes established by the Project Management Institute Body of Knowledge (PMBOK Guide). Corequisite: TSM 601 or permission of instructor. (Same as CIS 603.)

TSM 607 Advanced Telecommunications Project Management (3). A project management course in which students study the processes that result in identification, qualification and selection of telecommunications projects. Projects that generally modify existing telecommunications infrastructure or incorporate an entirely new infrastructure. Students will study the differences

in these processes when their client is internal or external. Students will study the processes from preparing proposals through contract negotiations to get projects initiated. Prerequisite: TSM 603 or permission of instructor.

TSM 610 Telecommunication Networks Management (3). An overview of fundamentals of daily telecommunication design, operations, management, and a survey of technologies and applications of telecommunications systems. Prerequisite: TSM 601. Corequisite: TSM 602.

TSM 615 Information System Security (3). Graduate-level study of modern computer, network, and information systems security. This course presents systems-oriented approaches to network defense, malicious software, and data encryption. Topics include network intrusion prevention and detection, incident response, worms, viruses, Trojan horses, public key encryption, message authentication, and privacy issues. Throughout the presentation of security issues, discussion will focus on the cost of security to business and society at large. (Same as CIS 615.)

TSM 617 Advanced Systems Planning (3). The primary focus of the course is to understand the development of a systematic planning cycle for implementing and maintaining an organization's Information Technology (IT)/Information Systems (IS). Specifically to understand the complex but direct relationship between "business planning" commonly called the "Corporate Strategic Plan (CSP)" and "systems planning" also call "Information System Plan (ISP)". Students will explore the theory and practice of IS planning through case study analysis. Students will understand how IT/IS projects and the planning involved in the projects implement the ISP. Prerequisite: CIS 317.

TSM 625 Information Security Risk Management (3). Graduate-level study of the management of risk securing modern computer, network, and information systems. Prerequisite: TSM 351 or TSM 615.

TSM 630 Telecommunications Legal Environment: Law, Policy, and Regulation (3). Law, policy and regulation as they affect telecommunications technologies and telecommunications industry. Emphasis will be placed on an examination of the FCC, the Telecommunications Act of 1996, and the telecommunications business environment, including licensing, divestiture and antitrust. Primarily a lecture, readings, and discussion course.

TSM 671 Problems in TSM (3). Individual study and research pertaining to special problems in telecommunications system management. Prerequisite: permission of instructor.

TSM 680 Telecommunications Solution Development (3). A capstone course for the M.S. in TSM that requires students to use project management techniques involving the technical, financial and managerial aspects of developing an integrated communications network solution meeting voice, data and video requirements. Major emphasis in the proposed solution is on requirement analysis, solution design, solution implementation, and solution management. Oral communication skills are required for presentation of proposed solution. Prerequisite: 18 hours of graduate work toward the M.S. including ACC 604, TSM 602, 603, and 610.

TSM 688 Telecommunications Systems Practicum (3). Application of knowledge and skills developed in core courses in an organizational environment to solve telecommunication management problems. Emphasizes practical industry experience. A report is submitted to the Graduate Committee at the end of the project period. Prerequisite: permission of program director.

TSM 695 Comprehensive Project in Telecommunication Systems Management (3). The course consists of an independent, in depth study of a topic or problem in Telecommunication Systems Management under the direct supervision of a faculty member on an individual basis. Prerequisites: Nine hours of graduate work in Telecommunications Systems Management and permission of the instructor.

TECHNOLOGY TEACHER EDUCATION (TTE)

TTE 451 Manufacturing Systems (4). A study of the practices used in the manufacturing industry. Emphasis is placed on the theory and processes used to convert the needs and wants of consumers into distributed products. Technical aspects of materials, processes, equipment, products and occupations relating to the manufacturing industry will be explored. Problem-solving, research and experimentation will be used to establish an enterprise to select, design, test, mass produce, market and service products. Recycling and the impacts on and relationship to societal institutions, the environment and the individual are introduced and explored. Lecture and laboratory. Prerequisites: ITD 101 and 120, upper division standing or instructor approval.

TTE 452 Communications Systems (3). Introduction to the systems and techniques used to transfer and/or process ideas, knowledge and information. Problem-solving, research and experimentation will be used to experience encoding, transmitting, decoding, storing, retrieving and using information. Students will develop technical expertise in the design, construction, analysis and evaluation of the components, devices and subsystems of communication systems. The impacts on and relationship to societal institutions, the environment and the individual are introduced and explored. Lecture and laboratory. Prerequisites: ITD 101 and upper division standing or instructor approval.

TTE 453 Transportation Systems (3). A study of systems used to move goods and transport people. Students will research, experiment and solve problems related to the design, development, evaluation and operation of subsystems and components of terrestrial, marine, atmospheric and space transportation as well as the transformation and transportation/transmission of energy to support those transportation systems. Students will select, design, construct, analyze and evaluate solutions to transportation problems. The impacts on and relationship to societal institutions, the environment and the individual are introduced and explored. Prerequisite: upper division standing or advisor approval.

TTE 455 Exploring Diverse Technological Systems (3). This course provides an overview of diverse technological systems. It explores technological aspects of how technology is designed, and used to meet the wants and needs of individuals and society. The problem-solving and design processes are examined in the context of production, communication and transportation systems. Emphasis is placed on teaching technical content and using the systems approach to develop technical understanding, rudimentary technical skills and problem solving expertise in the technology education classroom/laboratory setting.

TTE 472 Facility Planning, Operation and Maintenance (2). A study of the methods and procedures used in planning, utilizing, equipping, operating, maintaining and evaluating technology education classroom and laboratory facilities. Exploration of the laboratory management skills and techniques (including safety, inventory, record-keeping, requisitioning equipment and materials, maintenance and budgeting) necessary to develop, maintain and improve an educational environment which accommodates the instructional process in the technology education classroom. Lecture and laboratory.

TTE 554 Teaching in the Modular and Systems Environment (3). This course is designed to be the capstone course for pre-service technology education teachers. Emphasis is placed on teaching technical content using both the systems and modular approaches to develop technical understanding, rudimentary technical skills and problem solving expertise in the technology education classroom/laboratory setting.

UNMANNED AERIAL SYSTEMS (UAS)

UAS 110 Introduction to Aviation (3). Introductory course in the fundamentals of aviation. Knowledge and skills will be acquired through classroom, simulations, and hands-on flight activities, including launch and landing operations, emergency procedures, mission planning, execution, and ethics. Satisfactory completion of the course with FAA examination fulfills requirements for FAA Small UAV Certification. Field trip to local airport and off-campus sites for drone piloting expected.

UAS 310 Introduction to Unmanned Aerial Systems Applications (3). A survey course to introduce the student to the history of Unmanned Aerial Systems (UAS) and their current and future development for use in society. Focus areas include case studies in the practicality, safety, and ethics of applications in agriculture, engineering, mapping, disaster and emergency preparedness, environmental research, law enforcement, and business. Field trips to local businesses that use drone technology will be required.

UAS 410 Unmanned Aerial Systems Sensors and Data Display (3). Course presents the theory and applications of common sensors used by the operators of unmanned aircraft systems. Theory is combined with operational

scenarios to provide the student with the ability to match specific sensors with anticipated missions. It includes introduction to commonly used commercial software packages for data interpretation and mapping.

UAS 480 Experiential Learning in Unmanned Aerial Systems Technology (3). Course requires the student to complete a practical project with real-world application to an area of Unmanned Aerial Systems (UAS) technology. The student will work with a mentor in the university, commercial, municipal, or agency setting to determine the parameters of study for the problem. The student will use UAS techniques to acquire data for the mentor and interpret the results of that data in support of the learning outcomes. Field experiences in UAS flights for data acquisition as appropriate to the problem selected are expected.

WATERSHED SCIENCE (WSC)

WSC 601 Seminar in Sustainability Studies (2). An exploration of environmental problems caused by humans and the solutions to those problems, including human population growth, over-exploitation of natural resources, habitat destruction and extinction. The scientific basis and ethical issues surrounding these problems will be discussed. The course will also explore the potential for humans to live in a sustainable fashion on the planet, with an emphasis on social responsibility and civic engagement.

WSC 690 Seminar (1). Graduate students who anticipate completing the thesis must register for Seminar and defend their research before the college faculty and fellow graduate students.

WSC 693 Sustainability Practicum I (3). Students will work with a faculty mentor to design a capstone project that will focus on sustainability solutions. The project can be broadly defined to include everything from local approaches to improve recycling on campus to research on global climate change, and will be designed in consultation with the faculty mentor. Prerequisite: permission of the sustainability science graduate coordinator.

WSC 694 Sustainability Practicum II (4). Course will provide the opportunity for students to complete their capstone project, started during WSC 693, as part of their Sustainability Science M.S. degree. Students continue work on their project, give an oral presentation of their work at a Sustainability Science symposium, and complete a written report. Prerequisite: successful completion of WSC 693.

WSC 698 Thesis I (3).

WSC 699 Thesis II (3).