COURSE DESCRIPTIONS

Accounting (AC) Courses

AC 300 Fundamentals of Accounting. 3 Semester Hours.
A survey of accounting concepts and the use of accounting information in financial and managerial decisions.

AC 303 Management Decision Support Systems. 3 Semester Hours. (Lab fee.) (Also listed as MG 303.)
Prerequisite: Windows Applications course (CIS 146). An analysis of the nature of the decision making process and an examination of support systems. Instruction will emphasize an advanced application of spreadsheet and database management software.

AC 321 Intermediate Accounting I. 3 Semester Hours. (Lab fee.)
Prerequisite: Principles of Accounting. A survey of the financial reporting process, a detailed study of financial statements, and an analysis of generally accepted accounting principles.

AC 322 Intermediate Accounting II. 3 Semester Hours. (Lab fee.)
Prerequisite: AC 321. An in-depth study of accounting theory applicable to the major asset categories of a business entity.

AC 323 Intermediate Accounting III. 3 Semester Hours (Lab fee.)
Prerequisite: AC 322. A review of the application of accounting theory to liability and stockholders equity balance sheet categories, culminating with a study of special purpose financial statements.

AC 341 Governmental Accounting. 3 Semester Hours. (Lab fee.)
Prerequisite: Principles of Accounting. An introduction to fund and budgetary accounting for government and not-for-profit organizations in education, health care, and social welfare agencies.

AC 361 Federal Tax Accounting. 3 Semester Hours. (Lab fee.)
Prerequisite: Principles of Accounting. An overview of federal tax laws and regulations applicable to individuals and sole proprietors.

AC 371 Managerial Accounting. 3 Semester Hours. (Lab fee.)
Prerequisite: Principles of Accounting. An introduction to the preparation and interpretation of cost accounting data to be used by management in the twin entrepreneurial functions of planning and control. Job order, process, and standard cost systems will be studied in depth.

AC 401 Auditing. 3 Semester Hours. (Lab fee.)
Prerequisite: AC 322. Auditing theory and practice, with emphasis given to the function of the audit in the certification of financial statements by an independent auditor.

AC 425 Accounting Information Systems. 3 Semester Hours. (Lab fee.)
Prerequisite: AC 322 and AC 371. Fundamentals of information systems technology, techniques, and capabilities, particularly with respect to the use of accounting information in a computer environment.

AC 431 Advanced Accounting. 3 Semester Hours. (Lab fee.)
Prerequisite: AC 322. A study of advanced accounting concepts including partnerships, foreign currency transaction, international accounting, estates and trusts, bankruptcy, and related topics.

AC 441 Special Topics in Accounting. 3 Semester Hours. (Lab fee.) To be offered on occasion of student demand or need.

AC 442 Advanced Auditing and Fraud Examination. 3 Semester Hours. (Lab fee.)
Prerequisite: AC 322 and AC 401. An advanced study of auditing theory and practice.

AC 460 Directed Study/Research in Accounting. 3 Semester Hours.
A course designed to allow students an opportunity to perform research/directed studies in accounting. Offered at the discretion of the professor with approval of the School Dean.

AC 461 Federal Tax Accounting II. 3 Semester Hours. (Lab fee.)
Prerequisite: AC 361. The application of the federal income tax law as it applies to partnerships and corporations, with emphasis on the differences which exist between financial and tax accounting.

AC 471 Advanced Cost Accounting. 3 Semester Hours. (Lab fee.)
Prerequisite: AC 371. Cost data analysis and accounting controls in planning and controlling operations and in making special decisions.

AC 481 Financial Accounting Theory. 3 Semester Hours. (Lab Fee.)
Prerequisite: AC 323. An intensive study of recent developments, research in literature in accounting theory promulgated by the various professionals and accounting associations and related financial organizations.

APPLIED TECHNOLOGY

Applied Technology Core (ATC) Courses

ATC 300 WorkKeys Assessment. 1 Semester Hour.
This course is required for all B.S.A.T. majors. WorkKeys is an ACT-developed assessment tool which assesses student competence in critical skill areas. Pre- and post-tests will be administered to B.S.A.T. majors as a part of program assessment.

ATC 301 Problem Solving with Computers. 3 Semester Hours. (Also listed as CIS 301.) (Lab Fee.)
Prerequisite: Students should have completed at least one introductory course in computers or have equivalent work experience. This course is designed to strengthen the students grounding in common computer applications. Emphasis will be on the understanding of applications and how they use the associated technology. The course will be conducted through lecture, in-class computing laboratories, and out-of-class assigned problems and projects.

ATC 302 Technical Writing. 3 Semester Hours.
Prerequisite: EH 101. This course is intended for students wishing to enhance their technical writing skills. Based on the philosophy that the best way to learn is by doing, the course entails many writing projects. Technical writing refers to the many kinds of writing individuals do in their careers. In contrast to most academic writing, technical writing aims to get something done (not just to demonstrate knowledge), relays information from someone more knowledgeable about a topic to someone less knowledgeable about it, and is read by people from mixed technical and decision-making levels.

ATC 305 Industrial Processes. 4 Semester Hours. (Lab Fee.)
Prerequisite: Students should have had a combination of academic or work-based and work-based background in manufacturing technology of high-volume manufacturing process experience. Today's industrial/business world is tough. Competition is heavy and consumers are knowledgeable. Survival in such an environment demands organizational commitment to improving quality and productivity. The first step to improvement is the solid industrial overview this Industrial Processes Course provides. Topics of discussion and review include: print reading, geometric dimensioning and tolerancing; process control and quality management; safety in the manufacturing environment; metallurgy and materials; machining and fabrication; welding principles and theory; adhesive bonding and procedures; manufacturing, electronic, and aerospace assembly; and chemical processes and control.

ATC 306 Applied Mathematics. 3 Semester Hours
Prerequisite: Students should have had a course in technical math or college algebra. This mathematics survey course will include reviews of geometry, trigonometry and algebra with an introduction to basic principles of calculus in order to assure that all BSAT students have a nominal level of mathematics skills.

ATC 320 Organizational Communications and Leadership. 3 Semester Hours. (Also listed as MG 320.) (Lab Fee.)
Prerequisite: Student should have completed at least one course in English composition or equivalent. The purpose of this course is to enhance the student's ability to communicate effectively and efficiently in the workplace. Writing, listening, reading, and speaking are emphasized in assignments, exercises, and projects. Skills of leadership, group collaboration, and intercultural communication are stressed in assignments and demon-strated in projects.

ATC 375 Organizational Behavior and Teambuilding. 3 Semester Hours. (Also listed as MG/PS/PSA 375**.)** (Lab Fee.)
Prerequisite: It is recommended that students have had an introductory course in behavioral science and in computers and basic internet skills or have had equivalent work experience. This course is designed to enhance class members' understanding of the causes and consequences of the behavior of people within the context of organizations, with emphasis on teamwork. To accomplish the learning goals for the course, varying instructional methodologies will be employed including lecture, and assigned readings from the text, journal articles, and the web. A significant amount of class time will be spent in experiential exercises.

ATC 401 Logical Thinking. 3 Semester Hours. (Also listed as PH/PS 401.)
Prerequisite: General Psychology. A course that encourages thinking skills and is divided into three domains. Skeptical thinking will be entertained first followed by critical thinking or informal logic, with formal logic being addressed last. Skeptical thinking will be taught using "Occam's razor," and informal logic will be studied by analyzing cognitive biases and cognitive fallacies. Formal logic will be learned through the use of categorical sentences, truth functions, and inductive and deductive reasoning.

Applied Technology
Electronics/Instrumentation (ATE) Courses

ATE 306 Interfacing Techniques. 4 Semester Hours. (Also listed as IT 306.) (Lab Fee.)
Prerequisite: Microprocessor Fundamentals. Prerequisite: Microprocessor Fundamentals. This course is designed to have students become familiar with interfacing input and output devices to micro processor and computer interfacing systems. Students should already have some knowledge of microprocessor operation and fundamentals. Students will be involved in individual and team assignments in design, construction, and implementation of interfacing systems.

ATE 316 Applied Digital Design. 4 Semester Hours. (Also listed as IT 316.) (Lab Fee.)
Prerequisite: Introductory digital electronics. During the course, the tools of digital design will be developed, and then these tools will be used to investigate problems in digital design with computers and large-scale solutions to digital problems. The course will also cover the use of devices, such as programmable logic devices (PLD's), in digital problems and design.

ATE 400 Advanced Analog Instrumentation. 4 Semester Hours. (Also listed as IT 400.) (Lab Fee.)
Prerequisite: ATE 406, ATE 408 and ATE 409. This course is designed to familiarize the student with theories and methods used in analyzing and understanding complex electronic systems. Students are expected to be already familiar with basic circuit analysis, basic physics, and the elements of calculus. During the course, the fundamentals of circuit analysis will be reviewed, and then more advanced topics and methods of analysis will be introduced.

ATE 401 Applied Digital Communication. 4 Semester Hours. (Also listed as IT 401.) (Lab Fee.)
Prerequisite: Introductory electronic courses. This course is designed to familiarize the student with the basic systems and concepts used in electronic communications systems. The mathematical techniques used in the course include algebra, geometry, and trigonometry, and may introduce and employ some basic concepts of calculus.

ATE 406 Applied Mathematics for Electronics. 4 Semester Hours. (Cross-listed with ATM 406 and ATIS 406).
Prerequisite: ATC 306 or equivalent. This mathematics course will include a specific component for each BSAT option (three designations in total). All three of these components will be included in one course. Each course option will contain modules. Each module will be a project/ hands-on learning of concepts. A typical module will last from 2 1/2 to 3 weeks and will be done by a participating group. At the end of the module, the group will present what they have learned and how they solved each problem.

ATE 408/409 Physics for Instrumentation and Electronics I, II. 4 Semester Hours.
Prerequisite: ATC 306 or equivalent plus a basic course in physics is recommended. This two-semester course series is designed to familiarize the student with the basic physical laws and concepts we use to describe and shape the world around us. The stress in these courses is on critical thinking, problem-solving, and examples of applications related to industry, electronics, and instrumentation. The mathematical techniques used in the courses include algebra, geometry, and trigonometry, and may introduce and employ some basic concepts of calculus.

ATE 420 Electro-Optics. 4 Semester Hours. (Also listed as IT 420.) (Lab Fee.)
Prerequisite: ATE 406, ATE 408, and ATE 409. This course investigates electro-optical techniques and systems. This will include discussions of: electromagnetic waves, the optical spectrum, the modern theory of light, interaction of light with matter (geometrical and physical optics), optical sources (including LEDs and lasers), optical detectors, and electro-optic systems, such as fiber-optic systems and optical data storage. Course content will be based on the text and on lecture notes taken from a variety of sources.

ATE 425 Introduction to Robotics. 4 Semester Hours. (Also listed as ATM/IT 425.) (Lab Fee.)
Prerequisite: Introductory Electronic Courses. This course is designed to familiarize the student with the basic systems and concepts us ed in robotic control. The mathematical techniques used in the course include algebra, geometry, and trigonometry, and will employ some basic concepts of calculus. A major component of the course will require students to develop and implement group projects using the RHINO robotic system.

ATE 430 Senior Project I. 3 Semester Hours. (Cross-listed with ATIS 430 and ATM 430)
Prerequisite: Senior standing. It is recommended that this course be taken during the student's next to last term.
The Senior Project I Course involves a supervised experience in the hands-on application of advanced electronics/instrumentation, information systems, or manufacturing technical skills within the context of a selected organization. Students will be assigned a "mentor" within the participating industrial organization who will, along with the advisor, assure that a project is selected which will be of practical benefit to both the student and advisor, assure that a project is selected which will be of practical benefit to both the student and the organization. The project will culminate with the preparation of a detailed technical report that summarizes the project effort. This report will be reviewed by the student's advisor, instructor, and the Dean of the School of Business for approval and award of academic credit.

ATE 432 Senior Project II. 3 Semester Hours. (Cross-listed with ATIS 432 and ATM 432).
Prerequisite: Senior standing and ATE 430. It is recommended that this course be taken during the student's last term.
This course involves a supervised experience in the hands-on application of advanced electronics/instrumentation, information systems, or manufacturing technical skills within the context of a selected organization. Students will be assigned a "mentor" within the participating industrial organization who will, along with the advisor, assure that a project is selected which will be of practical benefit to both the student and the organization. The project will culminate with the preparation of a detailed technical report that summarizes the project effort. This report will be reviewed by the student's advisor, instructor, and the Dean of the School of Business for approval and award of academic credit. In addition, each student will be required to prepare and present an executive summary of the project results to an audience consisting of the industrial partner representatives and School of Business representatives as chosen by the Dean of the School.

ATE 440 Process Control Instrumentation. 4 Semester Hours. (Also listed as IT 440.) (Lab Fee.)
Prerequisite: Senior standing and consent of instructor. This course is designed to familiarize the student with the basic systems and concepts used in process control. The mathematical techniques used in the course include algebra, geometry, and trigonometry, and will employ some basic concepts of calculus.

ATE 441 Computer Instrumentation. 4 Semester Hours. (Also listed as IT 441.) (Lab Fee.)
Prerequisite: ATE 440. This course is designed to familiarize the student with the basic concepts used in computer control and instrumentation. The mathematical techniques used in the course include algebra, geometry, and trigonometry, and will employ some basic concepts of calculus. A major component of the course will require students to develop and implement group projects using the LabVIEW data acquisition system.

Applied Technology
Information Systems (ATIS) Courses

ATIS 325 Decision Support Systems. 3 Semester Hours. (Also listed as CIS 325) (Lab Fee.)
Prerequisite: Any introduction to computers course in which spreadsheet and database tools were covered. This course will evaluate design and implementation of computer information systems for solving semi-structured and unstructured problems. Provides introduction to concepts, structure, and capabilities of decision support (DSS), executive information (EIS), and expert systems (ES). Principles and techniques of decision theory, computer modeling, and system architecture and construction are covered.

ATIS 365 Visual Application Development. 3 Semester Hours. (Also listed as CIS 365.) (Lab Fee.)
Prerequisite: Introductory computer programming course.
Course introduces students to programming in visual, event-driven environments. Students learn concepts of visual programming and underlying design principals used in developing applications in visual programming environments. An emphasis will be placed on design of user interfaces, on-line document, input, and output component including menus, forms, queries, and reports.

ATIS 401 Management Information Systems. 3 Semester Hours.
Prerequisite: ATC 301 or equivalent, ATIS 325 or equivalent, or equivalent work experience.
Management Information Systems (MIS) refers to the systems and capabilities necessary to management, process, use and transport information as a resource to the organization. This course is designed to provide students with fundamental concepts of the various components (hardware, software, data, procedures, telecommuni-cations, the internet, and people) of information systems. This course will emphasize student group work in MIS related projects and topics.

ATIS 406 Applied Mathematics for Information Systems. 3 Semester Hours. (Cross-listed with ATE 406 and ATM 406). ***Prerequisite: ATC 306 or equivalent.*** This mathematics course will include a specific component for eaach BSAT option (three designations in total). All three of these components will be included in one course. Each course option will contain modules. Each module will be a project/hands-on learning of concepts. A typical module will last from 2 1/2 to 3 weeks and will be done by a participating group. At the end of the module, the group will present what they have learned and how they solved each problem.

ATIS 408 Information Systems Development. 3 Semester Hours. (Lab Fee.)
This is not an introductory course! It is strongly recommended that the student have completed courses in ATIS/CIS 365 Visual Application Development and ATIS 405 Database Systems prior to attempting this course. The course presents an overview of computer systems and the system development life cycle. Emphasis then focuses on tools and techniques that the programmer or analyst can use to document the computer software systems. Classical and structured tools for describing data flow, file design, input and output surveys other important skills such as project management and cost-benefit analysis, configuration management, software quality assurance, fact-finding and communications.

ATIS 410 Managing Information Systems. 3 Semester Hours. (Lab Fee.)
Prerequisite: ATIS 401. It is strongly recommended that the student have completed courses in Visual Application Development and Database Systems prior to attempting this course. This is not an introductory course! It is strongly recommended that the student have completed courses in ATIS 404 Visual Application Development and ATIS 405 Database Systems prior to attempting this source. The course presents an overview of computer systems and the system development life cycle. Emphasis then focuses on tools and techniques that the programmer or analyst can use to document the computer software systems. Classical and structured tools for describing data flow, file design, input and output design and program specifications are applied to documenting systems. This course surveys other important skills such as project management and cost-benefit analysis, configuration management, software quality assurance, fact-finding and communications.

ATIS 430 Senior Project I. 3 Semester Hours. (Cross-listed with ATE 430 and ATM 430).
Prerequisite: Senior standing. It is recommended that this course be taken during the student's next to last term.
The Senior Project I Course involves a supervised experience in the hands-on application of advanced electronics/instrumentation, information systems, or manufacturing technical skills within the context of a selected organization. Students will b e assigned a "mentor" within the participating industrial organization who will, along with the advisor, assure that a project is selected which will be of practical benefit to both the student and the organization. The project will culminate with the preparation of a detailed technical report that summarizes the project effort. This report will be reviewed by the student's advisor, instructor, and the Dean of the School of Business for approval and award of academic credit.

ATIS 432 Senior Project II. 3 Semester Hours. (Cross-listed with ATE 432 and ATM 432).
Prerequisite: Senior standing. It is recommended that this course be taken during the student's last term.
This course involves a supervised experience in the hands-on application of advanced electronics/instrumentation, information systems, or manufacturing technical skills within the context of a selected organization. Students will be assigned a "mentor" within the participating industrial organization who will, along with the advisor, assure that a project is selected which will be of practical benefit to both the student and the organization. The project will culminate with the preparation of a detailed technical report that summarizes the project effort. This report will be reviewed by the student's advisor, instructor, and the Dean of the School of Business for approval and award of academic credit. In addition, each student will be required to prepare and present an executive summary of the project results to an audience consisting of the industrial partner representatives and School of Business representatives as chosen by the Dean of the School.

ATIS 440 Database Systems. 3 Semester Hours. (Also listed as CIS 440) (Lab Fee.)
Prerequisite: CS 318. Introduces database systems, and their utilization and implementation. Concepts studied include organization, communications, integrity and security. Relational, network, and object-oriented database organizations are compared. Formal requirements of relational model and their utilization in distributed client/server environments presented.

Applied Technology
Manufacturing (ATM) Courses

ATM 401 Process, Product, and Facilities Design. 3 Semester Hours.
Prerequsite: ATC 305 or equivalent. A course emphasizing the integration of all aspects of manufacturing activities and material handling systems. A systematic approach is used to design a manufacturing facility to produce a complex product. Particular attention is given to efficiency and productivity in layout, work-flows, and product handling sytems.

ATM 402 Manufacturing Issues. 3 Semester Hours.
Prerequisite: ATC 305 or equivalent. A study of issues in manufacturing, including tooling systems for the integrated manufacturing environment, with an emphasis on design, geometric dimensioning and tolerances, fast change-over techniques, and acceptance of quality levels. The course will emphasize product reliability, sampling planning, loss functions, and the design of experiments to improve manufacturing.

ATM 403 Industrial Economy. 3 Semester Hours. (Lab Fee.)
Prerequisite: ATC 301 or equivalent and ATC 306 or equivalent. An examination of the operation of modern industrial economic systems in the United States, Western Europe, Japan, and Third World countries. Topics examined will include price determination, aggregate demand and supply theory, public policy options and the philosophical foundation of free market and command system economies. Time value of money, equivalence, and replacement analyses will also be addressed.

ATM 404 Introduction to Quality Control. 3 Semester Hours.
Prerequisite: ATC 301 or equivalent and ATC 306 or equivalent. An introductory course covering the basic concepts of quality control systems in manufacturing settings. The course covers the use of Statistical Process Control methods and equipment on a variety of products and processes. Basic statistical methods as applied to quality control problems, sampling plans, product/process reliability, and the use of control charts for variables and attributes data are included.

ATM 405 Introduction to Lean Manufacturing. (3 Semester Hours)
Prerequisite: ATC 305 or equivalent. This introductory course covers the origins and basic concepts underlying the principles of lean manufacturing. An understanding of the causes of waste in a company's operation, as well as the basic tools used to eliminate manufacturing waste will be addressed.

ATM 406 Applied Mathematics for Manufacturing. 3 Semester Hours. (Cross-listed with ATE 406 and ATIS 406).
Prerequisite: ATC 306 or equivalent. This mathematics course will include a specific component for each BSAT option (three designations in total). All three of these components will be included in one course. Each course option will contain modules. Each module will be a project/ hands-on learning of concepts. A typical module will last from 2 1/2 to 3 weeks and will be done by a participating group. At the end of the module, the group will present what they have learned and how they solved each problem.

ATM 408 ISO Certification Issues. 3 Semester Hours.
Prerequisite: ATC 305 or equivalent. A course covering the basic fundamental concepts of ISO 9000 issues, problems, and outcomes. The course covers the history of ISO 9000, quality concepts relating to ISO certification, and the organization and activities necessary to achieve this certification. The course will also cov er the management and organizational commitment necessary to successfully reach this plateau of performance.

ATM 409 Fundamentals of Operations. 3 Semester Hours.
Prerequisite: ATC 305 or equivalent. Fundamentals of Operations establishes a solid entry-level base of industrial knowledge upon which to build towards further growth in manufacturing and industrial supervision. This course introduces students to essential vocabulary and skills identifying and applying the basic principles of inventory control, planning, manu-facturing control, and operational management. Included in this course are the principles of effective planning, details of priority and capacity management through the use of material requirements planning, and a survey of the relationship between goods and services and the operation of the system.

ATM 410 Basics of Supply Chain. 3 Semester Hours.
Prerequisite: ATM 409 or equivalent work experience. The course explores the basic concepts of the industrial flow of materials in a supply chain. Included is a complete overview of material flow, from internal and external suppliers to and from the organization. Topics of discussion include elements of the supply chain, Just-in-Time (JIT), total quality management (TQM), manufacturing resources planning (MRP II), demand planning, and capacity management. Specific case studies are utilized along with apppropriate

ATM 412 Master Planning of Resources. 3 Semester Hours.
Prerequisite: ATM 410 or equivalent work experience. Master Planning of Resources concentrates on the processes used to develop sales and operations plans and teaches the student to identify and assess internal and external demand and forecasting requirements. The course focuses on the importance of producing achievable master schedules that are consistent with organizational business policies, objectives, and resource constraints. Course topics include demand management, sales and operations planning, master scheduling and measuring the business plan.

ATM 414 Detailed Scheduling and Planning. 3 Semester Hours.
Prerequisite: ATM 412 or equivalent work experience. Detailed Scheduling and Planning focuses on the various techniques for material and capacity scheduling. The course includes detailed descriptions of material requirements planning (MRP), capacity requirements planning (CRP), inventory management practices, and procurement and supplier planning. Topics include recognizing techniques and practices of inventory control; mechanics of the detailed material planning process; planning operations to support the priority plan, and planning procurement and external sources of supply.

ATM 416 Execution and Control of Operations. 3 Semester Hours.
Prerequisite: ATM 414 or equivalent work experience. Execution and Control of Operations focuses on the areas of prioritizing and sequencing work, executing work plans and implementing controls, reporting activity results, and providing feedback on performance. The course explains techniques for scheduling and controlling production processes, the execution of quality initiatives and continuous improvement plans, and the control and handling of inventories. Course topics include prioritizing and sequencing work, executing plans and implementing controls, authorizing and reporting activities for push and pull systems, and evaluating performance and providing feedback.

ATM 418 Strategic Resource Planning. 3 Semester Hours.
Prerequisite: ATM 416 or equivalent work experience. This course explores the relationship of existing and emerging processes and technologies to manufacturing strategy and supply chain-related functions. The course addresses aligning resources with the strategic plan; configuring and integrating operating processes to support the strategic plan, and implementing change; competitive market issues; choices affecting facilities, supply chain, information technology, and organizational design; configuring and integrating internal processes; and evaluating and managing projects.

ATM 425 Introduction to Robotics. 4 Semester Hours. (Also listed as ATE/IT 425.) (Lab Fee.)
Prerequisite: Introductory electronics course. This course is designed to familiarize the student with the basic systems and concepts used in robotic control. The mathematical techniques used in the course include algebra, geometry, and trigonometry, and will employ some basic concepts of calculus. A major component of the course will require students to develop and implement group projects using the RHINO robotic system.

ATM 430 Senior Project I. 3 Semester Hours. (Cross-listed with ATE 430 and ATIS 430).
Prerequisite: Senior standing. It is recommended that this course be taken during the student's next to last term.
The Senior Project I Course involves a supervised experience in the hands-on application of advanced electronics/instrumentation, information systems, or manufacturing technical skills within the context of a selected organization. Students will b e assigned a "mentor" within the participating industrial organization who will, along with the advisor, assure that a project is selected which will be of practical benefit to both the student and the organization. The project will culminate with the preparation of a detailed technical report that summarizes the project effort. This report will be reviewed by the student's advisor, instructor, and the Dean of the School of Business for approval and award of academic credit.

ATM 432 Senior Project II. 3 Semester Hours. (Cross-listed with ATE 432 and ATIS 432).
Prerequisite: Senior standing. It is recommended that this course be taken during the student's last term.
This course involves a supervised experience in the hands-on application of advanced electronics/instrumentation, information systems, or manufacturing technical skills within the context of a selected organization. Students will be assigned a "mentor" within the participating industrial organization who will, along with the advisor, assure that a project is selected which will be of practical benefit to both the student and the organization. The project will culminate with the preparation of a detailed technical report that summarizes the project effort. This report will be reviewed by the student's advisor, instructor, and the Dean of the School of Business for approval and award of academic credit. In addition, each student will be required to prepare and present an executive summary of the project results to an audience consisting of the industrial partner representatives and School of Business representatives as chosen by the Dean of the School.

ATM 435 Industrial Health and Safety. 3 Semester Hours. (Also listed as CE 435.)
Identifies potential safety hazards as they pertain to vocational shops and industry. Accident prevention techniques are provided. OSHA is introduced to the student in his/her area of skill concentration.

Art (AR) Courses

AR 301 Painting. 3 Semester Hours. (Lab fee.)
An introduction to basic oil painting theory and techniques and a study of the history of painting. Museum visits and critiques will be included.

AR 310 Fine Arts Connection. 3 Semester Hours. (Lab fee.) (Education or Art Majors Only.) (Former titles AR 309 and MU 451.) An integrated fine arts course that assists students in acquiring the knowledge to use the visual arts, music, and creative movement in developmentally appropriate ways in regular classroom instruction.

AR 311 Landscape Painting and Drawing. 3 Semester Hours.
Prerequisite: AR 301 or equivalent. The environment as a subject for drawing and painting in a variety of media. Direct study from nature.

AR 312 Figure Drawing. 3 Semester Hours. (Lab fee.)
Emphasis upon the human figure.

AR 313 Portrait Drawing and Painting. 3 Semester Hours. (Lab fee.)
Students will use a variety of media to develop skills in portraiture.

AR 314 Topics in Watercolor. 3 Semester Hours.
Students will use transparent and opaque water color techniques and a variety of subject matter to become more proficient as painters.

AR 315 Topics in Ceramics. 3 Semester Hours. (Lab fee.)
An introduction to basic ceramic techniques with emphasis on hand-constructed ceramics. The course will include a study of the history of ceramics from prehistory to modern times.

AR 317 Ceramic Sculpture. 3 Semester Hours. (Lab fee.)
An exploration of sculptural media, particularly clay and terra cotta.

AR 321 Set Design. 3 Semester Hours. (Lab fee.) (Also listed as EH 321.)
This course will cover the designing of a stage set from conception through mock-up, construction, and implementation. Set(s) will be designed for actual use. Material covered will be pertinent to productions ranging from children's plays to community and college theater. Course usually runs concurrently with drama production.

AR 330 Topics in Photography. 3 Semester Hours. (Lab fee.)
Students will need a SLR 35mm camera with adjustable/stop, shutter speed and focus and a working internal light meter. An exploration of black and white photography with emphasis upon creativity and darkroom activities. The course will include criticism and aesthetics.

AR 331 Photography II. 3 Semester Hours. (Lab fee.) (Note: This course requires the student to purchase supplies in addition to the lab fee.)
Prerequisite: AR 330 or photography experience and consent of instructor. Advanced theory and practice in primarily black and white photography.

AR 340 Medical and Biological Visualization. 3 Semester Hours. (Lab fee.) (Also listed as BI 340 and HPE 340.)
This course helps students develop perceptual motor ability (the ability to deal with objects through visualization). Perceptual motor ability has long been an indicator of success in fields like dentistry, medicine, architecture, art and 3-D computerization. The course will teach the visualization of anatomical and biological structures, to survey the common components of graduate courses in medical and biological illustration for the purpose of preparing pre-health and/or art undergraduates to express thinking through diagrams, sculpture, illustrations and computer graphics.

AR 343 Renaissance Art History. 3 Semester Hours.
The history of art from the Early Renaissance through the first part of the 19th century including the Renaissance, Mannerism, Baroque, Neo Classicism, and 19th-Century Realism and Romanticism.

AR 401 Advanced Figure Drawing. 3 Semester Hours. (Lab fee.)
Prerequisite: AR 312. A continuation of Figure Drawing, building on the techniques learned in AR 312 to create a finished product.

AR 402 Portfolio, Exhibition and Art Research. 3 Semester Hours.
Prerequisite: Graduating Senior. To familiarize the students with the proper utilization of the art reference books, abstracts, monographs, and indices for the purpose of college writing and research in the content area of art. Students will compile a professional portfolio and hang their senior exhibition.

AR 404 Art Studio in Photography. 3 Semester Hours.
Prerequisite: Art major or minor or permission of instructor. This course is designed to enable the student to produce works in photography making use of personal innovations, carefully considered form, techniques, and materials. Skills in art analysis and criticism will be used regularly. Students will define their creative projects in a written statement. This statement will be discussed and possibly modified. A body of work will be created.

AR 406 Art Studio in Graphics. 3 Semester Hours.
Prerequisite: Art major or minor or permission of instructor. This course is designed to enable the student to produce works in graphic art making use of personal innovations, carefully considered form, techniques, and materials. Skills in art analysis and criticism will be used regularly. Students will define their creative projects in a written statement. This statement will be discussed and possibly modified. A body of work will be created.

AR 408 Printmaking. 3 Semester Hours.
Development of techniques in various print media.

AR 410 Layout and Design. 3 Semester Hours.
Concepts will be covered from visualizations through finished projects. Problems in composition in commercial as well as fine arts projects will be assigned. This course is designed to produce a portfolio of finished projects.

AR 418 Art Studio. 3 Semester Hours.
Prerequisite: Art major or minor or permission of instructor. Designed to enable the student to produce works in visual art making use of personal innovations, carefully considered form, techniques, and materials. Skills in art analysis and criticism will be used regularly. This course involves a significant amount of criticism of historical and contemporary art works. Students will define their creative projects in a written statement. This statement will be discussed and possibly modified. A body of work will be created.

AR 420 Art Studio. 3 Semester Hours.
Prerequisite: Art major or minor or permission of instructor. Designed to enable the student to produce works in visual art making use of personal innovations, carefully considered form, techniques, and materials. Skills in art analysis and criticism will be used regularly. Students will define their creative projects in a written statement. This statement will be discussed and possibly modified. A body of work will be created.

AR 423 History of Modern Art. 3 Semester Hours. The post-impressionist period through 1945.

AR 424 Late Modern Art History. 3 Semester Hours. 1945 to present.

AR 430 Advanced Drawing and Design. 3 Semester Hours. Advanced concepts in drawing and composition.

AR 442 Special Topics in Art. 2 Semester Hours. To be offered on occasion of student demand or need.

AR 450 Internship in Art. 3 Semester Hours.
An internship program in which the student will receive training with a commercial enterprise relating to his or her area of experience.

AR 460 Special Workshop. 1 Semester Hour. Arts and Crafts.

AR 461 Special Workshop. 2 Semester Hours. Arts and crafts.

Biology (BI) Courses

BI 300 Microbes and You. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 300L. Prerequisite: Principles of Biology I and II, or consent of instructor. An introductory microbiology course which examines the major groups of bacteria and instills awareness of the importance of microbes to the Earth's ecology.

BI 300L Microbes and You Lab. 1 Semester Hour. ***Corequisite: BI 300.***

BI 301 Cell Structure and Function. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 301L. Prerequisite: Principles of Biology I, Introductory Chemistry with lab, or CH 301, or CH 303, or equivalent , or consent of instructor. Considers molecular organization of basic cellular components, including membranes, nucleic acids, and proteins, and how these are assembled into organelles and other cellular structures. Explores mechanisms of enzyme and organelle function and coordination.

BI 301L Cell Structure and Function Lab. 1 Semester Hour. ***Corequisite: BI 301.***

BI 302 Genetics. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 302L. Prerequisite: Principles of Biology I, Introductory Chemistry with lab, or CH 301, or CH 303, or equivalent, or consent of instructor. Up-to-date treatment emphasizing structure, function, and regulation of genes, recombinant DNA techniques and applications, principles and patterns of Mendelian inheritance, and population genetics.

BI 302L Genetics Lab. 1 Semester Hour. ***Corequisite: BI 302.***

BI 303 General Ecology. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 303L. Prerequisite: Principles of Biology I and II, or Plant Biology and Animal Biology, or consent of instructor. Study of extant organisms and how they interact with one another and with their nonliving environments. Interactions investigated at individual, population, community, and ecosystem levels. Qualitative, quantitative, and theoretical aspects of ecology discussed.

BI 303L General Ecology Lab. 1 Semester Hour. ***Corequisite: BI 303.***

BI 311 Biodiversity of North Alabama. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 311L. This course is designed as an introduction to the diversity of habitats and organisms found in northern Alabama. A broad variety of topics relating to the natural history and adaptations of the various organisms inhabiting this region will be discussed. Field trips required.

BI 311L Biodiversity of North Alabama Lab. 1 Semester Hour.
Corequisite: BI 311. Lab runs concurrently with lecture.

BI 321 Conservation Biology. 3 Semester Hours.
A synthetic discipline addressing loss of biological diversity throughout the world, incorporating population biology, community ecology, evolution, genetics, taxonomy, paleontology, zoo management, wildlife ecology, agriculture, forestry, and elements of history, philosophy, economics, anthropology, and public policy.

BI 322 Human Genetics. 3 Semester Hours. (Lab fee.)
Prerequisite: Genetics (BI 302), or consent of instructor. Presents principles of human genetics, and considers social, cultural, and ethical implications of these as applied to the human condition.

BI 323 Human Reproduction. 3 Semester Hours.
A comprehensive approach to human reproduction emphasizing structure and function, fertilization, prenatal development, pregnancy, birth, sexual disorders, and reproductive technology.

BI 333 Issues in Biology Today. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 333L. An introduction to fundamental concepts of biology with emphasis on current research and ethical issues. Topics include: classical, molecular and human genetics, biotechnology, evolution, human origins, sociobiology, and nutrition and health.

BI 333L Issues in Biology Today Lab. 1 Semester Hour. ***Corequisite: BI 333.***

BI 334 Issues in Biology Today II. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 334L. An introduction to fundamental concepts in biology with emphasis on current research and ethical issues. Topics include: Cancer, the nervous system, drug action and addiction, the immune system, HIV, plants and crops, and biodiversity and threatened habitats.

BI 334L Issues in Biology Today II Lab. 1 Semester hour. ***Corequisite: BI 334.***

BI 340 Medical and Biological Visualization. 3 Semester Hours. (Lab fee.) (Also listed as AR 340 and HPE 340.)
This course helps students develop perceptual motor ability (the ability to deal with objects through visualization). Perceptual motor ability has long been an indicator of success in fields like dentistry, medicine, architecture, art and 3-D computerization. The course will teach the visualization of anatomical and biological structures, to survey the common components of graduate courses in medical and biological illustration for the purpose of preparing pre-health and/or art undergraduates to express thinking through diagrams, sculpture, illustrations and computer graphics.

BI 341 Biogeography. 3 Semester Hours. (Also listed as GO 341.)
Prerequisite: BI 303, or consent of instructor. Presents biological aspects of geography. Designed to instill greater appreciation and awareness of man's physical environment and of mechanisms which control distribution of plants and animals on planet Earth.

BI 342 Economic Botany. 3 Semester Hours.
Presents important role plants have played in development of civilizations and cultures, past and present. Emphasis placed on origins of agriculture and domestication of plants, on development of early irrigation and rainfall agriculture civilizations, on importance of plants in religion, medicine, commerce, politics, and war, and on future of plants in relation to man.

BI 400 Pre-Health Capstone. 3 Semester Hours. Pass/Fail Grading.
The purpose of this course is to provide a mechanism whereby students interested in health-related careers can examine their knowledge of basic scientific principles using the criterion of standardized tests. The class will be team taught, with one class coordinator responsible for examining students' knowledge and other participating faculty available to reinforce knowledge in those areas perceived to be deficient for a particular student. The class will also examine health related career options and advanced training opportunities in particular areas of health care. This course is a pass/fail course and does not count toward the 18 semester hours of upper division biology course work required for biology majors.

BI 409 Biochemistry. 3 Semester Hours. (Also listed as CH 409.)
Prerequisite: CH 305 or CH 311. Study of proteins, carbohydrates, lipids, and other important biochemical compounds and their metabolic functions. Enzyme reaction mechanisms and biological oxidations are included.

BI 411 Invertebrate Systematics and Morphology. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 411L. Prerequisite: Principles of Biology I and II, or Animal Biology, or consent of instructor.
Inclusive and in-depth survey of invertebrate animals covering all phyla from protozoa through echinoderms. Emphasis on morphological structures characterizing each phylum, on systematic approach taken in each phylum, and on phylogenetic relationships among the various phyla.

BI 411L Invertebrate Systematics and Morphology Lab. 1 Semester Hour. ***Corequisite: BI 411.***

BI 412 Invertebrate Development and Function. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 412L. Prerequisite: Principles of Biology I and II, or Animal Biology, or consent of instructor. Study of developmental and functional aspects of invertebrates. Emphasis on feeding, locomotion, respiration, excretion, defense, reproduction, development, and control. All major taxonomic groups of invertebrates considered. Lab emphasis on structural-functional relationships.

BI 412L Invertebrate Development and Function Lab. 1 Semester Hour. ***Corequisite: BI 412.***

BI 413 Vertebrate Zoology. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 413L. Prerequisite: Principles of Biology I and II, or Animal Biology, or consent of instructor. Presents principles of vertebrate systematic biology, factors governing distribution of vertebrates, methods used by vertebrates to solve environmental problems, reproductive physiology and behavior, and population dynamics. Laboratory emphasis on identification of local vertebrates and statistical interpretation of population and community data.

BI 413L Vertebrate Zoology Lab. 1 Semester Hour. ***Corequisite: BI 413.***

BI 414 Comparative Vertebrate Anatomy. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 414L. Prerequisite: Principles of Biology I and II, or Animal Biology, or consent of instructor. Presents functional and comparative morphology of chordates with additional emphasis on development and evolution. Lab emphasis on structural-functional relationships.

BI 414L Comparative Vertebrate Anatomy Lab. 1 Semester Hour. ***Corequisite: BI 414.***

BI 415 Microbial Toxins and Human Health. 3 Semester Hours.
Prerequisites: Principles of Biology I and II and an introductory course in microbiology or consent of instructor. This advanced microbiology course examines the roles of microbes as human pathogens and as a source of contamination in the food industry.

BI 420 Field Vertebrate Zoology I: Ichthyology and Herpetology. 4 Semester Hours. (Lab fee.)
Prerequisite: Principles of Biology II, and either BI 303 or BI 413, or consent of instructor. A course in systematic and ecological ichthyology and herpetology. Introduces diversity of fishes, amphibians, and reptiles, position and content of major groups, their

classification, relationships, and basic structure, with emphasis on living representatives, particularly those of the Tennessee Valley region of North Alabama.

BI 422 Field Vertebrate Zoology II: Ornithology and Mammalogy. 4 Semester Hours. (Lab fee.)
Prerequisite: Principles of Biology II, and either BI 303 or BI 413, or consent of instructor. A course in systematic and ecological ornithology and mammalogy. Introduces diversity of birds and mammals, position and content of major groups, their classification, relationships, and basic structure, with emphasis on living representatives, particularly those of the Tennessee Valley region in North Alabama.

BI 423 Histology. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 423L Prerequisites: Principles of Biology I and II.
This course studies the groups of specialized cells called tissues. Tissue organization is examined at all levels, from the whole organ to the molecular components of cells. Histological techniques include tissue culture, fixing and staining, microscopy, and biochemistry.
BI 423L Histology Lab. 1 Semester hour. ***Corequisite: BI 423.***

BI 424 Animal Physiology. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 424L. Prerequisite: Principles of Biology I and II, or Animal Biology, and Introductory Chemistry with lab, or CH 301, or CH 303, or equivalent, or consent of instructor. Examines mechanisms of various physiological processes in animals at molecular and cellular levels, including muscle and nerve action, signal transduction via hormones, operation of immune system, AIDS, tumor formation, and development of cancer.
BI 424L Animal Physiology Lab. 1 Semester Hour. ***Corequisite: BI 424.***

BI 425 Embryology. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 425L. Prerequisites: Principles of Biology I and II. This course considers the period of growth and differentiation from fertilization until hatching or birth of an animal or, in plants, germination. Vertebrate and human models will be emphasized. Concepts explored in terms of cell biology, genetics, and comparative vertebrate anatomy.
BI 425L Embryology Lab. 1 Semester hour. ***Corequisite: BI 425.***

BI 427 Parasitology. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 427L. Prerequisites: Principles of Biology I and II. Study of the relationships between parasites and their hosts, with emphasis on vertegrate and human models. Concepts discussed in terms of systematics, molecular biology, ecology, and evolutionary biology.
BI 427L Parasitology Lab. 1 Semester hour. ***Corequisite: BI 427.***

BI 429 Immunology. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 429L. Prerequisites: Principles of Biology I and II. This course examines the evolution, organization, and function of immune systems, with an emphasis on vertebrate and human models. Concepts discussed in terms of cell biology, genetics, and evolutionary biology.
BI 429L Immunology Lab. 1 Semester hour. ***Corequisite: BI 429.***

BI 431 Plant Systematics and Morphology. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 431L. Prerequisite: Principles of Biology I and II, or Plant Biology, or consent of instructor. In-depth survey of non-vascular and vascular plants. Emphasis on morphological structures characterizing each division, subdivision, class, and subclass of plants, on systematic approach taken at each level of taxonomic hierarchy, and on phylogenetic relationships among the various groups of plants.
BI 431L Plant Systematics and Morphology Lab. 1 Semester Hour. ***Corequisite: BI 431.***

BI 432 Plant Development and Function. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: BI 432L. Prerequisite: Principles of Biology I and II, or Plant Biology, or consent of instructor. Study of developmental and functional aspects of plants. Emphasis on embryology and development, physiology, genetics, reproduction, and organismal ecology. All major taxonomic groups of plants considered.
BI 432L Plant Development and Function Lab. 1 Semester Hour.
Corequisite: BI 432.

BI 433 Population Biology. 3 Semester Hours.
Prerequisite: Genetics and General Ecology. An advanced course aimed at upper level biology majors. This course addresses concepts of population ecology and population genetics including population growth and regulation, demography, interspecific interactions, quantitative genetics, and basic molecular evolution.

BI 440 Biotechnology. 3 Semester Hours. (Lab fee.)
Prerequisite: Principles of Biology I, II, and BI 302. Laboratory-based exploration of theory and application of several techniques fundamental to biotechnology and molecular biology. Exercises include manipulation of bacterial strains, viruses and plasmids, advanced DNA cloning, Southern blotting of genomic DNA, protein purification, and polymerase chain reaction. Application of these techniques to a range of biological sciences explored.

BI 441 Special Topic in Biology. 1 Semester Hour.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

BI 442 Special Topic in Biology. 2 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

BI 443 Special Topic in Biology. 3 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

BI 444 Special Topic in Biology. 4 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

BI 450 Research Seminar. 1 Semester Hour.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need. Affords biology major opportunity to develop and present results of laboratory and/or field research.

BI 461 Directed Study/Research in Biology. 1 Semester Hour.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

BI 462 Directed Study/Research in Biology. 2 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

BI 463 Directed Study/Research in Biology. 3 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

Career and Technical (CE) Education Courses

CE 302 History and Principles of Career/Technical Education. 3 Semester Hours.
A course designed to relate the development of career and technical education from historic apprenticeships to contemporary career and technical programs. Philosophies and principles of career and technical education are also reviewed.

CE 305 Meeting the Needs of Exceptional Career/Technical Education Students. 3 Semester Hours.
A general survey course which addresses the identification, characteristics, needs, and legal rights of adolescent and adult exceptional learners. Instruction and curriculum modifications and interagency planning to assist in serving the unique needs of these students will also be addressed.

CE 432 Teaching Career/Technical Education. 3 Semester Hours. (Lab fee for onsight course.)
A review of teaching strategies, procedures, audiovisual lab, and concrete experiences which may be used to develop specific performance objectives for instruction for onsight course.

CE 433 Learning Resources and Technology in Career/Technical Education. 3 Semester Hours. (Lab fee.)
Includes teaching devices and methods of application, desirable teaching facilities, motivation and development of skill, reasoning qualities, lesson planning. A computer lab is included.

CE 434 Course Development and Evaluation in Career/Technical Education. 3 Semester Hours.
A course designed to provide a knowledge of the problems, techniques, and procedures in the selection and organization of subject matter for instructional purposes. Each student is required to develop a two-year career/technical curriculum suitable for implementation in career/technical schools.

CE 435 Industrial Health and Shop Safety. 3 Semester Hours.
Identifies potential safety hazards as they pertain to occupational education classes, labs, and industrial settings. Accident prevention is addressed. OSHA is introduced and discussed as applicable in the education/industry setting. BSAT students register for ATM 435.

CE 436 Career/Technical Information Guidance. 3 Semester Hours.
Introductory course in career/technical guidance to provide principles and techniques necessary to organize and operate career guidance services in the public school.

CE 438 Classroom/Laboratory Management. 3 Semester Hours.
Provides a knowledge of the problems, techniques, and procedures used to maintain and manage career-oriented classroom and labs for instructional purposes or for business, industry, and manufacturing. Deals with the organization, management, and care of career-oriented classrooms and labs. Developing student leadership skills is addressed.

CE 439 Career/Technical Student Youth Organizations. 3 Semester Hours.
Provides the procedures for establishing, implementing and operating student organization and advisory committees.

CE 440 Testing and Evaluation in Career/Technical Education. 3 Semester Hours.
A course designed to review the techniques and methods used to measure and interpret student achievement.

CE 441 Special Topics in Career/Technical Education. 1 Semester Hours.
To be offered on occasion of student demand or need.

CE 442 Special Topics in Career/Technical Education. 2 Semester Hours.
To be offered on occasion of student demand or need.

CE 445 Functions of the Coordinator. 3 Semester Hours.
Prepares the student to organize and administer the various programs in career/technical education that are of a cooperative nature. Field experience is required.

CE 446 Individualizing Instruction in the Career and Technical Programs. 3 Semester Hours.
A study of instructional strategies and procedures for meeting the individual needs of students.

CE 450 Practicum in Advanced Technical Studies. 3 Semester Hours.
Prerequisite: Requires B average in core. May only take one of the following per semester: CE 450, 451, or 452. Must be in-service teacher. Individually designed laboratory studies in a variety of state-of-the-art technologies.

CE 451 Practicum in Advanced Technical Studies. 3 Semester Hours.
Prerequisite: Requires B average in core. May only take one of the following per semester: CE 450, 451, or 452.Must be in-service teacher. Requires permission of the Department Chair. Individually designed laboratory studies in a variety of state-of-the-art technologies.

CE 452 Practicum in Advanced Technical Studies. 3 Semester Hours.
Prerequisite: Requires B average in core. Must be in-service teacher. Requires permission of the Department Chair. Individually designed laboratory studies in a variety of state-of-the-art technologies.

CE 459 Advanced Career and Technical Specialty. 12 Semester Hours.
This course designates credit that is to be awarded for advanced industrial or educational work experience (nonteaching) in the specialization area. No credit will be granted for work experience which does not exceed in advancement beyond the original level of training.

CE 460 Directed Study/Research Career/Technical Education. 3 Semester Hours.
To be offered on occasion of student demand or need. To be taken only during graduating semester with permission of Department Chair.

CE 461 Related Training Career and Technical Education. 3 Semester Hours. (To be taken the semester before graduation.) Courses designed to include attendance at an approved industrial, company-operated school for the purpose of providing the career/technical teacher with advanced related technical training. Courses are open to qualified teachers or individuals preparing to enter this field of teaching. Detail planning for each course will be conducted by a team of post-secondary trade and industrial teachers from throughout the state, academic deans of technical colleges, presidents of technical colleges, State Department representatives, and the academic personnel of the college. Planning relates to ED 460, also.

CE 469 Career and Technical Specialty. 3 Semester Hours.
Prerequisite: Limited to In-Service Teachers. Three semester hours of credit may be awarded for each year of documented vocational specialty teaching experience verified by the director or supervisor in vocational and technical school. A limit of six semester hours credit is granted. Only three semester hours may be earned for a 12-month period. This teaching experience must have been supervised and evaluated and may be from an approved military school, industrial and business school, proprietary school, or public career/technical school at either the secondary or post-secondary level.

CE 470 Practicum-Supervised Work Experience. 3 Semester Hours. (Lab fee.)
Prerequisite: Admission to the Teacher Education Admission Program. Requires permission of the Department Chair. College/University supervised work experience in a program area work setting. Consult with Department Chair before enrolling.

CE 471 Practicum-Supervised Work Experience. 3 Semester Hours. (Lab fee.)
Prerequisite: Admission to the Teacher Education Admission Program. College/University supervised work experience in a program area work setting.

CE 472 Practicum-Supervised Work Experience. 3 Semester Hours. (Lab fee.)
Prerequisite: Admission to the Teacher Education Program. College/University supervised work experience in a program area work setting.

CE 483 Practicum in Teaching Career and Technical Education. 3 Semester Hours.
Prerequisite: CE 434. Requires permission of the Department Chair. A series of studies designed to expand the current teaching skills of in-service teachers of technical subjects. These courses may not be substituted.

CE 484 Practicum in Teaching Career and Technical Education. 3 Semester Hours.
Prerequisite: CE 432. Requires permission of the Department Chair. A series of studies designed to expand the current teaching skills of in-service teachers of technical subjects. These courses may not be substituted.

CE 485 Practicum in Teaching Career and Technical Education. 3 Semester Hours.
Prerequisite: CE 440. Requires permission of the Department Chair. A series of studies designed to expand the current teaching skills of in-service teachers of technical subjects. These courses may not be substituted.

CE 487 Internship Career/Technical Education (Pre-service.) 9 Semester Hours. (Lab Fee.)
A course which provides an opportunity for prospective teachers to observe and implement instruction in a technical college setting under the guidance of a cooperating teacher. Participation in the full-school program is required. Consult with advisor two semesters before enrolling.

Chemistry (CH) Courses

CH 301 Introductory Chemistry. 3 Semester Hours. (Lab.) (Lab fee.)
Prerequisite: Precalculus Algebra. Basic chemistry for science majors. Emphasis on elementary concepts of atomic theory, thermodynamics, kinetics, acids, bases, and equilibrium. Course will not serve as upper-level chemistry for science majors nor as substitute for CH 303.
CH 301L Introductory Chemistry Lab. 1 Semester Hour. ***Corequisite: CH 301.***

CH 303 Chemistry I. 3 Semester Hours. (Lab fee.)
Corequisite: CH 303L. Prerequisite: Precalculus Algebra. Study of chemical principles important to student of scientific technologies. Topics include atomic theory, the periodic table, thermochemistry, gases, solids, and liquids.
CH 303L Chemistry I Lab. 1 Semester Hour. ***Corequisite: CH 303.***

CH 304 Chemistry II. 2 Semester Hours. (Continuation of CH 303.)
Prerequisite: General Chemistry I, or CH 303. Topics include kinetics, equilibrium, and acids and bases.

CH 305 Fundamentals of Organic Chemistry. 2 Semester Hours. (Lab.) (Lab fee.)
Prerequisite: General Chemistry I, II, or CH 303, 304. Introduction to organic molecules and their functional groups. Some characteristic reactions also included. Course is not required prerequisite for CH 311 and may be omitted if CH 311, 312, 313 sequence is to be taken.
CH 305L Fundamentals of Organic Chemistry Lab. 1 Semester Hour. ***Corequisite: CH 305.***

CH 311 Organic Chemistry I. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: CH 311L. Prerequisite: General Chemistry I, II, or CH 303, 304. Basic study of aliphatic and aromatic compounds, their properties, preparation, and reactions, with emphasis on theory and mechanisms of reaction. Laboratory includes organic qualitative analysis.
CH 311L Organic Chemistry I Lab. 1 Semester Hour. ***Corequisite: CH 311.***

CH 312 Organic Chemistry II. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: CH 312L. Prerequisite: CH 311. Basic study of aliphatic and aromatic compounds, their properties, preparation, and reactions, with emphasis on theory and mechanisms of reaction. Laboratory includes organic qualitative analysis.
CH 312L Organic Chemistry II Lab. 1 Semester Hour. ***Corequisite: CH 312.***

CH 314 Polymer Science. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite CH 314L. Prerequisite: CH 305, or 311. Study of synthesis, characterization, testing, and reactions of polymers, including step-reaction polymerization, ionic chain reactions, free radical chain polymerization, copolymerization, and inorganic polymers, in addition to effects of additives and fillers.

CH 314L Polymer Science Lab. 1 Semester Hour. ***Corequisite CH 314.) Prerequisite: CH 305, or 311.***

CH 324 Analytical Chemistry. 3 Semester Hours. (Lab.) (Lab fee.)
Prerequisite: General Chemistry I, II, or CH 303, 304. Classical volumetric techniques in chemical analysis, modern methods of chemical separation, and basic instrumentation techniques.
CH 324L Analytical Chemistry Lab. 1 Semester Hour. Corequisite: CH 324.

CH 330 Environmental Chemistry. 3 Semester Hours. (Lab fee.) (Also listed as GS 330.)
Study of natural chemical processes of Earth and actual and possible effects of humans on natural chemical systems. Environmental problems such as air and water pollution, ozone depletion, and global warming discussed. Also may include introduction to some methods of environmental analysis and pertinent environmental regulations.

CH 409 Biochemistry. 3 Semester Hours. Also listed as BI 409.
Prerequisite: CH 305, or CH 311. Study of proteins, carbohydrates, lipids, and other important biochemical compounds and their metabolic functions. Enzyme reaction mechanisms and biological oxidations included.

CH 410 Instrumental Analysis. 3 Semester Hours. (Lab fee.)
Corequisite: CH 410L. Prerequisite: CH 324. Theoretical application of modern instrumentation to problems in analytical chemistry. Optical, electrochemical, and other instrumentation techniques covered.
CH 410L Instrumental Analysis Lab. 1 Semester Hour.
Corequisite: CH 420. Prerequisite: CH 324. Practical application of modern instrumentation to problems in analytical and environmental chemistry.

CH 420 Intermediate Inorganic Chemistry. 3 Semester Hours.
Prerequisite: General Chemistry I, II, or CH 303, 304. Atomic structure, bonding, trends in the periodic table, and coordination chemistry. Also may include catalysis, group theory, structure and properties of solids or bio-inorganic chemistry.

CH 430 Physical Chemistry I. 4 Semester Hours. (Lab.) (Lab fee.)
Corequisite: CH 430L. Prerequisite: General Chemistry I, II, or CH 303, 304, and MA 304, and PY 303.
Application of laws of physics and mathematics to study of thermodynamics, equilibria, and kinetics.

CH 430L Physical Chemistry I Lab. 1 Semester Hour. ***Corequisite: CH 430***. Laboratory includes introduction to working with personal computers and spreadsheet programs.

CH 431 Physical Chemistry II. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite 431L. Prerequisite: CH 430, 420, or consent of instructor. Application of laws of physics and mathematics to study of quantum chemistry, molecular structure, and spectroscopy. Laboratory includes experience with computer programs pertinent to chemistry.

CH 431L Physical Chemistry II Lab. 1 Semester Hour. ***Corequisite: CH 431.***

CH 441 Special Topic in Chemistry. 3 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

CH 442 Special Topic in Chemistry. 4 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

CH 461 A Directed Study/Research in Chemistry. 1 Semester Hour.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need. (Course may consist of instrumentation internship that may be substituted for CH 410L.)

CH 462 Directed Study/Research in Chemistry. 2 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

CH 463 Directed Study/Research in Chemistry. 3 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

Computer Information Systems Courses (CIS)

CIS 301 Problem Solving With Computers. 3 Semester Hours. (Also listed as ATC 301.) (Lab fee.) **Designed for non-computer science, non-cis majors.**
This course is designed to strengthen the student's grounding in common computer applications. Emphasis will be on the understanding of applications and how they use the associated technology. The course will be conducted through lecture, in-class computing laboratories, and out-of-class assigned problems and projects. CIS 301 may only be taken for CIS majors as a substitution for the Microcomputer Applications course required.

CIS 325 Decision Support Systems. 3 Semester Hours. (Also listed as ATIS 325.) (Lab fee.)
Prerequisite: Any introduction to computers course in which spreadsheet and database tools were covered. This course will evaluate design and implementation of computer information systems for solving semi-structured and unstructured problems. Provides introduction to concepts, structure, and capabilities of decision support (DSS), executive information (EIS), and expert systems (ES). Principles and techniques of decision theory, computer modeling, and system architecture and construction are covered.

CIS 365 Visual Application Development. 3 Semester Hours. (Also listed as ATIS 365.) (Lab fee.)
Prerequisite: Introductory computer programming course. Course introduces students to programming in visual, event-driven environments. Students learn concepts of visual programming and underlying design principals used in developing applications in visual programming environments. An emphasis will be placed on design of user interfaces, on-line document, input, and output component including menus, forms, queries, and reports.

CIS 440 Database Systems. 3 Semester Hours. (Also listed as ATIS 440.) (Lab fee.)
Prerequisite: CS 318. Introduces database systems, their utilization, and implementation. Concepts studied include organization, communications, integrity and security. Relational, network, and object-oriented database organizations are compared. Formal requirements of relational model and their utilization in distributed client/server environments presented.

CIS 450 Human-Computer Interaction. 3 Semester Hours. (Lab fee.)
Prerequisite: CIS 365. Course covers interaction between modern computer interfaces and system users. Students examine user diversity and its impact on design of user interfaces. Techniques for task analysis, interface prototyping, and methods for using usability tests to evaluate effectiveness of human-computer dialogs are also covered. Emphasis is placed on the integration of human-computer interaction principles into software engineering life cycle. Theories, principles, and guidelines for interface development and testing are learned through design and development of prototypes for various types of user interfaces.

Computer Networking (CN) Courses

CN 301 Networking Fundamentals. 2 Semester Hours. (Lab fee.)
Prerequisite: Any two Computer Science classes. Introduces the student to underlying concepts of data communication, telecommunications, and networking. Focuses on terminology and technologies in current networking environments. Provides general overview of field of networking as basis for continued study in field.

CN 302 Local Area Networks. 2 Semester Hours. (Lab fee.)
Prerequisite: CN 301. Presents the latest concepts of local area network (LAN) technologies. Provides a comprehensive introduction to the concepts, technologies, components, and acronyms inherent in today's local networking environments.

CN 303 Wide Area Networks. 2 Semester Hours. (Lab fee.)
Prerequisite: CN 302. Provides conceptual and working knowledge of how LANs communicate over wide area. Introduces telephony and the technology of switched-voice communications. Provides an understanding of how communication channels of public switched-telephone networks are used for data communication and how voice data communication have become integrated.

CN 304 Network Architectures. 2 Semester Hours. (Lab fee.)
Prerequisite: CN 302. Outlines three important networking architectures in today's corporate environments: TCP/IP, SNA, and DNA. The major components and functions of each of these architectures are discussed, as well as methods used to connect different architectures. Provides concepts important to the field of Systems integration and conceptual basis for understanding network architecture.

CN 401 Internetworking Devices. 2 Semester Hours. (Lab fee.)
Prerequisite: CN 302. Advanced course intended for networking professionals and students who already grasp the general concepts of data communications and networking but would like a more detailed understanding of internetworking. Techniques and components for managing network growth and connecting disparate network architectures will be presented and solutions to internetworking problems will be developed.

CN 402 The Internet. 2 Semester Hours. (Lab fee.)
Prerequisite: CN 302. Familiarizes the student with the operation and function of the Internet. Covers the underlying components and protocols that make up the Internet and the services provided. Internet tools will be used to illustrate concepts. Provides concepts necessary to establishing and maintaining Internet connectivity. Tools used to navigate and access information on the Internet will be studied.

CN 403 Network Processes and Protocols. 2 Semester Hours. (Lab fee.)
Prerequisite: CN 304. Advanced course intended for networking professional and students who grasp the basic concepts of networking but would like to understand, in more detail, some of the major protocols controlling the flow of information between data communication layers and between cooperating processes on network nodes. Trace and analysis tools will be used to analyze the frames and packets traversing a network.

CN 404 Enterprise Network Design and Management. 2 Semester Hours. (Lab fee.)
Prerequisite: CN 304. Advanced course intended for networking professionals and students who grasp basic concepts of networking but would like to understand methods used to analyze, design, and manage LANs and point-to-point networks. Exercises are geared toward learning techniques used to design and analyze networks.

Cooperative Education (CP) Courses

Prerequisite: A minimum overall grade point average of 2.5 and prior approval of the Co-op Education Office. Courses must be taken in sequential order.

CP 301 Parallel Co-op Practicum I. 1 Semester Hour.
Prerequisite: Prior approval of Instructor. Co-op Work Experience. This is the **first in a series** of courses wherein students work on a part-time basis in a job directly related to their academic major. Grades will be based on the employer's evaluation of the student's productivity and the student's completion of vocational self-assessment workbook exercises and reports, work evaluation, and a personal SWOT analysis leading to the development of a professional career portfolio and class presentation.

CP 302 Parallel Co-op Practicum II. 1 Semester Hour.
Prerequisite: CP 301. Co-op Work Experience. This is the **second in a series** of courses wherein students work on a part-time basis in a job directly related to their academic major. Grades will be based on the employer's evaluation of the student's productivity and the student's completion of vocational self-assessment workbook exercises and reports, work evaluation, and a personal SWOT analysis leading to the development of a professional career portfolio and class presentation.

CP 303 Parallel Co-op Practicum III. 1 Semester Hour.
Prerequisite: CP 302. Co-op Work Experience. This is the **third in a series** of courses wherein students work on a part-time basis in a job directly related to their academic major. Grades will be based on the employer's evaluation of the student's productivity and the student's completion of vocational self-assessment workbook exercises and reports, work evaluation, and a personal SWOT analysis leading to the development of a professional career portfolio and class presentation.

CP 304 Parallel Co-op Practicum IV. 1 Semester Hour.
Prerequisite: CP 303. Co-op Work Experience. This is the **fourth in a series** of courses wherein students work on a part-time basis in a job directly related to their academic major. Grades will be based on the employer's evaluation of the student's productivity and the student's completion of vocational self-assessment workbook exercises and reports, work evaluation, and a personal SWOT analysis leading to the development of a professional career portfolio and class presentation.

CP 305 Parrallel Co-op Practicum V. 1 Semester Hour.
Prerequisite: CP 304. Co-op Work Experience. This is the **fifth in a series** of courses wherein students work on a part-time basis in a job directly related to their academic major. Grades will be based on the employer's evaluation of the student's productivity and the student's completion of vocational self-assessment workbook exercises and reports, work evaluation, and a personal SWOT analysis leading to the development of a professional career portfolio and class presentation.

CP 306 Parallel Co-op Practicum VI. 1 Semester Hour.
Prerequisite: CP 305. Co-op Work Experience. This is the **sixth in a series** of courses wherein students work on a part-time basis in a job directly related to their academic major. Grades will be based on the employer's evaluation of the student's productivity and the student's completion of vocational self-assessment workbook exercises and reports, work evaluation, and a personal SWOT analysis leading to the development of a professional career portfolio and class presentation.

CP 307 Parallel Co-op Practicum VII. 1 Semester Hour.
Prerequisite: CP 306. Co-op Work Experience. This is the **seventh in a series** of courses wherein students work on a part-time basis in a job directly related to their academic major. Grades will be based on the employer's evaluation of the student's productivity and the student's completion of vocational self-assessment workbook exercises and reports, work evaluation, and a personal SWOT analysis leading to the development of a professional career portfolio and class presentation.

CP 308 Parallel Co-op Practicum VIII. 1 Semester Hour.
Prerequisite: CP 307. Co-op Work Experience. This is the **eighth in a series** of courses wherein students work on a part-time basis in a job directly related to their academic major. Grades will be based on the employer's evaluation of the student's productivity and the student's completion of vocational self-assessment workbook exercises and reports, work evaluation, and a personal SWOT analysis leading to the development of a professional career portfolio and class presentation.

CP 401 Alternating Co-op Practicum I. 2 Semester Hours.
Prerequisite: Prior approval of instructor. Co-op Work Experience. This is the **first in a series** of courses wherein students work on a part-time basis in a job directly related to their academic major. Grades will be based on the employer's evaluation of the student's productivity and the student's completion of vocational self-assessment workbook exercises and reports, work evaluation, and a personal SWOT analysis leading to the development of a professional career portfolio and class presentation.

CP 402 Alternating Co-op Practium II. 2 Semester Hours.
Prerequisite: CP 401. Co-op Work Experience. This is the **second in a series** of courses wherein students work on a part-time basis in a job directly related to their academic major. Grades will be based on the employer's evaluation of the student's productivity and the student's completion of vocational self-assessment workbook exercises and reports, work evaluation, and a personal SWOT analysis leading to the development of a professional career portfolio and class presentation.

CP 403 Alternating Co-op Practium II. 2 Semester Hours.
Prerequisite: CP 402. Co-op Work Experience. This is the **third in a series** of courses wherein students work on a part-time basis in a job directly related to their academic major. Grades will be based on the employer's evaluation of the student's productivity and the student's completion of vocational self-assessment workbook exercises and reports, work evaluation, and a personal SWOT analysis leading to the development of a professional career portfolio and class presentation.

CP 404 Alternating Co-op Practium II. 2 Semester Hours.
Prerequisite: CP 403. Co-op Work Experience. This is the **fourth in a series** of courses wherein students work on a part-time basis in a job directly related to their academic major. Grades will be based on the employer's evaluation of the student's productivity and the student's completion of vocational self-assessment workbook exercises and reports, work evaluation, and a personal SWOT analysis leading to the development of a professional career portfolio and class presentation.

CP 405 Alternating Co-op Practium II. 2 Semester Hours.
Prerequisite: CP 404. Co-op Work Experience. This is the **fifth in a series** of courses wherein students work on a part-time basis in a job directly related to their academic major. Grades will be based on the employer's evaluation of the student's productivity and the student's completion of vocational self-assessment workbook exercises and reports, work evaluation, and a personal SWOT analysis leading to the development of a professional career portfolio and class presentation.

CP 410 Alternating Co-op Practium II. 2 Semester Hours.
Prerequisite: Prior approval of instructor. A course wherein the student works a minimum of 20 hours in a job directly related to their academic major. Grade will be based on the employer's evaluation of the student's productivity and the student's completion of vocational self-assessment workbook exercises and reports, work evaluation, and a personal SWOT analysis leading to the development of a professional career portfolio and class presentation.

Computer Science (CS) Courses

CS 309 Introduction to Digital Logic Design. 3 Semester Hours. (Lab.) (Lab fee.)
Corequisite: CS 309L, MA 308 or consent of instructor. A comprehensive introduction to Boolean Algebra and methods for designing circuits which implement Boolean expressions. Topics include binary numbers and codes, axioms and theorems of Boolean Algebra, standard algebraic forms of Boolean expressions, the use of methods such as Karnaugh Maps and the Quine-McCluskey procedures for simplification of Boolean expression, analysis and design of combinational and sequential circuits, register operations, and introduction to fault tolerance design.

CS 309L Digital Design Lab. 1 Semester Hours.
Corequisite: CS 309, MA 308, or consent of instructor.

CS 316 ADA Programming. 3 Semester Hours. (Lab Fee.)
Prerequisite: CS 317 or any other programming course.. Introduction to the basic concepts of the ADA language including conceptual overview and introduction to the design rationale for the ADA programming language. Discussion of terminology, data types and the ADA data typing rules, object declarations and rules of object visibility, functions, and subprograms. A brief discussion of the concepts of data abstraction, packages, and tasks.

CS 317 Computer Science I (C++) 3 Semester Hours. (Lab fee.)
Prerequisite: Pre-Calculus Algebra. This is the first course for any new CS or CIS student at ASU who lacks programming experience or has never been exposed to C++. It provides an introduction to computers and programming with problem solving techniques. Arithmetic and relational operations as well as I/O for elementary data types are covered as basic language constructs for alternation and iteration. Students are introduced to the concepts and the rationale for structured programming, using functions. The course will take the student through the use of structured data types strings, arrays, text files and records (strucs). Basic sorting and searching algorithms will be covered. Programming assignments focus on the techniques of good programming style and how to design, code, debug, and document programs.

CS 318 Computer Science II (C++) 3 Semester Hours. (Lab fee.)
Prerequisite: CS 317. This is an advanced course in computer programming using C++. The focus for this course is on the principles of structured programming, abstraction, and software design. It provides an introduction to algorithm analysis, recursion, pointers, and linked lists. Structured (modular) design and programming, using functions and parameters including scope are emphasized. Students will learn the principle of encapsulation (information hiding) and code reuse. Introduction to classes and inheritance are included. Programming assignments will focus on the techniques of design as a prerequisite of good programming.

CS 340 Introduction to Assembly Language. 3 Semester Hours. (Lab fee.)
Prerequisite: CS 309, 318. An introduction to computer architecture at the assembly language level. Methods for representing data in computers, the study of the assembly language of a specific computer. Studies addressing modes, instruction formats, and control structures of a typical assembly language. Introduction to the use of an assembler.

CS 372 Data Structures. 3 Semester Hours. (Lab fee.)
Prerequisite: CS 318. Continuation of CS 318 stressing concepts of abstraction, software engineering, and analysis of algorithms. Introduces stacks, queues, and trees, and presents problems and algorithms using these advanced data structures. Explains more efficient searching and sorting algorithms. Students required to show understanding of each of concept through programming assignments. While C++ is used to present algorithms, with instructors permission, student may use other programming language to complete assignments.

CS 409 Computer Organization and Architecture. 3 Semester Hours. (Lab fee.)
Prerequisite: CS 309, CS 340, and MA 308. A comprehensive study of the architecture of a hypothetical digital computer. The course will present an overview of computer architecture and then a detailed design of each major functional subsystem, including: memory, central processing unit (control unit and arithmetic-logic unit), Input/Output devices, and hardware for the support of the Operating System. Study of the implications of computer architecture for systems programming and Operating System design.

CS 414 Programming Language. 3 Semester Hours. (Lab fee.)
Prerequisite: CS 409. This course is an in-depth study of similarities and differences of modern programming languages such as Pascal, FORTRAN, C, Ada, and LISP. Emphasis is on the implementation of basic language features and in the choice of a language most appropriate for a given problem. Programming assignments will require the use of the unique features of various languages.

CS 415 Computer Systems Software. 3 Semester Hours. (Lab fee.)
Prerequisite: CS 317 and CS 409. A detailed study of the software components of an operating system and their organization. Review of computer hardware and its support of the functions of an operating system. Introduction to the concept of processes and their interaction in an operating system. Other topics include: deadlock and indefinite postponement, management of real memory, organization and management of virtual memory, scheduling of the CPU, interaction with a file system, and the management of disk drives. An introduction to operating systems security. Case studies from UNIX, MSDOS, VAX/VMS, OS/2.

CS 417 Object Oriented Applications. 3 Semester Hours. (Lab fee.)
Prerequisites: CS 317 and CS 318. Advanced topics in C++ programming including the use of standard system and file manipulation functions, dynamic memory allocation, and programming the graphics interface. Methods of interfacing to assembly language routines. Introduction to object oriented programming, and programming in a windows environment.

CS 423 Computer Graphics. 3 Semester Hours. (Lab fee.)
Prerequisite: CS 317 and MA 308. An introduction to the basic concepts and tools of computer graphics. Discussion of graphic devices and the use of software to control them. Review of coordinate systems, vectors and matrix algebra, and transformations on pictures. Basics of drawing curves and elementary geometric figures. Windowing and clipping. Introduction to three dimensional graphics

CS 441 Special Topic in Computer Science. 1 Semester Hour.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need. Topics which may be covered include special programming languages, compilers, system design, graphics, and special applications.

CS 442 Special Topic in Computer Science. 2 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need. Topics which may be covered include special programming languages, compilers, system design, graphics, and special applications.

CS 443 Special Topic in Computer Science. 3 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need. Topics which may be covered include special programming languages, compilers, system design, graphics, and special applications.

CS 451 Software Engineering. 3 Semester Hours. (Lab fee.)
Prerequisite: CS 318, CS 372; CIS majors also must complete CIS 365, 440 and 450. The course will familiarize the student with the entire software life cycle, spanning from the time of conception of the actual requirements, through the analysis, design, and development of the software. The course will study various methodologies of software engineering; i.e., the analysis and comparison of methods which use sound engineering principles to develop software that is reliable, cost-effective, and easily maintainable. The course will emphasize the concept of a software development team where students work on real-world software development projects to solve software problems for users.

CS 452 Senior Software Engineering Project. 3 Semester Hours. (Lab fee.)
Prerequisite: CS 417, CS 451, Senior standing, and consent of instructor. This course provides students with the opportunity to apply the knowledge and skills mastered in the computer science discipline through development of complex software projects. Emphasis is placed on the concept of software development teams to create project plans, software requirements, design specifications, test plans, and other written documentation for the selected software project. Student software teams also code, test, and integrate the software according to the requirements and design specifications produced. Technical walk throughs and software demonstrations are required at the completion of various milestones.

CS 452L Senior Software Engineering Project Lab. 1 Semester Hour.
Corequisite: CS 452.

CS 460 Directed Study/Special Computer Science Projects. 1 Semester Hour.
Prerequisite: 15 semester hours of upper level computer science coursework, and consent of instructor. This course is designed to allow students majoring in computer science to pursue special projects of interest to both the student and instructor. Projects undertaken for this course might well be continuations of projects begun in other courses.

CS 461 Directed Study/Special Computer Science Project. 2 Semester Hours.
Prerequisite: 15 semester hours of upper level computer science coursework, and consent of instructor.
This course is designed to allow students majoring in computer science to pursue special projects of interest to both the student and instructor. Projects undertaken for this course might well be continuations of projects begun in other courses.

CS 462 Directed Study/Special Computer Science Project. 3 Semester Hours.
Prerequisite: 15 semester hours of upper level computer science coursework, and consent of instructor. This course is designed to allow students majoring in computer science to pursue special projects of interest to both the student and instructor. Projects undertaken for this course might well be continuations of projects begun in other courses.

CS 472 Algorithm Analysis. 3 Semester Hours. (Lab fee.)
Prerequisite: MA 308, CS 318, and CS 316 or Fortran programming. An introduction to the classic methods for designing algorithms. The course will study specific problems such as sorting, graph traversals, and matrix multiplication in order to illustrate these methods. The methods studied will include: Divide and Conquer, Back-Tracking, Branch and Bound, and Dynamic Programming. A brief introduction to computational complexity.

CS 474 Introduction to Formal Language Theory. 3 Semester Hours. (Lab fee.)
Prerequisite: CS 472 and MA 320. Formal definition of programming languages. Examples of formal grammars, including methods for language parsing. Study of regular and context-free languages. Definition of automata and their relation to formal language definitions. Other topics will include the Chomsky hierarchy, Church-Turing thesis, and theory of computability.

Economics (EC) Courses

EC 310 Modern Economics. 3 Semester Hours. (Also listed as SS 310.)
A macro examination of the operation of modern economic systems including price determination, aggregate demand and supply theory, public policy options, and the philosophical foundations of free market and command systems.

EC 311 Economic Geography. 3 Semester Hours. (Also listed as GO 311.)
Analysis of the origins, nature and distributions of man's economic activities over the world. Elementary models of economic patterns, processes, and relationships in geographic space are stressed and the relation of these factors to the present position of the nations of the world is emphasized.

EC 320 Introduction to International Commerce. 3 Semester Hours. (Also listed as PO 320.)
Examines the international economic system and the challenges faced by multinational corporations in the conduct of international business. Special attention is given to the mechanics of importing and exporting, international finance, and private international law.

EC 321 Money and Banking. 3 Semester Hours. (Also listed as SS 321.)
Prerequisite: Principles of Economics. A study of how money, credit, and interest rates affect the level of employment, production, and prices in the economy. Topics of study will include the Federal Reserve System, the operations of commercial banks, credit controls, the theory of interest rate determination, and recent trends in banking.

EC 348 Labor Economics. 3 Semester Hours.
Introduction to labor in the economy and the relationships among workers, management, labor organizations, and public policy.

EC 410 International Finance and Monetary Economics. 3 Semester Hours.
Prerequisite: Principles of Macro and Micro Economics (or equivalent) and EC 321 Money and Banking (or equivalent). This course provides students with a strong foundation in the theory and practice of international finance and macroeconomics policies, and will explore emerging topics of interest such as a single currency (Euro) in Europe and financial crises in developing countries. The course consists of four parts: foreign exchange markets, the international monetary system, open-economy macroeconomics and international financial markets.

EC 441 Special Topics in Economics. 3 Semester Hours.
To be offered on occasion of student demand or need.

EC 460 Directed Study/Research in Economics. 3 Semester Hours.
A course designed to allow students an opportunity to perform research/directed studies in economics. Offered at the discretion of the professor with approval of the School Dean.

Education (ED) Courses

ED 300 Foundations of Education. 3 Semester Hours.
This survey course is designed for the student who expects to prepare for the teaching profession and includes principles, history, philosophy, and trends in education. Two full days of field experiences are required.

ED 303 Professional Education Communication. 3 Semester Hours.
This course is designed to facilitate the acquisition of professional attributes and to improve oral and written communication skills by refining study and research skills, using professional vocabulary, sharing research findings about educational trends and issues, and writing lesson plans. Practice in oral and written language usage will occur through writing and speaking about current educational concerns.

ED 305 Technology & Media in Education. 3 Semester Hours. (Lab fee.)
This course is designed to assist prospective teachers to acquire knowledge of technology available to enhance the teaching of the curriculum, including the Alabama Course of Study and textbooks currently used in N-12. The focus of this course includes development of basic knowledge and skills in instructional design, selection of appropriate technology, and applications in all areas of the curriculum N-12. This course has a computer laboratory experience.

ED 306 Computers: A Tool for Teaching. 1 Semester Hour. (Lab fee.)
Prerequisite: Fundamental computer concepts. This elective course is designed to increase the student's ability to use computers in the classroom. Demonstrations and hands-on experiences will include computers with peripheral devices such as scanners, laser discs, CD-ROM, Presenter Plus, still cameras, modems, and multimedia hardware.

ED 312 The Child in a Diverse Society. 3 Semester Hours. (Formerly titled as Child and Society.)
This course is designed to assist prospective teachers to develop understanding and appreciation of various social and ethnic groups and their cultures including the impact of these cultural phenomena on the education process. Field experience is required.

ED 321 Teaching Language Arts. 3 Semester Hours.
A course designed to teach appropriate methodology for all areas of language arts with an emphasis on effective teaching of written composition in the elementary grades. Course reflects the integrative nature of the language arts; the need for wholeness; the importance of being able to transfer skills, abilities, and attitudes learned in one context to another. Nine hours of field experiences in selected elementary schools are required.

ED 323 Teaching Reading in the Primary Grades. 3 Semester Hours. (Formerly titled Reading I: Materials and Methods of Teaching Beginning Reading.)
An in-depth study of early literacy development; word identification strategies including phonics, structural analysis, contextual analysis, and whole word methodology; various approaches to reading including the language experience and basal reader approaches and the uses of computers in the reading/writing program. Two and one-half days of field experiences in selected elementary schools are required.

ED 324 Teaching Mathematics in Primary Grades. 3 Semester Hours. (Formerly titled Teaching Mathematics to the Young Child.)
A course designed to assist prospective teachers of young children in presenting early mathematical concepts and skills. Application of psychological principles to the teaching and learning of mathematics is included. Field experiences in K-3 math classes in selected elementary schools are required.

ED 361 Measurement and Management. 3 Semester Hours.
Prerequisite: Admission to the Teacher Education Program. A course designed to provide future teachers with the skills and attitudes necessary to create a positive learning environment and assist them in being able to develop and implement proper evaluative techniques and give direction to pupil growth and development. One full day (7 hours) of field experience is required.

ED 364 Career Management. 1 Semester Hour. (Also referred to as GBA 364 and PS 364.)
This course is designed to prepare students to make a successful transition from an academic environment to the work environment: Traditional and non-traditional job search tactics, to include resume preparation, cover letter writing, networking concepts, development of a professional portfolio, interviewing skills, salary negotiation, work ethics, and corporate culture expectations.

ED 400 Reading Strategies. 1 Semester Hour.
This elective course is designed to prepare in-service teachers to implement current reading strategies in order to raise comprehension skills of students in K-12.

ED 406 Computers For Teacher Productivity. 1 Semester Hour. (Lab fee.)
Prerequisite: Fundamental computer concepts. This elective course will focus on increasing the student's ability to use computers as an organizational professional tool to assist in operating a modern classroom. Topics include lesson planning, grade books, test generators, presentation programs, desktop publishing, draw and paint programs, research programs, schedule and calendar programs.

ED 420 Teaching Science. 3 Semester Hours. (Lab fee.)
Prerequisite: Admission to the Teacher Education Program. A course designed to provide a study of the science concepts for elementary education. Emphasis is placed on materials and methods, processes of discovery, and the role of children as investigators. Students are required to teach a lab-based lesson in class and conduct two activities. Field experiences are required.

ED 423 Teaching Social Studies. 3 Semester Hours.
Prerequisite: Admission to the Teacher Education Program. A presentation of instructional materials, resources and strategies to be used for teaching social science concepts from the disciplines of economics, geography, history, political science, psychology, and sociology to children in the elementary school. Ten (10) hours of volunteer service with social service agencies, including those available to children within the community, are required while enrolled in this course.

ED 490 Supervision of Interns. 1 Semester Hour.
This elective course is designed to prepare in-service teachers to be cooperating teachers and supervisors of interns. Topics will include overview of the Teacher Education Program, conceptual framework, curriculum, portfolio, team building strategies, requirements of the internship, and observation and evaluation techniques. Teachers who complete the course, have a master's degree, and three years minimum teaching experience will be eligible to apply for a supervisor's position.

English (EH) Courses

EH 303 Journalism. 3 Semester Hours. (Lab fee.) (Will not satisfy literature requirements.) (Designed to fulfill requirements for language arts majors.)
Study and practical experience with journalistic principles, processes, and practices of the news media, utilizing media outlets both in schools and in the community with special emphasis on work with school publications.

EH 304 Southern Literature. 3 Semester Hours.
An appreciative and critical study of the body of fine literature written by and about residents of the American South with a concentration on literature in the 20th century. Oral and written student response.

EH 307 Major Authors I. 3 Semester Hours.
A survey (Ancient to Renaissance) of contributions to western civilization by the great writers of ancient and medieval times, beginning with the Old Testament and concluding with John Milton. Oral and written student response.

EH 308 Major Authors II. 3 Semester Hours.
A survey of contributions to western civilization made by the great writers of the 18th century through the 20th century, beginning with the Enlightenment and ending with contemporary writers. Oral and written student response.

EH 311 Drama Production. 3 Semester Hours. (Lab fee.) (Will not satisfy literature requirement. Designed to fulfill requirements for Language Arts majors.)
Study and practical experience in producing, acting, and directing, or otherwise active participation in stage craft in school or community theatre. An opportunity exists for qualified students to study with the Alabama Shakespeare Festival Theatre.

EH 312 Dramatic Literature. 3 Semester Hours.
Selected studies in drama, from classical through contemporary, designed to provide a wide familiarity with dramatic literature. Close study of specific plays. Oral and written student response.

EH 314 19th Century British Studies. 3 Semester Hours.
A critical study of the major and minor works of the Romantic and Victorian periods. Oral and written analysis.

EH 316 American Masterpieces. 3 Semester Hours.
An indepth study of the major works of American literature form the colonial period to the present. Oral and written analysis.

EH 320 Grammar for Teachers. 3 Semester Hours. (Will not satisfy literature or composition requirement.)
Prerequisite: Two courses in freshman composition. A teaching-oriented course, using both traditional standard grammar and linguistics-based grammatical systems. Includes some work in elements of composition.

EH 325 Myth: Ritual and Culture. 3 Semester Hours.
A study of the basic belief systems of major cultures and their impact on literature and thought. Special emphasis on Greek/Roman and on eastern and western religions.

EH 400 Creative Writing. 3 Semester Hours.
Study and practice in the art and skills of creative writing--poetry, prose,, and drama.

EH 401 Conflict Management. 3 Semester Hours. (Will satisfy general speech requirement. Will not satisfy literature requirement.)
A course in interpersonal communication, and group dynamics. Emphasis on conflict, resolution, problem solving and mediation.

EH 413 Composition for Teachers. 3 Semester Hours. (For prospective teachers only. Will not satisfy literature or general composition requirements.)
A study of essential features of composition writing and evaluation. Product-centered as well as process-centered techniques will be examined.

EH 414 History of the English Language. 3 Semester Hours. (Will not satisfy literature or composition requirements.)
The development of American English from early and medieval British beginnings to the current linguistic standards and variations. Designed to increase ease of use, vocabulary, and appreciation of the English language. Analytical writing required.

EH 416 Interpreting the Text. 3 Semester Hours. (Also listed as RE 416.)
An examination of various ancient, historical, and literary methods of interpreting literature covering the range from ancient ways of reading texts to current poststructuralist approaches. Even though primary emphasis will center on religious texts, there will be considerable attention given to issues and methods that emerged from the realms of the social sciences, literature, and philosophy.

EH 425 Shakespeare. 3 Semester Hours.
Designed to provide familiarization with the range of Shakespeare's work as well as close critical appreciation of certain sonnets and plays.

EH 431 Poetry and Poetics. 3 Semester Hours.
Prerequisite: Two composition courses and one literature course. A critical study of the major poems in English and American literature with an emphasis on language, forms, themes, poetic theory, analysis, interpretation, and explication. Oral and written analysis.

EH 433 Fiction. 3 Semester Hours.
Study of a wide range of fiction. Study is designed both to increase enjoyment of fiction and to develop analytical and evaluative reading skills. Both oral and written response required.

EH 440 African-American Studies. 3 Semester Hours.
A study of the major works of African-American writers from the 1700's to the present day. Includes the history of the African-American culture with an emphasis on literature related to the civil rights movement: 1865-1965.

EH 441 Special Topics in English. 1 Semester Hour.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

EH 442 Special Topics in English. 2 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

EH 443 Special Topics in English. 3 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

EH 450 Renaissance Literature 1550-1680. 3 Semester Hours.
A critical study of the major works of the English Renaissance from Spenser through Milton, (1550-1680) exclusive of Shakespeare. Oral and written analysis.

EH 451 Restoration/18th Century. 3 Semester Hours.
A critical study of the major and minor works of the late 17th and 18th century with an emphasis on Dryden, Pope, Swift, and Johnson. Oral and written analysis.

EH 452 Chaucer and Medieval Literature. 3 Semester Hours.
A critical study of the major literary works of the middle ages with an emphasis on Chaucer and The Canterbury Tales. Oral and written analysis.

EH 454 Seminar for Young Adult Literature. 1 Semester Hour. (Also listed as ED 454.)
This is a survey course of novels for middle and high school readers. Various themes and a diverse representation of authors will be studied.

EH 460 Directed Study of English. 1 Semester Hour.
Prerequisite: Consent of instructor. A special research or creative writing course designed to meet specific needs and interest.

EH 461 Directed Study of English. 2 Semester Hours.
Prerequisite: Consent of instructor. A special research or creative writing course designed to meet specific needs and interest.

EH 462 Directed Study of English. 3 Semester Hours.
Prerequisite: Consent of instructor. A special research or creative writing course designed to meet specific needs and interest.

Elementary Education (EL) Courses

EL 315 Principles of Teaching Young Children. 3 Semester Hours.
This is a course designed to teach Elementary Education majors (K-6) appropriate methodology specifically for kindergarten. This course includes developmental characteristics of five-year-old children with emphasis on language and intellectual development. The course will provide theoretical and philosophical bases for selecting materials and methods for a developmentally appropriate kindergarten curriculum. Implications for equipment selection, room arrangements, daily schedules, and learning experiences are discussed. One and one-half days of field experiences are required.

EL 320 Children's Literature. 3 Semester Hours.
This is a survey course of current and traditional prose and poetry thought to be applicable to diverse populations of children. Emphasis is placed on the integration of children's literature throughout the curriculum. Field experience is required.

EL 413 Teaching Reading in Intermediate Grades. 3 Semester Hours. (Lab fee.) (Formerly titled Materials and Methods of Teaching Reading Comprehension.)
Prerequisite: ED 323 (except Middle School endorsement) and Admission to the Teacher Education Program.
Utilization of metacognitive strategies; instructional decision-making; and critical thinking to develop reading comprehension processes, to assist at-risk readers, and to foster the enjoyment of reading through balanced literacy. This is a senior-level course and requires a minimum of 18 hours of teaching on-site in selected elementary schools. In addition, one hour of instructing a child and additional time for planning and reflecting are required in a 3:00-6:00 time frame one afternoon per week for 12 weeks. The student will use a portfolio management system, trade books, computers, current curriculum resources, and teacher-made materials to instruct a child. At the culmination of the clinical cycle, the student will conduct a parent conference.

EL 424 Teaching Mathematics in Intermediate Grades. 3 Semester Hours. (Lab fee.)
Prerequisite: ED 324 (no prerequisite for middle school endorsement).
A course designed to provide study of the mathematics skills and concepts in grades 4-8 with an emphasis on materials and methods of instruction. In addition, one hour of instructing a child and additional time for planning and reflecting are required in a 3:00-6:00 p.m. time frame one afternoon per week. The student will use a portfolio management system, trade books, computers, current curriculum resources, and teacher-made materials to instruct a child. At the culmination of the clinical cycle, the student will conduct a parent conference. Field experiences in selected elementary schools are required.

EL 472 Planning and Organizing the Elementary School Curriculum. 3 Semester Hours.
Prerequisite: Senior standing and admission to the Teacher Education Program. This course must be taken the last semester prior to internship.
The application of a reflective model of teaching which integrates the curriculum through analytical, evaluative, strategic, practical, and communicative skills. Special emphasis will be given to integrating the elementary school curriculum to accommodate the needs of a diverse population. This is a Candidate Assisted Practice Site (C.A.P.S.) course and the field experience requires a minimum of 30 hours of teaching on-site in selected elementary schools.

EL 482 Internship in Elementary Education. 9 Semester Hours. (Lab fee.)
Prerequisite: Senior standing and admission to the Teacher Education Program. Fourteen-week internship program. This culminating experience of the Teacher Education Program provides practical experience in teaching classes in state-accredited schools under the guidance of a cooperating teacher and supervision of a college professor. Seminar attendance is required.

EL 483 Internship in Elementary Education. 5 Semester Hours. (Lab fee.)
Seven-week internship program for persons seeking additional certification.

Early Childhood Education (ER) Courses

ER 302 Theories and Stages in Language Development. 3 Semester Hours.
This course is designed to familiarize the student with language acquisition and theory including phonology, syntax, semantics and pragmatics with emphasis on the varied home, cultural and school influences in language and literacy development. Field experience required.

ER 310 Principles of Early Childhood Education. 3 Semester Hours.
This course, designed for **Early Childhood Education majors (P-3)**, will provide prospective teachers of young children with the historical, theoretical, and practical issues of early childhood education. Emphasis is on early childhood philosophical and sociological foundations, facets of development, principles of learning, trends and issues, and program models. Field experience required.

ER 318 Literature in Early Childhood Education. 3 Semester Hours.
This course has a two-fold purpose. As a survey course, it is designed to assist preservice teachers in becoming acquainted with the great wealth of trade books available for today's young children. An equally important purpose is to assist pre-service teachers so they may guide young children toward more creative, insightful utilization of literary materials in a classroom setting. Field experience required.

ER 350 Administering and Managing Early Childhood Programs. 3 Semester Hours.
Prerequisite: Admission to Teacher Education Program, Senior Standing. This course should be taken the semester prior to internship. It is designed to provide future administrators of childcare programs with a knowledge of the factors that influence quality programs which include: program philosophy, policies and evaluation; assessing, recording, and reporting children's progress; scheduling; nutrition and health services; home and school collaboration; administrative organization and regulations; managing personnel; organizing the physical environment; financing and budgets; and contributing to the profession.

ER 460 Practicum in Early Childhood Education. 3 Semester Hours. (Lab fee.)
Prerequisite: Admission to Teacher Education Program, senior standing and ED 323 and ED 324.
This field experience consists of tutoring kindergarten or first grade students in math and reading, and investigating the management of a child care center.

ER 461 Practicum in Early Childhood Education. 3 Semester Hours. (Lab fee.)
Prerequisite: Admission to Teacher Education Program, senior standing and SE 301 or CHD 210.
This is a field experience in an elementary school designed to increase knowledge of how to relate to special education K-3rd grade students. Assignments are intended to link theory of early childhood education to practice.

ER 462 Practicum in Early Childhood Education. 3 Semester Hours. (Lab fee.)
Prerequisite: Admission to Teacher Education Program, senior standing and AR 310 or CHD 202.
This is a field experience in an elementary school designed to increase knowledge of planning fine arts experiences for K-3rd grade students. Assignments are intended to link theory of early childhood education to practice.

ER 470 Early Childhood Curriculum. 3 Semester Hours.
Prerequisite: ED-310, Admission to Teacher Education Program, Senior Standing. This is the capstone course for early childhood majors and should be taken the semester prior to internship. This course is designed to teach the basic principles and considerations underlying planning a developmentally appropriate curriculum for young children, birth through third grade (P-3), in all areas of development. This course examines the content, methods, materials and assessment appropriate for young children and the teacher's role in organizing and integrating the early childhood curriculum. Implications for equipment selection, room arrangement, daily schedules, and learning experiences are discussed. This is a candidate assisted practice site (C.A.P.S.) course which requires five full days of field experience in a selected elementary school.

ER 480 Internship in Early Childhood Education. 9 Semester Hours. (Lab fee.)
Prerequisite: Senior standing and admission to the Teacher Education Program. Fourteen-week internship program. This culminating experience of the Teacher Education Program provides practical experience in teaching classes in state-accredited schools under the guidance of a cooperating teacher and supervision of a college professor. For students who have not taken a preschool practicum at the community college level, the internship will consist of two weeks in a four-year-old program and twelve weeks in an elementary school. Seminar attendance is required.

ER 481 Internship in Early Childhood Education. 5 Semester Hours. (Lab fee.)
Seven-week internship program for persons seeking additional certification.

Finance (FIN) Courses

FIN 355 General Insurance. 3 Semester Hours.
A study of fundamental principles and uses of various types of insurance: life, fire, automobile, homeowners, and other casualty and business forms.

FIN 356 Real Estate. 3 Semester Hours. (Approved by the Alabama Real Estate Commission as a pre-license course.)
A course designed to give students a broad understanding of the principles of real estate. Instruction includes historical background, freehold estates, leasehold estates, deeds, transferring of interests, financing, appraising, and the Alabama Real Estate License Law.

General Business (GBA) Courses

GBA301 Windows Applications for Business. 3 Semester Hours. (Lab fee.)
An examination of the many uses for windows applications in the modern business setting. Emphasis given to a "hands on approach" of assessing the usage of personal computers for preparing spreadsheets, managing files, word processing, and graphics.

GBA305 Statistical Methods of Business I. 3 Semester Hours. (Lab fee.)
Prerequisite: College algebra or equivalent. Introduction to descriptive and inductive methods to evaluate data. Coverage will include the calculation of central tendency, tests of hypothesis, probability theory, and sampling.

GBA306 Statistical Methods of Business II. 3 Semester Hours. (Lab fee.)
Prerequisite: GBA 305. An advanced course covering topics such as analysis of variance, time series analysis, simple and multiple regression, and index numbers.

GBA307 Quantitative Business Analysis. 3 Semester Hours. (Lab Fee.)
Focuses on the concepts, processes and problem solving tools related to the quantitative aspects associated with management and operation of a business. Topics include applied linear programming, decision theory, waiting line analysis, regression analysis, forecasting techniques, inventory management and similar topics. In addition to an in-depth study of these subjects, the course will include case studies, optimization techniques, and multi-criteria decision-making applications.

GBA311 The Legal Environment of Business. 3 Semester Hours.
An analysis of the legal, social, and ethical environment of business.

GBA312 Law for Accountants. 3 Semester Hours.
Prerequisite: Legal Environment (BUS 263). A study of law subjects the accountant encounters including contracts, the UCC, business organizations, and accountant liability.

GBA332 History of American Business. 3 Semester Hours. (Cross listed as HY 332)
This course familiarizes the student with the major developments in the history of American business since colonial times. Particular emphasis is given to the evolution of the firm and the role of entrepreneurs.

GBA350 The International, Legal and Cultural Environment of Business. 3 Semester Hours.
Prerequisite: None. However, it is recommended that the student complete GBA 311 or PO 350, and GBA 352 before taking GBA 350. This course focuses on the legal framework within which international trade takes place. Within this large framework public and private international law are important as a sub-focus. Areas to be studied include international organizations, environmental law, human rights, economic/commercial law, public and private international law, tax law, comparative law and ethics.

GBA357 Personal Finance. 3 Semester Hours.
A study and review of consumer money management problems, choices, and decision-making. Topics such as investing in stocks, bonds, mutual funds, commodities, and options will be covered.

GBA364 Career Management. 1 Semester Hour. (Also referred to as ED 364 and PS 364.)
This course is designed to prepare students to make a successful transition from an academic environment to the work environment: Traditional and non-traditional job search tactics, to include resume preparation, cover letter writing, networking concepts, development of a professional portfolio, interviewing skills, salary negotiation, work ethics, and corporate culture expectations.

GBA368 Industrial and Personnel Psychology. 3 Semester Hours. (Also listed as PS 368.) (Sometimes taught on a pass/fail basis.) The application of psychology to industrial organization. Areas of consideration include morale and group processes, supervisory leadership, selection and placement, training, motivation, fatigue, accidents, interviewing and industrial counseling.

GBA452 Advanced Application of Technology Management I. 9 Semester hours.
Academic credit awarded for experiential learning activities that involve the integration of technical knowledge and management science in a workplace setting.

GBA453 Advanced Application of Technology Management II. 9 Semester Hours.
Academic credit awarded for individually directed experiential learning activities that involve the use of problem solving, risk analysis, and decision-making skills and competencies as they relate to the achievement of an operational goal within a selected organization.

GBA460 Directed Study/Research in Business. 3 Semester Hours.
A course designed to allow students an opportunity to perform research or directed studies. This course is offered at the discretion of the professor with the approval by the School Dean.

Gerontology (GE) Courses

GE 320 Nutrition. 3 Semester Hours. (Also listed as GS 320.)
This course considers contemporary nutrition from the viewpoint of practical application. Emphasis is on the relationship of nutrition to health, growth, development, and disease prevention.

GE 320L Nutrition Lab. 1 Semester Hour. (Also listed as GS 320L). *Corequisite GE 320.*

GE 335 Adult Psychology. 3 Semester Hours. (Also listed as PS 335).
Indepth survey of theory, research findings, and methods of obtaining knowledge regarding biological, cognitive, and psychosocial aspects of adult development. Topics include physical change, development of identity and social roles, intellectual changes over the life span, relationships, career and retirement choices, and coping with death and dying. Critical analyses of scientific research designs and methods will be emphasized.

GE 410 Physiology of Aging. 3 Semester Hours.
A study of the physiological process of aging and the special problems encountered by such process.

GE 412 Aging Policy and Programs. 3 Semester Hours.
The federal, state, and local framework of services and programs for the aging.

GE 471 Aging in a Mass Society. 3 Semester Hours. (Also listed as SO 471.)
A study of the aging process, the special problems encountered by the aging and by the institutions of society involved in the care of the aging.

GE 497 Practicum in Psychology/Sociology/Gerontology. 3 Semester Hours. (Also listed as PS/SO 497.)
This course provides the student an opportunity to experience the theoretical concepts and knowledge obtained in the classroom. The practicum entails approximately eight hours per week of supervised field experiences in appropriate community agencies, institutions, industrial or research settings, and bi-weekly in-class seminars.

Geography (GO) Courses

GO 309 North America and Europe. 3 Semester Hours. (Does not satisfy B.A. History requirements.)
This course examines the physical, historical, cultural, economic, and political characteristics of four geographical regions: the United States, Canada, Western Europe, and Eastern Europe. Except for the United States, there is considerable emphasis on the historical evolution of each region. The five basic themes of geography--location, place, relationships within places, movement, and regions--will also be stressed.

GO 310 South America, Africa and Asia. 3 Semester Hours. (Does not satisfy B.A. History requirements.)
This course examines the physical, historical, cultural, economic, and political characteristics of ten geographical regions: South America, Central America, Subsaharan Africa, North Africa, the Middle East, East Asia, South Asia, Southeast Asia, Australia, and the Pacific. There is considerable emphasis on the historical evolution of each region, including patterns of social and political development, cultural diffusion, conflict, and cooperation. The five basic themes of geography--location, place, relationships within places, movement, and regions--are stressed in each region.

GO 311 Economic Geography. 3 Semester Hours. (Also listed as EC 311.)
This course examines the origin, types, and distribution of economic activities around the world as well as the theories that explain the location of economic activities. There is some discussion of environmental determinants of economic activities as well as the role of people and cities in a nation's economy. The student should demonstrate a knowledge of the five basic themes of geography as they relate to economic activities: location, place, relationships within places, movement, and regions.

GO 320 The Geography of North America. 3 Semester Hours.
This course emphasizes the geography of the United States, Canada, and Mexico. The relationship of the Caribbean region and Central America to North America is also considered. There is an emphasis on location, place, relationships within places, movement, and regions.

GO 332 Physical Geography. 3 Semester Hours. (Also listed as GS 332). (Lab fee.)
Corequisite: GO 332L.
Designed to instill greater appreciation and awareness of man's physical environment. Areas of emphasis include mineralogy, petrology, plate tectonics, diastrophism, weathering, mass wasting, agents of erosion, soil layers, and remote sensing.

GO332L Physical Geography Lab. 1 Semester Hour. ***Corequisite: GO 332.***

GO 341 Biogeography. 3 Semester Hours. (Also listed as BI 341).
Prerequisite: BI 303,Consent of instructor. Presents biological aspects of geography. Presents biological aspects of geography. Designed to instill greater appreciation and awareness of man's physical environment and of mechanisms which control the distribution of plants and animals on planet Earth.

General Science (GS) Courses

GS 300 Introduction to Astronomy. 3 Semester Hours. (Lab fee.)
Corequisite: GS 300L. Prerequisite: Precalculus algebra. A study of the laws and principles of astronomy, designed to help the student gain an understanding of how the astronomer studies his subject. To help the student appreciate the scope of the universe, discussion will include the solar system, stars, galaxies, and the Big Bang theory.

GS 300L Introduction to Astronomy Lab. 1 Semester Hour. (Lab fee.) ***Corequisite: GS 300.***

GS 301 Atmospheric Science. 3 Semester Hours. (Lab fee.)
Corequisite: GS 301L. A survey course in meteorology at the introductory level. This course provides the student with physical explanations for those phenomena collectively called weather.

GS 301L Atmospheric Science Lab. 1 Semester Hour. ***Corequisite: GS 301.***

GS 302 Earth Science. 3 Semester Hours. (Lab fee.)
Corequisite: GS 302L. An introduction to the materials that make up the earth's crust and to the various processes responsible for wearing down and shaping the landscape, including an analysis of environmental issues which relate this science to human activities.

GS 302L Earth Science Lab. 1 Semester Hour. ***Corequisite: GS 302.***

GS 320 Nutrition. 3 Semester Hours. (Also listed as GE 320.) (This course may be used to satisfy the Health requirement for B.S.Ed. Majors. It will not count as a physical science for B.S. Ed. Physical Education majors or Elementary Education majors.) This course considers contemporary nutrition from the viewpoint of practical application. Emphasis is on the relationship of nutrition to health, growth, development, and disease prevention.

GS 320L Nutrition Lab. 1 Semester Hour. ***Corequisite GS 320.***

GS 321 Environmental Science. 3 Semester Hours. (Lab fee.)
Corequisite: GS 321L. Emphasis on biological, chemical, and physical aspects of environmental problems, integrating current legal, economic, social, and technical developments.

GS 321L Environmental Science Lab. 1 Semester Hour. ***Corequisite: GS 321.***

GS 330 Environmental Chemistry. 3 Semester Hours. (Also listed as CH 330). (Lab fee.)
Study of natural chemical processes of Earth and actual and possible effects of humans on natural chemical systems. Environmental problems such as air and water pollution, ozone depletion, and global warming discussed. Also may include introduction to some methods of environmental analysis and pertinent environmental regulations.

GS 332 Physical Geography. 3 Semester Hours. (Also listed as GO 332). (Lab fee.)
Corequisite: GO 332L. Designed to instill greater appreciation and awareness of man's physical environment. Areas of emphasis include mineralogy, petrology, plate tectonics, diastrophism, weathering, mass wasting, agents of erosion, soil layers, and remote sensing.

GS 332L Physical Geography Lab. 1 Semester Hour. (Also listed as GO 332L.)
Corequisite: GS 332.

Humanities (HU) Courses

HU 311 Beginning French Conversation I. 3 Semester Hours.
Designed for students with no previous expertise in French, this course is intended to enable the student to recognize and speak French in a practical manner. Emphasis is given to language skills necessary for conducting business and successful mobility in French-speaking countries or communities.

HU 312 Beginning French Conversation II. 3 Semester Hours.
Prerequisite: HU 311 or equivalent. A continuation of Beginning French Conversation I, this course is intended to enhance the student's ability to recognize and speak French in a practical manner. Emphasis is given to language skills necessary for conducting business and successful mobility in French-speaking countries or communities.

HU 313 Beginning Spanish Conversation and Culture I. 3 Semester Hours.
Designed for students with no previous expertise in Spanish, this course is intended to enable the student to recognize and speak Spanish in a practical manner. Emphasis is given to language skills necessary for conducting business and successful mobility in Spanish-speaking countries or communities.

HU 314 Beginning Spanish Conversation and Culture II. 3 Semester Hours.
Prerequisite: HU 313 or equivalent. A continuation of Beginning Spanish Conversation I, this course is intended to enhance the student's ability to recognize and speak Spanish in a practical manner. Emphasis is given to language skills necessary for conducting business and successful mobility in Spanish-speaking countries or communities.

HU 315 Beginning Japanese Language and Culture I. 3 Semester Hours.
Designed for students with no previous expertise in Japanese. This course is intended to enable the student to recognize and speak basic Japanese and to gain an appreciation of Japanese culture. Emphasis is on language skills necessary for conducting business and for successful mobility in Japanese communities.

HU 316 Beginning Japanese Language and Culture II. 3 Semester Hours.
Prerequisite: HU 315 or equivalent. A continuation of Beginning Japanese Language and Culture I. This course is designed to enhance the student's ability to recognize and speak Japanese in a practical manner and to expand the student's knowledge and appreciation of Japanese culture. Emphasis is on the language skills necessary for conducting business and successful mobility in Japanese communities.

HU 321 Library Research Techniques. 1 Semester Hour.
This course familiarizes the student with the proper utilization of the basic reference books, abstracts and indexes, the card catalog, and audiovisual equipment. The course also enables the student to master research in their other college subjects.

HU 330 Landmarks of Civilization. 3 Semester Hours. (Also listed as HY 330). (Occasional lab time is required.)
Classical World to present. A review of selected examples of man's creative achievements in drama, literature, philosophy, art, and music. This course is designed to demonstrate the integration of human knowledge. Stresses expository writing and critical thinking.

History (HY) Courses

HY 300 Historiography. 3 Semester Hours. (Offered Fall Semester.)
This course is intended to provide students with an introduction to the main currents of historical scholarship in the modern era. It will devote particular attention to historicism, Marxism, the approaches derived from the social sciences such as psychohistory, and

cliometrics and the new challenges such as post-modernism, post-structuralism, deconstruction, gender history and the new historicism. It will provide the students with a basic idea of the traditional definition of evidence and of how to conceive and structure a research paper. This course is required for all B.A. history majors, who should take it during their first semester at Athens State University.

HY 301 Social Science Research Methods. 3 Semester Hours. (Also listed as PO 301 and SS 301.) (Required of B.S.Ed. degree-seeking History and Social Science majors; may not be taken by B.A. degree-seeking history major.) Should be taken at the beginning of the junior year. A course designed to develop the techniques of social science research and to explore varying historical interpretations.

HY 302 Alabama History. 3 Semester Hours.
The history of Alabama and its southern heritage from early times to the present. Study of present day problems and an examination of the space age as it has effected Alabama's development are included.

HY 303 The South In United States History. 3 Semester Hours.
A study of the post-Reconstruction South. A survey of its historical, economic, and social development as a distinct region of the United States.

HY 304 Revolutionary American History. 3 Semester Hours.
A survey of Anglo-American colonial history, revolutionary developments, and the writing and ratification of the Constitution of the United States.

HY 305 American Expansion in the 19th Century. 3 Semester Hours.
This course covers the early years of the republic rise of sectionalism, and the forces of industrialization, urbanization, and immigration in United States history. Also explored is westward migration, the quest for social justice including the major reform movements of the century and the interdependence of the people of the United States.

HY 306 20th Century America. 3 Semester Hours.
An examination of the political, social, cultural, and economic developments in 20th-century America. Emphasis is placed on the Progressive Movement, role of the United States in world affairs, the Interwar period, and developments after World War II, particularly the Vietnam Era and its aftermath.

HY 307 American Constitutional Law. 3 Semester Hours. (Also listed as PO 307 and JS 307.)
This course examines the text of the nation's primary law and key decisions of the U.S. Court interpreting certain phrases. Organization and operation of the Court are also covered. This course focuses on separation of powers, federalism, interstate commerce, taxation, the contract clause and the takings clause. This course provides a foundation in American constitutionalism for students who plan to attend law school or teach social studies in the secondary schools.

HY 308 America and the World. 3 Semester Hours. (Also listed as PO 308.)
Examines America's foreign relations with the main geographical regions of the world, including issues that affect human survival, such as energy crisis, disarmament, foreign aid, and economic cooperation.

HY 309 American Civil War and Reconstruction. 3 Semester Hours. (Does not satisfy B.A. History requirements.)
Causes, events, and results of the Civil War. Also political, economic, and social aspects of reconstruction.

HY 310 A History of American Religion. 3 Semester Hours. (Does not satisfy B.A. History requirements.)
The role of religion in America's development is the focus of this course. Each period from European settlement to the triumph of the people over their land at the end of the 19th century and through the tribulations of the two World Wars is examined. Theology is explored only when it directly explains particular historical events.

HY 313 Revolutionary Europe. 3 Semester Hours.
A study of the background and the events of the French Revolution and the Napoleonic Period (1789-1815). Emphasizes the revolutionary wellsprings of the contemporary Western world.

HY 314 19th Century Europe. 3 Semester Hours.
A study of the social, political, and industrial forces which shaped modern Europe between 1815 and 1914. Particular attention is given to the development of large state and business bureaucracies, the spread of industry and steam transportation, European imperialism, the rise of totalitarian ideologies, and the increase in popular participation in political and social events.

HY 315 20th Century Europe. 3 Semester Hours.
The major themes of the course are the rise and demise of totalitarian dictatorships, the continued spread of democracy, the appearance of the welfare state, and the general improvement of the European standard of living since 1918.

HY 321 England and Britain to 1688. 3 Semester Hours.
This course covers British history from the Roman occupation to the Glorious Revolution with emphasis on the development of the English people and state.

HY 322 England and Britain. 3 Semester Hours.
A survey of English and British history from 1688 to the present. Encompasses political, constitutional, socioeconomic, cultural, intellectual, and imperial movements.

HY 324 Nazi Germany. 3 Semester Hours.
The course is designed to provide students with a comprehensive, sophisticated account and analysis of the Nazi period in German history. It will explore issues related to the content and implications of Nazi ideology, the role of Hitler, the complicity of elites such as the Junkers, the military the churches and big business. The course will examine the origins both of the Nazi movement and of the conditions in Germany that led to the movement's rise to power. It will provide a detailed analysis of the consequences of the implementation of Hitler's policies in the forms of genocide, military conquest, and defeat. Permission of the instructor required. Offered every other year.

HY 330 Landmarks of Civilization. 3 Semester Hours. (Also listed as HU 330.) (Occasional lab time is required.)
Classical World to present. A review of selected examples of man's creative achievements in drama, literature, philosophy, art, and music. This course is designed to demonstrate the integration of human knowledge. Stresses expository writing and critical thinking.

HY 332 History of American Business. 3 Semester Hours. (Also listed as GBA 332.)
This course familiarizes the student with the major developments in the history of American business since colonial times. Particular emphasis is given to the evolution the firm and the role of entrepreneurs.

HY 334 Middle East. 3 Semester Hours.
A survey of the historical and cultural characteristics of those countries from Mauritania and Morocco to Afghanistan. Emphasis is placed on the historical development and Arabization of the region, current socio-economic problems, the strategic significance of the area, and its relations to the rest of the world.

HY 335 Past Imperfect: A Study of World War II Film and History. 3 Semester Hours.
This course is designed to introduce the student to the topic of film and history. Attention will focus on World War II with a selection of representative prewar, wartime, and postwar films.

HY 336 A History of Criminal Justice. 3 Semester Hours. (Also listed as JS 336.)
The subject of this course is the historical development of American criminal justice philosophy, institutions, and practices in the political, cultural, and social context of the Western world and the United States from ancient Hebraic Law to the present. Emphasis is on the contribution and effect of the Enlightenment, Puritanism, American Revolution and Constitution, and Frontier experience on the origins and evolution of the American administration of justice.

HY 342 Modern Russia. 3 Semester Hours. (Formerly titled Russia and Eastern Europe.) (Does not satisfy European history requirement for a B.A. in history.)
Examines the history, geography, and current political systems in the Russia.

HY 350 Warfare in the Western World. 3 Semester Hours.
This course covers the history of military operations in the West from the 17th century to the present with concentration on selected campaigns in major wars, political and military leadership and the waging of war, and the formulation of war aims and strategy.

HY 401 American History Seminar. 3 Semester Hours.
The seminar will survey recent literature covering American history and allow the student to pursue a particular topic indepth.

HY 402 European History Seminar. 3 Semester Hours.
The seminar will survey recent literature covering modern European economic and political history. Its emphasis will be on major research projects by the students.

HY 414 Modern Africa. 3 Semester Hours.
An exploration of sub-Sahara Africa from the beginnings of European Colonization. Emphasis is focused on the effects of World War II on the region including the rise of black nationalism, the region's special mineral offerings and their influence on global developments, the Cold War, and Independence movements particularly in Zimbabwe, Zaire, and South Africa.

HY 441 Special Topics in History. 1 Semester Hour.
Prerequisite: Consent of the instructor. To be offered in accordance with student demand or need.

HY 442 Special Topics in History. 2 Semester Hours.
Prerequisite: Consent of the instructor. To be offered in accordance with student demand or need.

HY 443 Special Topics in History. 3 Semester Hours.
Prerequisite: Consent of the instructor. To be offered in accordance with student demand or need.

Instrumentation (IT) Courses

IT 306 Interfacing Techniques. 4 Semester Hours. (Also listed as ATE 306) (Lab fee.)
Prerequisite: Microprocessor fundamentals. This course is designed to have students become familiar with interfacing input and output devices to microprocessor and computer interfacing systems. Students should already have some knowledge of microprocessor operation and fundamentals. Students will be involved in individual and team assignments in design, construction, and implementation of interfacing systems.

IT 316 Applied Digital Design. 4 Semester Hours. (Also listed as ATE 316) (Lab fee.)
Prerequisite: Introductory digital electronics. During the course, the tools of digital design will be developed, and then these tools will be used to investigate problems in digital design with computers and large-scale solutions to digital problems. The course will also cover the use of devices, such as programmable logic devices (PLD's), in digital problems and design.

IT 320 Math Methods for Instrumentation. 4 Semester Hours. (Lab fee.)
Prerequisite: Calculus II. Designed to introduce student to advanced mathematical methods necessary for understanding complex instrumentation systems. Includes introductions to complex numbers, Laplace transforms, Fourier analysis, and elementary statistical analysis.

IT 400 Advanced Analog Instrumentation. 4 Semester Hours. (Also listed as ATE 400.) (Lab fee.)
Prerequisite: IT 320, and PY 302. This course is designed to familiarize the student with theories and methods used in analyzing and understanding complex electronic systems. Students are expected to be already familiar with basic circuit analysis, basic physics, and the elements of calculus. During the course, the fundamentals of circuit analysis will be reviewed, and then more advanced topics and methods of analysis will be introduced.

IT 401 Applied Digital Communications. 4 Semester Hours. (Also listed as ATE 401) (Lab fee.)
Prerequisite: Introductory electronics courses. This course is designed to familiarize the student with the basic systems and concepts used in electronic communication systems. The mathematical techniques used in the course include algebra, geometry and trigonometry, and may introduce and employ some basic concepts of calculus.

IT 420 Electro-optics. 4 Semester Hours. (Also listed as ATE 420.) (Lab fee.)
Prerequisite: IT 320 and PY 302. This course investigates electro-optical techniques and systems. This will include discussions of: electromagnetic waves, the optical spectrum, the modern theory of light, interaction of light with matter (geometrical and physical optics), optical sources (including LEDs and lasers), optical detectors, and electro-optic systems, such as fiber-optic systems and optical data storage. Course content will be based on the text and on lecture notes taken from a variety of sources.

IT 425 Introduction To Robotics. 4 Semester Hours. (Also listed as ATE/ATM 425.) (Lab fee.)
Prerequisite: IT 320 and PY 302. This course is designed to familiarize the student with the basic systems and concepts used in robotic control. The mathematical techniques used in the course include algebra, geometry, and trigonometry, and will employ some basic concepts of calculus. A major component of the course will require students to develop and implement group projects using the RHINO robotic system.

IT 440 Process Control Instrumentation. 4 Semester Hours. (Also listed as ATE 440) (Lab fee.)
Prerequisite: Senior standing and consent of instructor. This course is designed to familiarize the student with the basic systems and concepts used in process control. The mathematical techniques used in the course include algebra, geometry and trigonometry, and will employ some basic concepts of calculus.

IT 441 Computer Instrumentation. 4 Semester Hours. (Also listed as ATE 441.) (Lab fee.)
Prerequisite: IT 440. This course is designed to familiarize the student with the basic concepts used in computer control and instrumentation. The mathematical techniques used in the course include algebra, geometry and trigonometry, and will employ some basic concepts of calculus. A major component of the course will require students to develop and implement group projects using the LabVIEW data acquisition system.

IT 461 Directed Study/Special Instrumentation Project. 1 Semester Hour.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

IT 462 Directed Study/Special Instrumentation Project. 2 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

IT 463 Directed Study/Special Instrumentation Project. 3 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

IT 464 Directed Study/Special Instrumentation Project. 4 Semester Hours.
Prerequisite: Consent of academic unit coordinator and/or instructor. To be offered on occasion of student demand or need.

Justice Studies (JS) Courses

JS 301 Criminal Justice Process. 3 Semester Hours.
An overview of the major steps in the processing of a criminal case in the United States, including pretrial, trial, and post-conviction phases.

JS 302 Criminal Law. 3 Semester Hours. (Also listed as PO 302.)
Definitions of crimes to include the specific elements of various criminal offenses. Defenses to criminal conduct also are discussed.

JS 307 American Constitutional Law. 3 Semester Hours. (Also listed as HY307/PO307.)
This course examines the text of the nation's primary law and key decisions of the U.S. Supreme Court interpreting certain phrases. Organization and operation of the Court are also covered. This course focuses on separation of powers, federalism, interstate commerce, taxation, the contract clause and the takings clause. This course provides a foundation in American constitutionalism for students who plan to attend law school or teach social studies in the secondary schools.

JS 336 A History of Criminal Justice. 3 Semester Hours. (Also listed as HY 336.)
The subject of this course is the historical development of American criminal justice philosophy, institutions, and practices in the political, cultural, and social context of the Western world and the United States from ancient Hebraic law to the present. Emphasis is on the contribution and effect of the Enlightenment, Puritanism, American Revolution and Constitution, and frontier experience on the origins and evolution of the American administration of justice.

JS 307 American Constitutional Law. (Also listed as HY 307 and PO 307.)
This course examines the text of the nation's primary law and key decisions of the U.S. Supreme Court interpreting certain phrases. Organization and operation of the Court are also covered. This course focuses on separation of powers, federalism, interstate commerce, taxation, the contract clause and the takings clause. This course provides a foundation in American constitutionalism for students who plan to attend law school or teach social studies in the secondary schools.

JS 350 Introduction to the American Legal System. 3 Semester Hours. (Also listed as SO 350, PSA 350, and PO 350.)
This course is a review of basic legal doctrines and processes in the U.S. system of jurisprudence. Students are introduced to a wide variety of topics in civil and criminal justice. Topics include the theory and nature of law as a device for social control, torts, contracts, and ownership of property. The course is structured to provide prelaw majors with limited exposure to the many social conflicts managed by law and courts, and to provide education majors with an overview of law-related topics necessary for civics instruction.

JS 364 Civil Liberties. 3 Semester Hours. (Also listed as PO 364.)
Analysis of leading cases and doctrines which balance governmental/societal interests with individual rights across a broad spectrum of social relationships. Explores the constitutional foundations for freedom of expression, due process, and equal protection under the law.

JS 400 Law Enforcement In America. 3 Semester Hours.
An in-depth examination of American policing. Includes history, structure, functions, processes, and administrative issues of contemporary law enforcement agencies/systems.

JS 401 Adult Corrections. 3 Semester Hours. (Also listed as SO 401.)
Prerequisite: Introduction to Sociology. This course examines the organizational structure and historical development of governmental, quasi-governmental, and non-governmental systems and agencies concerned with the delivery of public safety services. Also, this course presents current issues that impact public safety agencies.

JS 446 Public Safety Concepts and Systems. 3 Semester Hours. (Also listed as PSA 446.)
This course examines the organizational structure and historical development of government, quasi-governmental, and non-governmental systems and agencies concerned with the delivery of public safety services. Also, this course presents current issues that impact public safety agencies.

JS 452 Advanced Criminology. 3 Semester Hours. (Also listed as SO 452.)
Prerequisite: Introduction to Sociology. Analysis of social causal process and theories by which individuals become criminals and evaluation of the effectiveness of the criminal justice system in returning helpful, contributing citizens back to society. Historical and contemporary orientation.

JS 453 Juvenile Delinquency. 3 Semester Hours. (Also listed as SO 453.)
Prerequisite: Introduction to Sociology. The course applies a sociological approach to analyzing juvenile delinquency. While recognizing a variety of the causes (physiological, psychological, and social) of juvenile delinquency, this approach focuses on the impact of societal conditions on juvenile delinquency. The course combines a theoretical and an empirical emphasis.

JS 455 Public Administration Ethics. 3 Semester Hours. (Also listed as PO 455 and PSA 455). (Formerly titled Ethics for Public Administrators.)
Examines ethical issues encountered by administrators of government agencies. More specifically, this course explores the application of codes of ethics, theories of ethical decision-making, and ethical principles affecting public administration.

JS 460 Directed Studies in Justice Studies. 1 Semester Hour. Consent of instructor required.

JS 462 Directed Studies in Justice Studies. 2 Semester Hours. Consent of instructor required.

JS 463 Directed Studies in Justice Studies. 3 Semester Hours. Consent of instructor required.

JS 465 Senior Research Project. 4 Semester Hours. (Also listed as PO/PSA 465.)
Prerequisite: Justice Studies major and consent of instructor. Provides supervised experiences in appropriate criminal justice agencies. This course includes intensive routine seminars with discussion and evaluation of experiences in the field.

Mathematics (MA) Courses

MA 301 Pre-Calculus Algebra. 3 Semester Hours. (Lab fee.)
Prerequisite: Two years of high school algebra; geometry recommended.
For students preparing to take Calculus sequence. Topics covered include real number system, simplification of algebraic expressions, functions and graphs, rational and polynomial functions, exponential and logarithmic functions, conic sections, binomial theorem, finite induction, arithmetic and geometric progressions, and business and behavioral science applied word problems.

MA 302 Pre-Calculus Trigonometry. 3 Semester Hours. (Lab fee.)
Prerequisite: MA 301 or equivalent. For students preparing to take Calculus sequence. Includes set notation, concept of functions, extended study of geometric and trigonometric functions, analytic trigonometric functions, radian measure, computation and numerical application.

MA 303 Calculus I. 3 Semester Hours. (Lab fee.)
Prerequisite: MA 301 and MA 302 or equivalents. Introduction to limits plus techniques and applications of differential calculus.

MA 304 Calculus II. 3 Semester Hours. (Lab fee.)
Prerequisite: MA 303 or equivalent. Continuation of MA 303 covering integral calculus.

MA 305 Calculus III. 3 Semester Hours. (Lab fee.)
Prerequisite: MA 304. Continuation of MA 303, 304 covering advanced integral techniques, L'Hospital's Rule, infinite sequences and series.

MA 306 Calculus IV. 3 Semester Hours. (Lab fee.)
Prerequisite: MA 305. Continuation of MA 303, 304 covering conics, parametric and polar equations, vectors, functions of several variables, and multiple integration.

MA 308 Discrete Mathematics. 3 Semester Hours.
Prerequisite: MA 301 or equivalent. Introduces topics in mathematical models, mathematical reasoning, sets, relations and functions, Boolean algebra, special data structures, and special algebras. Application of these topics teaches nature and purpose of mathematical models, algebra of logic, sets and groups, and relationships between mathematics and Computer Science.

MA 309 Business Calculus. 3 Semester Hours. (Cannot be used to satisfy requirement for upper-level mathematics elective.) (Lab fee.)
Prerequisite: Precalculus algebra. Covers basic business applications using calculus, including functions, graphs and limits as encountered in professional business environments. Some solutions require use of computer.

MA 310 Matrices and Linear Algebra. 3 Semester Hours.
Prerequisite: MA 304. Matrices, systems of equations, determinants, vector spaces, and applications.

MA 311 Advanced Mathematics for Teachers. 3 Semester Hours. (Lab fee.)
Prerequisite: At least one college-level mathematics course. Develops greater mathematical skills and insight. Introduces student to topics in numeration systems, elementary number theory, problem solving, introduction to probability theory, statistics, and geometry.

MA 314 College Geometry. 3 Semester Hours.
Prerequisite: MA 304. Foundations of Euclidean geometry to include geometric construction and properties of regular polygons and circles. Based on logical statements and formal proofs.

MA 316 Vector Analysis. 3 Semester Hours.
Prerequisite: MA 306. Vector algebra, vector operations, vector functions, scalar and vector fields, divergence, curl, Laplacian, line and surface integrals, orthogonal curvilinear coordinates, divergence theorem, Stoke's and Green's theories.

MA 320 Modern Algebra. 3 Semester Hours.
Prerequisite: MA 308 and 310 or permission of instructor. Axiom approach, group fundamental properties, introduction to rings, fields and ideals. Emphasis on proofs.

MA 330 Advanced Mathematical Software. 3 Semester Hours. (Cannot be used to satisfy requirement for upper-level mathematics elective.)
Prerequisite: MA 303, 304, 305, 306 or equivalent calculus sequence, and knowledge of computer programming. This class teaches the use of mathematical software (MAPLE). Emphasis is placed both on solving problems from the calculus and appropriately presenting the results. Techniques will be taught which will ultimately increase productivity in the workplace and provide insight for research.

MA 331 Applied Statistics and Probability I. 3 Semester Hours.
Prerequisite: MA 303, 304 (or equivalent), and MA 308 (or permission of instructor). Topics include descriptive statistics, basic probability theory, random variables, discrete and continuous distributions, sampling theory, and inferential statistics to include estimation and hypothesis testing. Emphasis will be in both the application and the mathematical underpinnings of these topics.

MA 401 Complex Analysis. 3 Semester Hours.
Prerequisite: MA 306. Covers complex numbers, analytic functions and integrals, conformal mapping, sequences and series, and integration by the method of residues.

MA 421 Differential Equations. 3 Semester Hours. (Lab fee.)
Prerequisite: MA 306 or equivalent. Theory and techniques of solution for ordinary differential equations with applied examples from different scientific disciplines. Introduction to Laplace transforms.

MA 423 Numerical Analysis. 3 Semester Hours. (Computer programming required.) (Lab fee.)
Prerequisite: MA 306, 310. Introduction to numerical methods for interpolation, evaluating roots of polynomials, systems of equations, integration, differentiation, differential equations, and approximation and error analyses.

MA 428 Partial Differential Equations. 3 Semester Hours.
Prerequisite: MA 421. Fourier series, classical PDE's (heat, wave and Laplace's equations), and numerical methods.

MA 431 Applied Statistics and Probability II. 3 Semester Hours.
Prerequisite: MA 331 and completion of a 12-hour calculus sequence. A continuation of MA 331. Topics include analysis of variance, bivariate analysis, association, and prediction, theory of testing and inference, and other advanced statistical and probability concepts.

MA 441 Special Topics in Mathematics. 3 Semester Hours.
Prerequisite: MA 304. Considers topics in abstract algebra, theory of equations, and various mathematical applications.

MA 445 Mathematical Modeling and Simulation. 3 Semester Hours.
Prerequisite: MA 310, 421 or equivalent. Covers techniques in vector rotation of three-space coordinates, Perron's eigenvalue theorem, date fitting by the normalization processes for multivariable function approximation, Bezier representation of polynomials for "real-time", computer graphic application, and other topics.

MA 450 Advanced Calculus I. 3 Semester Hours.
Prerequisite: MA 306, 310. Vector operations and spaces, linear transformations, functions of several variables, limits, continuity, total differential, Jacobian, general chain rule, implicit functions, higher order derivatives, change of variables in integrals.

MA 451 Advanced Calculus II. 3 Semester Hours.
Prerequisite: MA 450. A continuation of MA 450 with various applications of multivariate calculus.

MA 452 Real Analysis. 3 Semester Hours.
Prerequisite: MA 310, 320, 421. Covers logic and the foundation for differential and integral calculus of a function of one variable.

MA 461 Directed Study/Research in Mathematics. 1 Semester Hour.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

MA 462 Directed Study/Research in Mathematics. 2 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

MA 463 Directed Study/Research in Mathematics. 3 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

MA 470 Senior Mathematics Seminar. 3 Semester Hours.
Prerequisite: MA 320, 421. Review of mathematical ideas in calculus, linear algebra, differential equations, abstract algebra, and other selected topics.

Management (MG) Courses

MG 302 Management Information Systems. 3 Semester Hours. (Lab fee.)
Prerequisite: W***indows applications course (CIS 146).*** An examination of the role of information systems in organizations and how they relate to the objectives and structure of an organization. Emphasis is given to providing a broad overview of the information system management function.

MG 303 Management Decision Support Systems. 3 Semester Hours. (Also listed as AC 303.) (Lab fee.)
Prerequisite: Windows applications course (CIS 146). An analysis of the nature of the decision making process and an examination of support systems. Instruction will emphasize an advanced application of spreadsheet and database management software.

MG 320 Organizational Communication and Leadership. 3 Semester Hours. (Also listed as ATC 320) (Lab fee.)
The purpose of this course is to enhance the student's ability to communicate effectively and efficiently in the workplace. Writing, listening, reading, and speaking are emphasized in assignments, exercises, and projects. Skills of leadership, group collaboration, and intercultural communication are stressed in assignments and demonstrated in projects.

MG 346 Principles of Management. 3 Semester Hours.
An introductory course that explores both the underlying theory and the practical application of management practices and organizational development. In addition to the basic management functions, the course deals with ethical questions, international competition, and other issues stemming from management's relationship with its increasingly complex legal, social, and competitive environment.

MG 349 Human Resources Management. 3 Semester Hours. (Also listed as PSA 349) (Lab fee.)
A study of the technical functions of HRM. Emphasis is on their application to programs that foster employee commitment to objectives in a competitive, global economy.

MG 350 Financial Management. 3 Semester Hours. (Lab fee.)
Prerequisite: Principles of Accounting, Principles of Economics, and Algebra. A study of the art of money capital management on the level of the firm in an enterprise economy. Topics covered include analysis of financial statements, investment decision making, calculation of the firm's cost of capital.

MG 351 Labor/Management Relations. 3 Semester Hours.
An examination of managerial issues affecting development of industrial and labor relations policy. Topics examined include impact of public policy, negotiation, and administration of collective bargaining agreements, the NLRB, and arbitration cases.

MG 352 International Business. 3 Semester Hours. (Lab fee.)
An analysis of the cultural, economic, ethical, legal, and social environment of the global market.

MG 353 Project Management. 3 Semester Hours. (Lab fee.)
An examination of the use of critical path method (CPM)and Program Evaluation Review Technique (PERT) on project planning and control.

MG 375 Organizational Behavior and Teambuilding . 3 Semester Hours. (Also listed as ATC 375, PS 375 and PSA 375.) (Lab fee.) (Sometimes taught on a pass/fail basis.)
This course is designed to enhance class members' understanding of the causes and consequences of the behavior of people within the context of organizations, with emphasis on teamwork. To accomplish the learning goals for the course, varying instructional methodologies will be employed including lecture, and assigned readings from the text, journal articles, and the web. A significant amount of class time will be spent in experiential exercises.

MG 377 Public Administration. 3 Semester Hours. (Also listed as PO 377 and PSA 377.)
An examination of the major issues and concepts associated with management of governmental agencies. Topics include personnel management, financial management and budgets, political and legal environments, employee rights and responsibilities, program evaluation, and community relations.

MG 390 Production/Operations Management. 3 Semester Hours. (Lab fee.)
Prerequisite: MG 346. Production and Operations Management examines manufacturing and services industries and the multitude of activities needed to produce or process goods and services in the private and public sectors. Examines the problems of facilities layout, plant location, statistical quality control, process control, and various models utilized in these areas.

MG 410 Employment Law for Business. 3 Semester Hours.
Prerequisite: Legal Environment (BUS 263). An applied study of significant legal issues in labor and employment law including labor-management relations, wage and hour laws, safety and health laws, retirement, welfare and privacy laws that prepare future managers, supervisors, and business owners for responsibilities in management-employee relations.

MG 412 Case Study: International Business Diplomacy. 3 Semester Hours.
Prerequisite: None. However, it is recommended that MG 352 and EC 320 be completed before taking MG 412. This is the capstone course for the international business minor. It focuses on two broad areas: case studies in political, legal, economic, and cultural areas and the in-depth study of multicultural diversity. Areas to be covered include religion, family, time, gender, race, ethnicity, aesthetics, power distance, individual vs. collective, masculine vs. feminine and uncertainty avoidance.

MG 415 Technical Risk Management. 3 Semester Hours. (Lab fee.)
Prerequisite: Statistics (BUS 271). Examines the use of the scientific method and statistical analysis to minimize the risk exposure in management decision making, particularly when bringing high-technology products to the market place within allotted time and financial specifications.

MG 416 Entrepreneurship. 3 Semester Hours. (Lab fee.)
Prerequisite: Accounting I, CIS 146, MG 346, and MK 331. In this course, students bring their knowledge of management, marketing, accounting and microcomputer applications to bear on the problems of planning and operating a small business. Student teams research, prepare, and present complete business plans including proforma financial statements for startup ventures. Market research, site selection, pricing, promotion, and financial analysis for the small firm are among the topics stressed.

MG 417 Management of Change. 3 Semester Hours. (Lab fee.)
Examines the various approaches to organizational change, the resistance and driving forces for change, and the implementation and control of change in organizations.

MG 418 Management of Technology. 3 Semester Hours. (Lab fee.)
A case study approach to the integration of technical knowledge with management science.

MG 419 Technology Transfer and Commercialization. 3 Semester Hours.
Technology Transfer and Commercialization offers an overview of how government-sponsored technology and expertise can be transferred into commercial and private sectors to maintain business competitiveness. Specific case studies are employed to illustrate the effectiveness and importance of technology transfer to global commerce.

MG 420 Business Policy. 3 Semester Hours. (Lab fee.) (Student should schedule this course during one of the last two semesters of their degree program.)
Prerequisite: Senior standing, FIN 350, MG 346, MK 331. A Capstone Course which examines the interrelations of the various business functions from the viewpoint of middle management's decision process. Heavy emphasis on both oral and written case study analysis. NOTE: Student must earn a minimum grade of "C" in this course in order to graduate with a major in accounting, management, human resources management, or the management of technology.

MG 441 Special Topics in Management. 3 Semester Hours.
To be offered on occasion of student demand or need.

MG 449 Advanced Human Resource Management. 3 Semester Hours. (Also listed as PSA 449.)
Prerequisite: MG 349. This course will examine the functions of Human Resource Management by investigating both the theoretical advance of HRM, and the practical application of these functions as they apply to the manager's responsibility in the global marketplace.

MG 460 Directed Study/Research in Management. 3 Semester Hours.
A course designed to allow students an opportunity to perform research/directed studies in management. Offered at the discretion of the professor with approval of the School Dean.

MG 491 Practicum in the Management of Technology I. 3 Semester Hours.
Prerequisites: MG 415, 417, and 418. Supervised experience with, observation of, and participation in the application of management of technology concepts and practices in an organizational setting.

MG 492 Practicum in the Management of Technology II. 3 Semester Hours.
Prerequisite: MG 491. Individually designed directed experience in management of technology concepts and practices in a selected organizational setting. The use of problem solving, risk analysis, and decision-making skills and competencies must be demonstrated in a project completed by the student that involves assisting the selected organization in achieving an operational objective identified by the cooperating organization.

Marketing (MK) Courses

MK 331 Marketing Principles. 3 Semester Hours.
Prerequisite: Principles of Economics. A study of the forces operating, institutions employed, and methods followed in the flow of goods and services from production to consumption.

MK 333 Advertising. 3 Semester Hours.
Prerequisite: Marketing Principles. A study of the principles of advertising, types of advertising media, and analyzing problems of advertising encountered in business.

MK 336 Consumer Behavior. 3 Semester Hours.
Prerequisite: Marketing Principles. A study of the buying habits and motives involved in the purchase of economic goods and services. Emphasis is on the decision processes that precede and determine consumer behavior.

MK 431 Marketing Research. 3 Semester Hours.
Prerequisites: MK 331, Statistics (BUS 271). A study of research methods and procedures as they apply to marketing operations. This course includes the information sources available to marketing researchers and the design and analysis of research projects concerned with obtaining primary information.

MK 432 Retailing. 3 Semester Hours.
Prerequisite: MK 331. Principles and methods of store location and layout, promotion, buying, pricing, personnel management, credit, and stock control.

MK 433 Marketing Strategies and Policies. 3 Semester Hours.
Prerequisite: MK 331. Examines various policies and problems requiring decision by marketing management. Particular emphasis will be given to advertising and promotional strategies.

Physical Education (HPE) Courses

HPE 301 Theory of Coaching and Officiating. 3 Semester Hours. (Recommended for Physical Education majors only.)
A course designed to familiarize students with officiating techniques, coaching principles, basic coaching philosophies, effective methodology, motor skills, and strategic and theoretical elements leading to the development of championship teams. Field experience is required.

HPE 312 Varsity Athletics. 1 Semester Hours. ***Prerequisite: By permission only.*** Participation in college intercollegiate sports.

HPE 313 Varsity Athletics. 1 Semester Hours. ***Prerequisite: By permission only.*** Participation in college intercollegiate sports.

HPE 320 Analysis and Teaching of Team Sports. 3 Semester Hours. (Recommended for Physical Education majors only.)
A course dealing with analysis and teaching of movement patterns involved in the performance of volleyball, basketball, and soccer. Practical experience in writing lesson plans, designing conditioning programs, officiating, and designing strategies used in competition. Field experience is required.

HPE 321Analysis and Teaching of Rhythms and Dance. 3 Semester Hours. (Recommended for Physical Education majors only.)
A course dealing with the analysis and movement involved in the performance of rhythmic and dance activities. Practical experiences in conditioning, skill improvement, and movement analysis are included. Field experience is required.

HPE 322 Analysis and Teaching of Individual Sports. 3 Semester Hours. (Recommended for Physical Education majors only.)
A course dealing with the analysis and teaching of movement patterns involved in the performance of badminton, golf, and tennis. Practical experience writing lesson plans, designing conditioning programs, officiating, and designing strategies used in competition. Field experience is required.

HPE 323Aquatics and Advanced Lifesaving. 3 Semester Hours. (Recommended for Physical Education majors, wellness majors, or students seeking an additional health endorsement.)
A course dealing with the analysis of movement involved in the performance of a variety of aquatics and lifesaving techniques. This course provides training in the procedures of administering first aid and CPR. American Red Cross Certification is awarded for the successful completion of this course.

HPE 325 Kinesiology. 3 Semester Hours. (Recommended for Physical Education majors only or approval of instructor.) ***Prerequisite: Anatomy and Physiology.*** Anatomical, mechanical, and functional aspects of human movement are studied with emphasis on analysis of joint actions, mechanical principles, and laws of motion as they apply to efficient movement.

HPE 326 History and Principles of Physical Education. 3 Semester Hours. (Recommended for Physical Education majors only.)
A course designed to provide the professional student an overview of the body of knowledge encompassing the discipline of physical education. Historical, psychological, biological, and sociological foundations of human movement are studied. Field experience is required.

HPE 327 Physiology of Exercise. 3 Semester Hours. (Recommended for Physical Education majors only or approval of instructor.)
Prerequisite: Anatomy and Physiology. A course designed to provide the student an opportunity to develop a better understanding of the effects of exercise on body systems, factors affecting performance, and the role of physical education in health-related fitness.

HPE 333 Care and Prevention of Athletic Injuries. 3 Semester Hours. (Lab fee.) (Recommended for Physical Education majors only or approval of instructor.)
A course designed to familiarize students with the most prevalent athletic injuries, their anatomical explanation and physiological complications, and treatment of such injuries.

HPE 340 Medical and Biological Visualization. 3 Semester Hours. (Lab fee.) (Also listed as BI 340 and AR 340.)
This course helps students develop perceptual motor ability (the ability to deal with objects through visualization.) Perceptual motor ability has long been an indicator of success in fields like dentistry, medicine, architecture, art and 3-D computerization. The course will teach the visualization of anatomical and biological structures, to survey the common components of graduate courses in medical and biological illustration for the purpose of preparing pre-health and/or art undergraduates to express thinking through diagrams, sculpture, illustrations and computer graphics.

HPE 350 Adapted Physical Education and Sports. 3 Semester Hours. (Recommended for Physical Education majors only or approval of instructor.)
A course designed to provide students with the information necessary to understand, evaluate, and develop programs of physical activities to meet the special needs, interests, and abilities of exceptional children and youth. Class will interact with exceptional students at field sites.

HPE 354 Contemporary Health and Physical Education Activities. 3 Semester Hours.
A course dealing with personal/community health and physical education designed to assist students in developing a broad understanding of their obligation to themselves and society in matters of health, physical education, physical fitness, and physical activities. Appropriate physical education activities will be included.

HPE 355 Health-Related Fitness and Nutrition. 3 Semester Hours. (Recommended for Physical Education majors only or approval of instructor.)
A course dealing with the development of cardiovascular endurance, muscle strength, flexibility, nutrition, and appropriate body composition as these elements contribute to health-related fitness. The course also provides the student with the opportunity to participate in an exercise program which emphasizes cardiovascular endurance, muscular strength, and flexibility.

HPE 400 Organization and Administration of Physical Education. 3 Semester Hours. (Recommended for Physical Education majors only.)
A course designed to provide the professional student theoretical and practical information about specific aspects of the process of organizing and administering physical education and athletic programs. Field experience is required.

HPE 401 Measurement and Evaluation of Physical Education. 3 Semester Hours.
Prerequisite: Requires admission to the Teacher Education Program. Included in this course is the study of theory of measurement in physical education, the selection and administration of appropriate tests, and the interpretation of test results utilizing fundamentally sound statistical procedures. Field experience is required.

HPE 412 Senior Varsity Athletics. 1 Semester Hours.
Prerequisite: By permission only. Participation in college intercollegiate sports.

HPE 413 Senior Varsity Athletics. 1 Semester Hours.
Prerequisite: By permission only. Participation in college intercollegiate sports.

HPE 420 Teaching Health in the High School. 3 Semester Hours. (Recommended for students seeking an additional health endorsement *Pending approval.)
Prerequisite: Requires admission to the Teacher Education Program. Emphasis is placed on approved teaching techniques, theories of learning, characteristics and health risks of high school students, planning for instruction, instructional management, and selection of learning activities. Lesson planning and unit construction are an important part of this course. Field experience is required.

HPE 427 Principles of Exercise Prescription and Assessment. 3 Semester Hours. (Lab fee.) (Recommended for Physical Education Majors only or approval of instructor.)
Prerequisites: Biology, Human Anatomy and Physiology, Physiology of Exercise. A course designed to provide the student with an opportunity to increase knowledge and practical experiences in exercise prescription and health fitness assessment. The course will emphasize strategies and procedures for the implementation of human performance concepts, including the design of health fitness and exercise programs for healthy individuals as well as for individuals with health complications.

HPE 430 Teaching Physical Education in the Elementary School. 3 Semester Hours. (Lab fee.) (Recommended for Physical Education majors only.)
Prerequisite: Three of the following analysis courses: PE 320, 321, 322, 323 and admission to the Teacher Education Program. A course designed to study source materials, planning and organizing instruction, selection of suitable activities, and preparation of teaching units for physical education in the elementary school. Field experience is required.

HPE 431 Motor Development and Physical Activities. 3 Semester Hours.
Prerequisite: Child Psychology or equivalent. The influence of various tissues (i.e. muscle, bone, adipose), and coordinated neural function are central concerns of this course. Physical activities intended to enhance the physical and motor growth and development of young children are examined. The relationship of physical and motor growth and development to all other aspects of human development is studied.

HPE 440 Teaching Physical Education in the High School. 3 Semester Hours. (Lab fee.)
Prerequisite: Three of the following analysis courses: PE 320, 321, 322, 323. Requires admission to the Teacher Education Program. Emphasis is placed on approved teaching techniques, theories of learning, characteristics of high school students, planning for instruction, instructional management, and selection of learning activities. Lesson planning and unit construction are an important part of this course. Field experience is required.

HPE 460 Directed Study/Research in Physical Education. 1-3 Semester Hours.
To be offered on occasion of student need and may be taken 1 to 3 times.

HPE 480 Wellness Internship in Physical Education. 9 Semester Hours. (Lab fee.)
To be offered as an internship. Students are supervised by college faculty at community sites for fourteen weeks.

HPE 488 Internship in N-12. 9 Semester Hours. (Lab fee.)
Prerequisite: Senior standing and admission to the Teacher Education Program. Fourteen-week internship program for physical education with seven weeks in an elementary school and seven weeks in a secondary school. This culminating experience of the Teacher Education Program provides practical experience in teaching classes in state-accredited schools under the guidance of a cooperating teacher and supervision of a college professor. Seminar attendance is required.

HPE 484 Internship in Health Education. 5 Semester Hours. (Lab fee.)
Prerequisite: Senior standing and Admission to the Teacher Education Program. Seven week internship program for health education in grades 7-12.

Philosophy (PH) Courses

PH 300 Moral Values in Today's Society. 3 Semester Hours. (Also listed as SO 300.)
This course examines the moral values of various societies as well as those of individual moral philosophers past and present to see how they legitimate their views of what constitutes a good and desirable life.

PH 301 Introduction to Philosophy. 3 Semester Hours.
An examination and evaluation of various answers to basic problems of philosophy.

PH 312 Logic. 3 Semester Hours.
A course intended to help the student develop skill in detecting, identifying, and analyzing fallacious reasoning and implication in the mass media, literature, advertising, theater, philosophy, and religion.

PH 321 History of Philosophy I. 3 Semester Hours.
A critical survey of the thought of major western philosophers from Thales to Descartes.

PH 322 History of Philosophy II. 3 Semester Hours.
A critical survey of the thought of western philosophers from Descartes to the present time.

PH 325 Philosophy of Religion. 3 Semester Hours. (Also listed as RE 325.)
A philosophical study of the grounds of religious belief and practice, the relationship of man to God and its implications for morality, and the belief in life after death. Special attention is given to the impact of science upon religion.

PH 401 Elements of Skeptical, Critical, and Logical Thinking. 3 Semester Hours. (Also listed as PS 401.)
Prerequisite: General Psychology. A course that encourages thinking skills and is divided into three domains. Skeptical thinking will be entertained first, followed by critical thinking or informal logic, with formal logic being addressed last. Skeptical thinking will be taught using "Occam's razor," and informal logic will be studied by analyzing cognitive biases and cognitive fallacies. Formal logic will be learned through the use of categorical sentences, truth functions, and inductive and deductive reasoning.

PH 441 Special Topics in Philosophy. 1 Semester Hour. To be offered on occasion of student demand or need.

PH 442 Special Topics in Philosophy. 2 Semester Hours. To be offered on occasion of student demand or need.

PH 443 Special Topics in Philosophy. 3 Semester Hours. To be offered on occasion of student demand or need.

PH 461 Directed Study/Research in Philosophy. 1 Semester Hour. (Open only to superior students who have had at least fifteen hours of philosophy in the classroom.) (May be repeated for up to ten additional hours of credit.)
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need. The student studies in an area of his or her particular interest approved by the instructor.

PH 462 Directed Study/Research in Philosophy. 2 Semester Hours. (May be repeated for up to ten additional hours of credit.) (Open only to superior students who have had at least fifteen hours of philosophy in the classroom.)
Prerequisite: Consent of instructor. The student studies in an area of his or her particular interest approved by the instructor.

PH 463 Directed Study/Research in Philosophy. 2 Semester Hours. (Open only to superior students who have had at least fifteen hours of philosophy in the classroom.)
Prerequisite: Consent of instructo*r.* The student studies in an area of his or her particular interest approved by the instructor.

Political Science (PO) Courses

PO 301 Social Science Research Methods. 3 Semester Hours. (Also listed as SS 301 and HY 301.) This course is designed to develop the techniques of social science research and to explore varying historical interpretations.

PO 302 Criminal Law. 3 Semester Hours. (Also listed as JS 302.)
Definitions of crimes to include the specific elements of various criminal offenses. Defenses to criminal conduct also are discussed.

PO 303 Comparative State and Local Government. 3 Semester Hours.
A comparative examination of the structures, operation, and contemporary issues focusing on state and local government throughout the United States.

PO 304 Problems of American Government. 3 Semester Hours.
This course examines numerous institutional dynamics and policy questions facing American national government.

PO 305 Alabama Government. 3 Semester Hours.
An examination of the structure and operation of state and local governments and the political process in Alabama.

PO 306 Elections and Public Opinions. 3 Semester Hours.
This course examines the role and effects of elections and public opinion on American political institutions.

PO 307 American Constitutional Law. 3 Semester Hours. (Also listed as HY 307 and JS 307.)
This course examines the text of the nation's primary law and key decisions of the U.S. Supreme Court interpreting certain phrases. Organization and operation of the Court are also covered. This course focuses on separation of powers, federalism, interstate commerce, taxation, the contract clause and the takings clause. This course provides a foundation in American constitutionalism for students who plan to attend law school or teach social studies in the secondary schools.

PO 308 America and the World. 3 Semester Hours. (Also listed as HY 308.)
This course examines America's foreign relations with the main geographical regions of the world since 1775 as well as American policy toward disarmament, foreign aid, economic cooperation, and other contemporary issues. The institutions involved in the making of foreign policy also are discussed.

PO 320 Introduction to International Commerce. 3 Semester Hours. (Also listed as EC 320.)
This course examines the international economic system and the management challenges faced by multinational corporations in the conduct of international business. Special attention is given to the mechanics of importing and exporting, international finance, and private international law.

PO 341 Statistics With Advanced Topics in Behavioral Science. 3 Semester Hours. (Also listed as PS 341 and SO 341.)
Prerequisite: Psychology, sociology, or political science major or minor or permission, Pre-Calculus Algebra or Finite Mathemat-

ics. This course looks at the use of descriptive and inferential statistics to analyze behavioral science data. Advanced inferential topics help prepare students for graduate school.

PO 342 Methods of Behavioral Science Research. 3 Semester Hours. (Also listed as PS 342 and SO 342.) (It is strongly recommended that students take PS/SO/PO 341 Statistics with Advanced Topics in Behavioral Science prior to taking PS/SO/PO 342.) (Lab fee.) ***Prerequisite: Psychology, sociology, political science major or minor or permission.*** This course is concerned with theory design and collection of data in behavioral science research with emphasis on the techniques of collecting, analyzing, and interpreting behavioral science data.

PO 350 Introduction to the American Legal System. 3 Semester Hours. (Also listed as JS 350, PSA 350, and SO 350.)
This course is a review of basic legal doctrines and processes in American system of jurisprudence. Students are introduced to a wide variety of topics in civil and criminal justice. Topics include the theory and nature of law as a device for social control, torts, contracts, and ownership of property. The course is structured to provide prelaw majors with exposure to the many social conflicts managed by law and courts and to provide education majors with an overview of law-related topics necessary for civics instruction.

PO 351 American Public Policy/Political Sociology. 3 Semester Hours. (Also listed as SO 351.)
This course explores factors that impact government's responses to a wide variety of social conditions. The process for making policy, the content of current policy, and the impact of policy receive attention.

PO 364 Civil Liberties. 3 Semester Hours. (Also listed as JS 364.)
Analysis of leading cases and doctrines which balance governmental/societal interests with individual rights across a broad spectrum of social relationships. Explores the constitutional foundations for freedoms of expression, due process rights, and equal protection under law.

PO 377 Public Administration. 3 Semester Hours. (Also listed as MG 377 and PSA 377.)
An examination of the major issues and concepts associated with management of governmental agencies. Topics include personnel management, financial management and budgets, political and legal environments, employee rights and responsibilities, program evaluation, and community relations.

PO 380 Public Finance. 3 Semester Hours. (Also listed as PSA 380.)
This course provides students with information about government finance and budgeting. The political, administrative, and economic implications of decisions about government revenue sources, expenditures, and indebtedness are assessed.

PO 441 Special Topics in Political Science. 1 Semester Hour. To be offered on occasion of student demand or need.

PO 442 Special Topics in Political Science. 2 Semester Hours. To be offered on occasion of student demand or need.

PO 443 Special Topics in Political Science. 3 Semester Hours. To be offered on occasion of student demand or need.

PO 452 Comparative Political Systems. 3 Semester Hours.
Examines the theory of comparative government as well as government and politics in Western Europe, Asia, Africa, and Latin America.

PO 453 International Relations. 3 Semester Hours.
A survey of the basic characteristics and theories of the international system. Special emphasis is placed on regional and international organizations, international law, international economics, strategic studies, and international cooperation.

PO 455 Public Administration Ethics. 3 Semester Hours. (Also listed as JS 455 and PSA 455.) (Formerly titled Ethics for Public Administrators.)
Examines ethical issues encountered by administrators of government agencies. More specifically, this course explores the application of codes of ethics, theories of ethical decision-making, and ethical principles affecting public administration.

PO 461 Directed Study/Research in Political Science. 1 Semester Hour. (To be offered on occasion of student demand or need.) ***Prerequisite: Consent of instructor.*** Designed to meet the specific needs of Political Science majors.

PO 462 Directed Study/Research in Political Science. 2 Semester Hours. (To be offered on occasion of student demand or need.) ***Prerequisite: Consent of instructor.*** Designed to meet the specific needs of Political Science majors.

PO 463 Directed Study/Research in Political Science. 3 Semester Hours. (To be offered on occasion of student demand or need.) ***Prerequisite: Consent of instructor.*** Designed to meet the specific needs of Political Science majors.

PO 465 Senior Research Project. 4 Semester Hours. (Also listed as JS 465 and PSA 465.)
In this Capstone course, the student will work closely with the professor in designing and completing a major research project in an area of political science that is relevant to his or her career objectives. The student must be a political science major and have the consent of the instructor.

Procurement (PR) Courses

PR 394 Introduction to Procurement. 3 Semester Hours.
An introduction to that aspect of management science concerned with procurement.

PR 395 Price and Cost Analysis. 3 Semester Hours.
An examination of the role of the government contracting officer in the acquisition process. Emphasis is given to considering pricing practices and theories and to assessing the government's procedures and methods of evaluating pricing and costing activity.

PR 396 Advanced Procurement Concepts and Introduction to Government Contract Law. 3 Semester Hours.
Prerequisite: PR 394. Detailed examination of the FAR to include recent interpretations of government contract law.

PR 397 Contract Negotiation. 3 Semester Hours.
Prerequisite: PR 394. An examination of the concepts and techniques of negotiation. Topics covered include strategies and tactics of contract negotiation, preparation for sound negotiation, organization and operation of a procurement team, the relative positions of strength required for successful negotiation, and limitations as imposed by law. In addition to class lectures, the students will participate in mock negotiations using case studies.

PR 398 Contract Administration. 3 Semester Hours.
Prerequisite: PR 394. An examination of the management of government contracts in the post-award phase. The content provides insight into the variety of administrative matters that arise during the life of a contract. Emphasis is given to a consideration of the rights and responsibilities of the government and contractor.

Psychology (PS) Courses

PS 301 Introduction to Gender and Multicultural Studies. 3 Semester Hours.
An introduction to the concepts, terminology, and issues in gender and multicultural studies including exploration of America's multicultural composition, gender as an element of culture, and contemporary issues in the field.

PS 304 Drugs and Behavior. 3 Semester Hours.
Prerequisite: General Psychology. A survey of the psychosocial factors related to drug abuse and addiction. Special emphasis will be focused upon estimation of drug epidemiology, consequences of drug usage, and treatment of drug addiction.

PS 310 The Professional Psychologist. 1 Semester Hour.
Prerequisite: General Psychology. Examines the career options available to psychology majors. Topics include what to do with a bachelor's degree in psychology and issues related to graduate schools.

PS 330 Educational Psychology. 3 Semester Hours.
Prerequisite: General Psychology. Application of psychological concepts and principles to classroom teaching and learning especially in the areas of motivation, individual differences, adjustment, and teacher-student interaction.

PS 331 Social Psychology. 3 Semester Hours.
Prerequisite: General Psychology. This course presents an indepth survey of theory, research findings, and research methods pertaining to how the individual's thoughts, feelings, and behaviors are influenced by the real or imagined presence of others. Understanding and critical analysis of primary research is emphasized with the goal of developing critical thinking skills. Topics include the self, person perception, attitudes and attitude change, interpersonal attraction and intimate relationships, stereotyping, prejudice and discrimination, and prosocial behavior.

PS 332 Child Psychology. 3 Semester Hours.
Prerequisite: General Psychology. Indepth survey of theory, research findings, and methods of obtaining knowledge regarding biological, cognitive, and psychosocial aspects of development from conception to puberty. Topics include prenatal development, motor and perceptual capacities in infancy, cognitive development, the self and self-understanding, and the family. Critical analyses of scientific research designs and methods will be emphasized.

PS 334 Adolescent Psychology. 3 Semester Hours.
Prerequisite: General Psychology. Indepth survey of theory, research findings, and methods of obtaining knowledge regarding biological, cognitive, and psychosocial aspects of adolescent development. Topics include physical change, cognitive development, development of identity, social development within the family and among peers, emotional development and moral attitudes. Critical analyses of scientific research designs and methods will be emphasized.

PS 335 Adult Psychology. 3 Semester Hours. (Also listed as GE 335.)
Prerequisite: General Psychology. Indepth survey of theory, research findings, and methods of obtaining knowledge regarding biological, cognitive, and psychosocial aspects of adult development. Topics include physical change, development of identity and social roles, intellectual changes over the life span, relationships, career and retirement choices, and coping with death and dying. Critical analyses of scientific research designs and methods will be emphasized.

PS 336 Psychology of Learning. 3 Semester Hours.
Prerequisite: General Psychology. A survey of the theories and concepts related to learning. The course will cover historical background, respondent conditioning, operant conditioning, imitation and cognitive models.

PS 341 Statistics With Advanced Topics In Behavioral Science. 3 Semester Hours. (Also listed as PO 341 and SO 341.)
Prerequisite: Psychology, Sociology, or Political Science major or minor or consent of instructor, Precalculus Algebra or Finite Mathematics. This course looks at the use of descriptive and inferential statistics to analyze behavioral science data. Advanced inferential topics help prepare students for graduate school.

PS 342 Methods of Behavioral Science Research. 3 Semester Hours. (Also listed as PO 342 and SO 342.) (It is strongly recommended that students take PS/SO/PO 341 Statistics with Advanced Topics in Behavioral Science prior to taking PS/SO/PO 342.) (Lab fee.)
Prerequisite: Psychology, Sociology, Political Science Major or Minor or consent of instructor. This course is concerned with theory design and collection of data in behavioral science research with emphasis on the techniques of collecting, analyzing, and interpreting behavioral science data.

PS 352 Abnormal Psychology. 3 Semester Hours.
Prerequisite: General Psychology and junior class standing. This course presents and indepth survey of the field of psychopathology. Considerable emphasis is placed upon DSM IV terminology and diagnostic criteria and upon research related to the etiology and treatment of mental disorders. All major diagnoses are covered, but special attention is focused upon schizophrenia and other serious mental disorders. Additional attention is focused upon contemporary issues such as de-institutionalization, commitment procedures, and insanity defense.

PS 364 Career Management. 1 Semester Hour. (Also referred to as ED 364 and GBA 364.)
This course is designed to prepare students to make a successful transition from an academic environment to the work environment: Traditional and non-traditional job search tactics, to include resume preparation, cover letter writing, networking concepts, development of a professional portfolio, interviewing skills, salary negotiation, work ethics, and corporate culture expectations.

PS 368 Industrial and Personnel Psychology. 3 Semester Hours. (Also listed as GBA 368.) (Sometimes taught on a pass/fail basis.)
The application of psychology to industrial organization. Areas of consideration include morale and group processes, supervisory leadership, selection and placement, training, motivation, fatigue, accidents, interviewing, and industrial counseling.

PS 375 Organizational Behavior and Teambuilding. 3 Semester Hours. (Also listed as MG 375, ATC 375 and PSA 375.) (Sometimes taught on a pass/fail basis.) (Lab fee.)
This course is designed to enhance class members' understanding of the causes and consequences of the behavior of people within the context of organizations, with emphasis on teamwork. To accomplish the learning goals for the course, varying instructional methodologies will be employed including lecture, and assigned readings from the text, journal articles, and the web. A significant amount of class time will be spent in experiential exercises.

PS 380 Experimental Psychology. 3 Semester Hours. (Lab fee.)
Prerequisite: Psychology Major or Minor and PS/SO/PO 341 Statistics With Advanced Topics in Behavioral Science. in Corequisite: PS 380L.
An introductory course in experimental methods and procedures in psychology. Topics of discussion will include: hypothesis formation, internal and external validity, true experimental designs, quasi-experimental designs, single-subject designs, evaluation research, data collection, ethics, and formal reporting. Laboratory experience included.

PS 380L Experimental Psychology Laboratory. 1 Semester Hour. ***Corequisite: PS 380.***

PS 401 Elements of Skeptical, Critical, and Logical Thinking. 3 Semester Hours. (Also listed as ATC/PH 401.)
Prerequisite: General Psychology. A course that encourages thinking skills and is divided into three domains. Skeptical thinking will be entertained first followed by critical thinking or informal logic, with formal logic being addressed last. Skeptical thinking will be taught using "Occam's razor," and informal logic will be studied by analyzing cognitive biases and cognitive fallacies. Formal logic will be learned through the use of categorical sentences, truth functions, and inductive and deductive reasoning.

PS 402 Introduction to Clinical Psychology. 3 Semester Hours.
Prerequisite: General Psychology. An introduction to personality theory and the techniques of counseling and psychotherapy. An approach to psychotherapy and psychotherapeutic techniques will be emphasized within which various schools of thought can be considered in terms of a common framework.

PS 406 Physiological Psychology. 3 Semester Hours. (Lab fee.)
Prerequisite: General Psychology. A study of the relationships between physiological and psychological functions with special emphasis on mind-body interaction and the physiological explanations for human behavior. Topics of study include: nervous and endocrine systems, sleeping and waking, ingestive behavior, sexual behavior, reinforcement, punishment, motivation, emotions, and learning (disabilities, dysfunctions, etc.).

PS 410 History and Systems of Psychology. 3 Semester Hours.
Prerequisite: General Psychology. A consideration of the scientific and philosophical antecedents of psychology, in addition to the history of the discipline. The course spans pre-Socratic thought to current and emerging issues in the field of psychology.

PS 420 Cognitive Psychology. 3 Semester Hours.
Prerequisite: General Psychology. This is an advanced psychology course that surveys the major topics in cognitive psychology. Special emphasis will be focused on attention, memory, language usage, problem solving, and decision making. It is strongly recommended that the student have completed Statistics With Advanced Topics in Behavioral Science and either Experimental Psychology or Methods of Behavioral Science Research.

PS 425 Tests & Measurements. 3 Semester Hours. (Lab fee.)
Prerequisite: General Psychology. A survey of commonly used educational and psychological tests. Special emphasis will be focused upon test construction, standardization, reliability, validity, and the development of classroom (curriculum based) tests.

PS 441 Special Topics in Psychology. 1 Semester Hour.
Prerequisite: General Psychology. To be offered on occasion of student demand or need.

PS 442 Special Topics in Psychology. 2 Semester Hours.
Prerequisite: General Psychology. To be offered on occasion of student demand or need.

PS 443 Special Topics in Psychology. 3 Semester Hours.
Prerequisite: General Psychology. To be offered on occasion of student demand or need.

PS 444 Special Topics in Psychology. 4 Semester Hours.
Prerequisite: General Psychology. To be offered on occasion of student demand or need.

PS 461 Directed Studies in Psychology. 1 Semester Hour. (To be offered on occasion of student demand or need.)
Prerequisite: General Psychology and consent of instructor. The student studies in an area of his/her particular interest approved by the instructor.

PS 462 Directed Studies in Psychology. 2 Semester Hours. (To be offered on occasion of student demand or need.)
Prerequisite: General Psychology and consent of instructor. The student studies in an area of his/her particular interest approved by the instructor.

PS 463 Directed Studies in Psychology. 3 Semester Hours. (To be offered on occasion of student demand or need.)
Prerequisite: General Psychology and consent of instructor. The student studies in an area of his/her particular interest approved by the instructor.

PS 497 Practicum in Psychology/Sociology/Gerontology. 3 Semester Hours. (Also listed as SO/GE 497.)
Prerequisite: Senior standing and consent of instructor. This course provides the student an opportunity to experience the theoretical concepts and knowledge obtained in the classroom. The practicum entails approximately eight hours per week of supervised field experiences in appropriate community agencies, institutions, industrial or research settings, and bi-weekly in-class seminars.

PS 498 Practicum in Psychology/Sociology. 3 Semester Hours. (Also listed as SO 498.)
Prerequisite: Senior standing and consent of instructor. This course provides the student an opportunity to experience the theoretical concepts and knowledge obtained in the classroom. The practicum entails approximately eight hours per week of supervised field experiences in appropriate community agencies, institutions, industrial or research settings, and bi-weekly in-class seminars.

Public Safety Administration (PSA) Courses

PSA349 Human Resources Management. 3 Semester Hours. (Also listed as MG 349.)

A study of the technical functions of Human Resources Management. Emphasis is on application to organizations that deliver public safety services. Topics include the traditional Human Resources Management functional field areas of labor law, personnel administration, labor economics and organizational behavior/theory.

PSA 350 Introduction to the American Legal System. 3 Semester Hours. (Also listed as JS 350, PO 350, and SO 350.)
This course is a review of basic legal doctrines and processes in the United States system of jurisprudence. Students are introduced to a wide variety of topics in both civil and criminal justice. Topics include the theory and nature of law as a device for social control, torts, contracts, and ownership of property. The course is structured to prelaw majors with limited exposure to the many social conflicts managed by law and courts, and to provide education majors with an overview of law-related topics necessary for civics instruction.

PSA 360 Safety Management for Outdoor Recreation. 3 Semester Hours.
This course focuses on development and management of outdoor recreational safety programs and services provided by public agencies. This course examines and encompasses the following topics: the range and extent of outdoor recreation opportunities and services provided by public agencies and on public lands; the current and projected use of public recreational opportunities; accident causation factors; survey of outdoor recreation safety and security programs; and, development of programs for specific outdoor safety problems.
This course is intended primarily for those contemplating or currently employed in those professions of public safety, leisure services management, or outdoor recreation. Emphasis will be on planning safety programs for outdoor leisure pursuits and protection of the natural environment for recreational uses.

PSA 375 Organizational Behavior. 3 Semester Hours. (Also listed as MG 375 and PS 375.) (Sometimes taught on a pass/fail basis.) (Lab fee.)
A consideration of human behavior in organizational settings with emphasis on individual processes, group processes, and organizational structure and functions.

PSA 377 Public Administration. 3 Semester Hours. (Also listed as MG 377 and PO 377.)

An examination of the major issues and concepts associated with management of governmental agencies. Topics include personnel management, financial management and budgets, political and legal environments, employee rights and responsibilities, program evaluation, and community relations.

PSA 380 Public Finance. 3 Semester Hours. (Also listed as PO 380.)
This course provides students with information about government finance and budgeting. The political, administrative, and economic implications of decisions about government revenue sources, expenditures, and indebtedness are assessed.

PSA 390 Fire Service Administration 3 Semester Hours. (PSA majors only.)
Prerequisite: State certification as a Fire Officer II and Fire Instructor II. (A Fire Officer II certification course may be taken concurrently.) An examination of numerous topics that are of vital importance to the administration of the modern fire service agency. After completion with a grade of C or higher, the student is eligible for State of Alabama certification as a Fire Officer III.

PSA 400 Public Safety Education. 3 Semester Hours.
This course presents an overview, through lectures, discussions, and readings, of the foundations of training for professional and public educational programs, and a comprehensive examination of the principles of education for adult learners. The intended audience for this course are those students who are currently involved in the delivery of fire and life-safety educational programs for the public, teach public safety professionals in an academy setting, or for those students who anticipate working with adult learners in one of these settings. This course will include a research/field experience component. It is important that the student have proficiency in a public safety field, and a sufficient core of professional courses prior to taking this course**. Students must have consent of the instructor to take this course.**

PSA 425 Strategic Management Concepts for Public Safety Management. 3 Semester Hours.
An examination of the interrelationships among the various functions of public safety agencies, and a critical inquiry into the process of planning, implementing, and controlling the organizational strategy of Public Safety agencies. Also included is a consideration of the strategies needed to reinvent government.

PSA 441 Special Topics in Public Safety. 1 Semester Hour. To be offered on occasion of student demand or need.

PSA 442 Special Topics in Public Safety. 2 Semester Hours. To be offered on occasion of student demand or need.

PSA 443 Special Topics in Public Safety. 3 Semester Hours. To be offered on occasion of student demand or need.

PSA 444 Special Topics in Public Safety. 4 Semester Hours. To be offered on occasion of student demand or need.

PSA 446 Public Safety Concepts and Systems. 3 Semester Hours. (Also listed as JS 446.)
This course examines the organizational structure and historical development of governmental, quasi-governmental, and non-governmental systems and agencies concerned with the delivery of public safety services. Also, this course presents current issues that impact public safety agencies.

PSA 449 Advanced Human Resource Management. 3 Semester Hours. (Also listed as MG 449.)
Prerequisite: PSA 349. This course will examine the fuctions of Human Resource Management by investigating both the theoretical advance of HRM, and the practical application of these functions as they apply to the manager's responsibility in the global marketplace.

PSA 455 Public Administration Ethics. 3 Semester Hours. (Also listed as JS 455 and PO 455.) (Formerly titled Ethics for Public Administrators.)
Examines ethical issues encountered by administrators of government agencies. More specifically, this course explores the application of codes of ethics, theories of ethical decision-making, and ethical principles affecting public administration.

PSA 459DPublic Safety Supervisor. 3 Semester Hours.

PSA 460DPublic Safety Manager/Administrator. 3 Semester Hours.

PSA 461DPublic Safety Instructor. 3 Semester Hours.

PSA 462DHaz-Mat Technician. 3 Semester Hours.

PSA 463DHaz-Mat Specialist. 3 Semester Hours.

PSA 465 Senior Research Project. 4 Semester Hours. (Also listed as JS 465 and PO 465.)
Prerequisite: Public Safety Administration major and consent of instructor. Provides supervised administrative experiences in appropriate public safety agencies. This course includes routine seminars with discussion and evaluation of experiences in the field.

Physics (PY) Courses

PY 300 Physics for Non-majors. 4 Semester Hours. (Lab fee.)
Prerequisite: Precalculus algebra. Comprehensive introduction to concepts and methods of physics, including discussion of mechanics, thermal physics, electricity and magnetism, and optics. Some basic problem solving is required.

PY 301 Calculus Physics I. 3 Semester Hours. (Lab fee.)
Corequisite: PY 301L. Prerequisite: Calculus I, II. Calculus-based introduction to principles of mechanics, energy, waves, and fluids.

PY301L Calculus Physics I Lab. 1 Semester Hour. ***Corequisite: PY 301.***

PY 302 Calculus Physics II. 3 Semester Hours. (Lab fee.)
Corequisite: PY 302L. Prerequisite: PY 301. Continuation of PY 301. Calculus-based introduction to principles of heat, electricity, magnetism, and optics.

PY302L Calculus Physics II Lab. 1 Semester Hour. ***Corequisite: PY 302. Prerequisite: PY 301L.***

PY 303 Calculus Physics III (Modern Physics). 3 Semester Hours. (Lab fee.)
Corequisite: PY 303L. Prerequisite: General Physics (Calculus-Based) I, II. Calculus-based introduction to topics in modern physics, including quantum physics and atomic and nuclear structure.

PY303L Calculus Physics III (Modern Physics) Lab. 1 Semester Hour. ***Corequisite: PY 303.***

PY 306 Thermal Physics. 4 Semester Hours.
Prerequisite: PY 302, Calculus III. Study of thermal energy, equations of state, entropy, and the laws of classical and statistical thermodynamics.

PY 309 Mechanics I. 3 Semester Hours.
Prerequisite: PY 302, MA 421. Study of the laws and principles of classical mechanics including particle motion, central forces, and motion of rigid bodies. Solution of many problems required.

PY 310 Mechanics II. 3 Semester Hours.
Prerequisite: PY 309. Study of laws and principles of classical mechanics including particle motion, central forces, and motion of rigid bodies. Solution of many problems required.

PY 312 Electricity and Magnetism I. 3 Semester Hours.
Prerequisite: PY 302, MA 421. Theory of electromagnetic fields and waves as developed from basic experimental laws. Emphasis placed on techniques of problem solving.

PY 344 Principles Of Optics. 4 Semester Hours. (Lab fee.)
Prerequisite: PY 303, MA 421. Study of optical phenomena including wave motion, reflection, refraction, image formation, and dispersion.

PY 345 Physical Optics. 4 Semester Hours. (Lab fee.)
Prerequisite: PY 344. Selected topics in classical and modern physical optics. Covers polarization, interference, Fresnel and Fraunhofer diffraction, Fourier methods, coherence, stimulated emission, lasers, and holography.

PY 412 Electricity and Magnetism II. 3 Semester Hours.
Prerequisite: PY 312. Theory of electromagnetic fields and waves as developed from basic experimental laws. Emphasis is placed on techniques of problems solving.

PY 415 Intermediate Quantum Physics I. 3 Semester Hours.
Prerequisite: PY 303, MA 428 recommended. Advanced introduction to quantum mechanics, the Schroedinger wave equation, the one-electron atom, spin, and complex atoms.

PY 416 Intermediate Quantum Physics II. 3 Semester Hours. (Continuation of PY 415.)
Prerequisite: PY 415. Advanced introduction to molecules, statistical physics, solids, and nuclear physics.

PY 435 Senior Laboratory. 3 Semester Hours. (Lab fee.)
Prerequisite: PY 303, 309, and 312. Selected experiments from modern physics, electricity and magnetism, optics, and thermodynamics.

PY 441 Special Topics in Physics. 3 Semester Hours.
Prerequisite: Consent of instructor. Selected topics in upper-level physics. To be offered on occasion of student demand or need.

PY 461 Directed Study and Research in Physics. 1 Semester Hour.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

PY 462 Directed Study and Research in Physics. 2 Semester Hours.
Prerequisite: Consent of instructor. To be offered on occasion of student demand or need.

PY 463 Directed Study and Research in Physics. 3 Semester Hours.
Prerequisite: Consent of Instructor. To be offered on occasion of student demand or need.

Religion (RE) Courses

RE 301 Religions That Shaped the World. 3 Semester Hours.
A survey of religions from ancient Egypt, Mesopotamia, Greece, Persia, Rome, Africa, America and the Eastern Religions of India, China, and Japan. This course will examine how these religions have shaped and continue to shape our religious world views.

RE 303 Current Religious Movements and Issues. 3 Semester Hours.
An examination of current religious issues and movements which are influential in the thought and practice of modern society.

RE 305 Survey of Religious Education. 3 Semester Hours.
This course provides an introduction to the field of religious education. The philosophy, history, processes and methods, organization, administration, and institutions concerned with the delivery of contemporary Christian educational ministries will be examined. Particular emphasis will be placed on specialized and parachurch religious educational organizations and processes representing a variety of denominations and faiths.

RE 312 History of Judaism. 3 Semester Hours.
Presents Judaism from the destruction of the Temple through medieval times. Examines the world of Talmud, Midrash, Response and the general Diaspora. Requires reading from historical and tenetial sources.

RE 314 History of Islam. 3 Semester Hours.
Presents Islam from its beginning, in an historical, religious, and geographical context, to its major geographical, doctrinal, and sectarian spread internationally.

RE 325 Philosophy of Religion. 3 Semester Hours. (Also listed as PH 325.)
A philosophical study of the grounds of religious belief and practice, the relationship of man to God and its implications for morality and the belief in life after death. Special attention is given to the impact of science upon religion.

RE 327 Sociology of Religion. 3 Semester Hours. (Also listed as SO 327.)
The interaction, interpretation, and interrelationships of religion, society, and individual morality in American religious behavior and institutions.

RE 330 Biblical Hebrew Grammar I. 3 Semester Hours.
Inductive approach, utilizing the Biblical narratives, especially in Genesis and the Books of Kings.

RE 331 Biblical Hebrew Grammar II. 3 Semester Hours.
Emphasis on conjugations, syntax, and morphology, Hebrew poetry, and Hebrew narrative.

RE 340 New Testament Greek I. 3 Semester Hours.
For Beginners. Greek grammar utilizing New Testament vocabulary.

RE 341 New Testament Greek II. 3 Semester Hours.
Continuation of RE 340.

RE 351 Introduction to Christian Thought. 3 Semester Hours.
A critical study of contemporary Christian theological perspectives, which will cover a broad spectrum of current theological perspectives including evangelical, conservative, liberal, neo-reformation, liberationist, feminists, and other post-modern approaches.

RE 403 Religion in Life. 3 Semester Hours.
An examination of religious ethics from various religious perspectives with the primary focus on western religious traditions and a comparison of western traditions with eastern ones observing both similarities and differences.

RE 405 Religious Education of Adults. 3 Semester Hours.
This course presents an overview, through lectures, discussions, and readings, of the foundations of adult religious education, a survey of adult religious education programs, and a comprehensive examination of the principles of education for adult learners. The intended audience for this course are those students who are currently involved in the delivery of religious educational programs, or those students who anticipate working with adult learners in a religious setting. This course includes a research/field experience component.

RE 409 Christian Thought in Early Centuries. 3 Semester Hours.
A study of Christian thought in Jesus, Paul, and other leaders in the first centuries.

RE 412 The Hebrew Prophets. 3 Semester Hours.
An examination of the settings, psychology, and conventional forms of prophecy in the ancient Near East as well as the writings of the former and latter prophets of the Old Testament.

RE 413 The Wisdom and Devotional Literature. 3 Semester Hours.
A historical and faith analysis of the Books of Job, Ecclesiastes, Song of Solomon, Proverbs, Psalms, and other 4th and 3rd century BC Old Testament writings.

RE 415 Religious Dimensions in Literature and Art. 3 Semester Hours.
A study of various theological themes as they appear in literature and the arts.

RE 416 Interpreting the Text. 3 Semester Hours (Also listed as EH 416).
An examination of various ancient, historical, and literary methods of interpreting literature covering the range from ancient ways of reading texts to current poststructuralist approaches. Even though primary emphasis will center on religious texts, there will be considerable attention given to issues and methods that emerged from the realms of the social sciences, literature, and philosophy.

RE 417 Internship Senior Research Project: Religious Education. 4 Semester Hours.
This course provides opportunities for students to document and present directed research and supervised on-site work experiences in appropriate religious education settings. This course includes regularly scheduled discussion conferences and the evaluation of field experiences.

RE 441 Special Topics in Religion. 1 Semester Hour. To be offered on occasion of student demand or need.

RE 442 Special Topics in Religion. 2 Semester Hours. To be offered on occasion of student demand or need.

RE 443 Special Topics in Religion. 3 Semester Hours. To be offered on occasion of student demand or need.

RE 461 Directed Study/Research in Religion. 1 Semester Hour.
Prerequisite: Consent of instructor. (Open only to superior majors.) (May be repeated for up to six additional hours of credit.) (To be offered on occasion of student demand or need.)

RE 462 Directed Study/Research in Religion. 1 Semester Hour.
Prerequisite: Consent of instructor. (Open only to superior majors.) (May be repeated for up to six additional hours of credit.) (To be offered on occasion of student demand or need.)

RE 463 Directed Study/Research in Religion. 1 Semester Hour.
Prerequisite: Consent of instructor. (Open only to superior majors.) (May be repeated for up to six additional hours of credit.) (To be offered on occasion of student demand or need.)

Secondary Education (SC) Courses

SC 331 Issues in Secondary Education. 3 Semester Hours. (Formerly titled Professional Education for Teaching Middle/High School.) This beginning education course is designed to facilitate the acquisition of professional attributes and to improve oral and written communication skills by refining study and research skills, using professional vocabulary, sharing research findings about educational trends and issues, and writing lesson plans. Attributes and dispositions will be articulated, defined, and modeled. These dispositions will be encouraged in oral presentations and collegial interactions. Practice in oral and written language usage will occur through writing and speaking about current educational concerns. Twelve (12) hours of field experience required.

SC 333 Teaching Reading and Writing in the Content Areas. 3 Semester Hours.
Prerequisite: Admission to the Teacher Education Program. A course designed for teachers of students in middle school and high school to develop creative instructional strategies to promote reading comprehension, vocabulary development, and study strategies in the fields of humanities, social sciences, natural sciences, physical education, math, learning disabilities, and vocational education. Nineteen (19) hours of field experience required. Students must spend two full days (14 hours) in a public school setting. Students must also tutor an at-risk student for 5 hours.

SC 431 Teaching in Middle/High School. 3 Semester Hours.
Prerequisite:Admission to the Teacher Education Program and SC 331 Issues in Secondary Education. The course includes the fundamental principles and techniques in planning, implementing, and evaluating learning activities and in selecting and using appropriate materials and equipment. The second phase is individualized according to the student's major areas. This course must be taken one or two semesters prior to the internship. A total of twenty-one (21) hours of field experience is required.

SC 484 Internship in Middle School. 9 Semester Hours. (Lab fee.)
Prerequisite: Senior standing and admission to the Teacher Education Program. Fourteen-week internship program. This culminating experience of the Teacher Education Program provides practical experience in teaching classes in state-accredited schools under the guidance of a cooperating teacher and supervision of a college professor. Seminar attendance is required.

SC 485 Internship in Middle School. 5 Semester Hours. (Lab fee.)
Seven-week internship program for persons seeking additional certification.

SC 486 Internship in High School. 9 Semester Hours. (Lab fee.)
Prerequisite: Senior standing and admission to the Teacher Education Program. Fourteen-week internship program. This culminating experience of the Teacher Education Program provides practical experience in teaching classes in state-accredited schools under the guidance of a cooperating teacher and supervision of a college professor. Seminar attendance is required.

SC 487 Internship in High School. 5 Semester Hours. (Lab fee.)
Seven-week internship program for persons seeking additional certification.

Special Education (SE) Courses

SE 301 Introduction to Exceptional Learners. 3 Semester Hours.
A general survey course which addresses etiology, identification, incidence, curriculum modification, parent interaction, placement options, and inclusion of all types of educationally exceptional learners in general education settings. Includes Lee v. Macon Awareness Training. Field experience is required.

SE 315 Introduction to Cognitive and Health Disabilities. 3 Semester Hours.
Prerequisite: SE 301 or concurrent enrollment. This course provides an overview of causes, characteristics, educational needs of, and issues associated with mental retardation, orthopedic impairments, and other health impairments. Field experience is required.

SE 325 Introduction to Learning and Emotional Disabilities. 3 Semester Hours.
Prerequisite: SE 301 or concurrent enrollment. This course provides an overview of causes, characteristics, and issues associated with learning disabilities and emotional disabilities. Field experience is required.

SE 335 Curriculum Development and Adaptations. 3 Semester Hours.
Prerequisite: Math or reading methods courses as well as SE 301 or concurrent enrollment. This course teaches the sources and development of appropriate curricula for a wide variety of students. It will include familiarity with state courses of study for inclusive settings as well as intense curricula for social and occupational needs in the resource setting.

SE 345 Assessment I: Norm Referenced Tests. 3 Semester Hours. (Lab fee.)
Prerequisite: SE 301 and either 315 or 325. This course provides training and hands-on experience with formal, norm-referenced tests for use with exceptional students at elementary and secondary school levels. Topics include basic concepts of measurement, test development and technical characteristics, test administration, test scoring, and score interpretation. Administration of a battery of tests to a student and preparation of a formal report of testing are required.

SE 355 Alternative Instructional Strategies. 3 Semester Hours.
Prerequisite: At least one math and one reading methods course and SE 355, 315,or 325; concurrent enrollment. This course provides the pre-service teacher with alternative corrective procedures for a variety of academic, social, and occupational problems. Includes Lee v. Macon Training on "Makes Sense Strategies." Field experience is required.

SE 415 Transition Planning and Learning Strategies for Adolescents. 3 Semester Hours.
Prerequisite: SE 301,315, 325, 335 or concurrent enrollment. This course provides training and hands-on experience with intervention strategies for adolescents with a variety of needs. It will include expertise in academic support, functional skills, social and career skills. Field experience is required.

SE 425 Conferencing and Collaborative Techniques. 3 Semester Hours.
Prerequisite: Admission to TEP. This course is designed to develop communication skills and ethical standards in communicating programs and problems of the exceptional learner to parents, professionals, students, and other appropriate personnel. To be taken concurrently with the internship.

SE 435 Strategies for Individuals with Severe Disabilities. 3 Semester Hours.
Prerequisite: SE 301, 315, 325 and 335. This course provides training and hands-on experience with intervention strategies for students with severe mental, physical, and emotional disabilities. It will include intensive field experience in functional skills, movement and medical procedures, and in working with out-of-control students. Field experience is required.

SE 445 Assessment II: Advanced Procedures and Techniques. 3 Semester Hours. (Lab fee.)
Prerequisite: SE 345, SE495 (or currently). This course focuses on assessment procedures that do not rely on formal, norm-referenced tests. Topics include curriculum-based assessment, portfolio assessment, functional behavioral assessment, and the use of structured observation, rating scales, and assessment of classroom ecology. Administration of batteries of tests, application of techniques and procedures from this course to two students, and preparation of a formal written report of assessments are required. Field experience required.

SE 455 Language and Development Strategies for Young Children. 3 Semester Hours.
Prerequisite: SE 301, 315, 325 or concurrent enrollment. This course emphasizes the development of language, cognitive, social, and motor skills. Topics include strategies and materials used to meet the developmental needs of young children with a variety of disabilities. Field experience is required.

SE 465 IEPs and Other Legal Issues. 3 Semester Hours.
Prerequisite: SE 301, 315, 325. Admission to TEP. This course provides an overview of legal guidelines governing the implementation of special education services including federal and state regulations as well as court cases. It will include development of IEPs for a variety of students.

SE 476 Internship for Collaborative Education K-6. 9 Semester Hours. (Lab fee.)
Prerequisite: Senior standing and admission to the Teacher Education Program. Fourteen-week internship program. This culminating experience of the Teacher Education Program provides practical experience in teaching classes in state-accredited schools under the guidance of a cooperating teacher and supervision of a college professor. Seminar attendance is required.

SE 478 Internship for Collaborative Education 6-12. 9 Semester Hours. (Lab fee.)
Prerequisite: Senior standing and admission to the Teacher Education Program. Fourteen-week Internship Program. This culminating experience of the Teacher Education Program provides practical experience in teaching classes in state-accredited schools under the guidance of a cooperating teacher and supervision of a college professor. Seminar attendance is required.

SE 495 Classroom Management and Discipline. 3 Semester Hours.
Prerequisite: SE 301 and either SE 315 or 325. This course is designed to develop an understanding of classroom dynamics and behavioral problems. Topics include physical environment management and curriculum management as well as a wide variety of disciplinary strategies. Includes Lee v. Macon Training on Positive Behavioral Supports.

Sociology (SO) Courses

SO 300 Moral Values Today's Society. 3 Semester Hours. (Also listed as PH 300.)
This course examines the moral values of various societies as well as those of individual moral philosophers past and present to see how they legitimate their views of what constitutes a good and desirable life.

SO 301 Introduction to Multicultural Studies. 3 Semester Hours. (Also listed as PS 301.)
An introduction to the concepts, terminology, and issues in gender and multicultural studies including exploration of America's multicultural composition, gender as an element of culture, and contemporary issues in the field.

SO 304 Sociology of Work. 3 Semester Hours.
Prerequisite: Introduction to Sociology. Consists of sociological analysis of work in pre-industrial and industrial societies; a consideration of problems involved in the conceptual and empirical study of occupations and professions; an examination of the process of professionalism; and the study of leisure and the social consequences of changes in occupations and professions.

SO 312 Majority/Minority Group Relations. 3 Semester Hours.
Prerequisite: Introduction to Sociology. A study of the principles and processes which shape the patterns of relations between majority groups, racial, ethnic, and other groups, with emphasis on American society, along with a comparison of intergroup relations in other societies.

SO 314 Population Study. 3 Semester Hours.
Prerequisite: Introduction to Sociology. The relationship of demographic factors to the social structure. Trends in fertility, mortality, population growth, distribution, migration, and composition.

SO 327 Sociology of Religion. 3 Semester Hours. (Also listed as RE 327.)
Prerequisite: Introduction to Sociology. The interaction, interpretation, and interrelationships of religion, society, and individual morality in American religious behavior and institutions.

SO 341 Statistics With Advanced Topics In Behavioral Science. 3 Semester Hours. (Also listed as PO 341 and PS 341.)
Prerequisite: Psychology, Sociology, or Political Science Major or Minor or Permission, Precalculus Algebra or Finite Mathematics. This course looks at the use of descriptive and inferential statistics to analyze behavioral science data. Advanced inferential topics help prepare students for graduate school.

SO 342 Methods of Behavioral Science Research. 3 Semester Hours. (Also listed as PO 342 and PS 342.) It is strongly recommended that students take PS/SO/PO 341 Statistics With Advanced Topics in Behavioral Science prior to taking PS/SO/PO 342. (Lab fee.)
Prerequisite: Psychology, Sociology, Political Science Major or Minor, or Permission. This course is concerned with theory design and collection of data in behavioral science research with emphasis on the techniques of collecting, analyzing, and interpreting behavioral science data.

SO 350 Introduction to the American Legal System. 3 Semester Hours. (Also listed as JS 350, PO 350, and PSA 350.**)** ***Prerequisite: Introduction to Sociology.*** This course is a review of basic legal doctrines and processes in the United States system of jurisprudence. Students are introduced to a wide variety of topics in both civil and criminal justice. Topics include the theory and nature of law as a device for social control, torts, contracts, and ownership of property. The course is structured to provide prelaw majors with limited exposure to the many social conflicts managed by law and courts, and to provide education majors with an overview of law-related topics necessary for civics instruction.

SO 351 American Public Policy/Political Sociology. 3 Semester Hours. (Also listed as PO 351.)
This course explores factors that impact government's responses to a wide variety of social conditions. The process for making policy, the content of current policy, and the impact of policy receive attention.

SO 360 Contemporary American Family. 3 Semester Hours.
Prerequisite: Introduction to Sociology. A study of the origin and evolution of the American family as a social institution and the relationship of family structure to social organization. Emphasis will be placed upon the development of the family from colonial days to its contemporary forms and the larger social context within which the family has developed.

SO 361 Social Analysis. 3 Semester Hours.
Prerequisite: Introduction to Sociology. A study of the basic principles of social organization including an examination of the structure and function of groups and complex organizations including social institutions, with special emphasis on their operation in American society.

SO 362 Deviant Social Behavior. 3 Semester Hours.
Prerequisite: Introduction to Sociology. An in-depth examination of the social implication of labeling deviant behavior and its effects upon both the individual and society.

SO 363 Social Structure and Personality. 3 Semester Hours.
Prerequisite: Introduction to Sociology. An analysis of the relationship of the culture and individual behavior through social influences.

SO 401 Adult Corrections. 3 Semester Hours. (Also listed as JS 401.)
Prerequisite: Introduction to Sociology. Socioeconomic facets of crime and principles and practices of delinquency, probation, and parole. Interaction (environmental and attitudinal) of persons from sentencing to return to society will be stressed.

SO 441 Special Topics in Sociology. 1 Semester Hour.
Prerequisite: Introduction to Sociology. A study of social issues and contemporary social problems and their consequences.

SO 442 Special Topics in Sociology. 2 Semester Hours.
Prerequisite: Introduction to Sociology. A study of social issues and contemporary social problems and their consequences.

SO 443 Special Topics in Sociology. 3 Semester Hours.
Prerequisite: Introduction to Sociology. A study of social issues and contemporary social problems and their consequences.

SO 444 Special Topics in Sociology. 4 Semester Hours.
Prerequisite: Introduction to Sociology. A study of social issues and contemporary social problems and their consequences.

SO 452 Advanced Criminology. 3 Semester Hours. (Also listed as JS 452.)
Prerequisite: Introduction to Sociology. Analysis of social causal process and theories by which individuals become criminals and evaluation of the effectiveness of the criminal justice system in returning helpful, contributing citizens back to society. Historical and contemporary orientation.

SO 453 Juvenile Delinquency. 3 Semester Hours. (Also listed as JS 453.)
Prerequisite: Introduction to Sociology. The course applies a sociological approach to analyzing juvenile delinquency. While recognizing a variety of the causes (physiological, psychological, and social) of juvenile delinquency, this approach focuses on the impact of societal conditions on juvenile delinquency. The course combines a theoretical and an empirical emphasis.

SO 460 Sociological Theories. 3 Semester Hours.
Prerequisite: Introduction to Sociology. An historical examination of the theories and principles of sociological theory with emphasis on current theory and its relationship to research.

SO 461 Directed Study/Research in Sociology. 1 Semester Hour.
Prerequisite: Introduction to Sociology. Designed to examine selected topics from a sociological perspective. Open to senior-level majors by approval.

SO 462 Directed Study/Research in Sociology. 2 Semester Hours.
Prerequisite: Introduction to Sociology. Designed to examine selected topics from a sociological perspective. Open to senior-level majors by approval.

SO 463 Directed Study/Research in Sociology. 3 Semester Hours.
Prerequisite: Introduction to Sociology. Designed to examine selected topics from a sociological perspective. Open to senior-level majors by approval.

SO 471 Aging in a Mass Society. 3 Semester Hours. (Also listed as GE 471.)
Prerequisite: Introduction to Sociology. A study of the aging process, the special problems encountered by the aging and by the institutions of society involved in the care of the aging.

SO 490 Senior Sociology Seminar. 1 Semester Hour.
Prerequisite: Introduction to Sociology. Students synthesize material presented in courses on theory, methods, statistics, as well as an understanding of issues in substantive areas by preparing a written critical analysis of several published research articles. Graduating seniors majoring in sociology must complete this course to demonstrate competency. Enrollment should be only in the last semester before graduation.

SO 497 Practicum in Psychology/Sociology/Gerontology. 3 Semester Hours. (Also listed as PS/GE 497.)
Prerequisite: Senior Standing and Approval of Instructor. This course provides the student an opportunity to experience the theoretical concepts and knowledge obtained in the classroom. The practicum entails approximately eight hours per week of supervised field experiences in appropriate community agencies, institutions, industrial or research settings, and bi-weekly in-class seminars.

SO 498 Practicum in Psychology/Sociology. 3 Semester Hours. (Also listed as PS 498.)
Prerequisite: Senior Standing and Approval of Instructor. This course provides the student an opportunity to experience the theoretical concepts and knowledge obtained in the classroom. The practicum entails approximately eight hours per week of supervised field experiences in appropriate community agencies, institutions, industrial or research settings, and bi-weekly in-class seminars.

Social Science (SS) Courses

SS 301 Social Science Research Methods. 3 Semester Hours. (Also listed as PO 301 and HY 301.) (Required of B.S.Ed. degree-seeking History and Social Science majors; may not be taken by B.A. degree-seeking history major.)
A course designed to develop the techniques of social science research and to explore varying historical interpretations.

SS 310 Modern Economics. 3 Semester Hours. (Also listed as EC 310.)
A macro examination of the operation of modern economic systems including price determination, aggregate demand and supply theory, public policy options, and the philosophical foundations of free market and command systems.

SS 321 Money And Banking. 3 Semester Hours. (Also listed as EC 321.)
Prerequisite: Principles of Economics. A study of how money, credit, and interest rates affect the level of employment, production, and prices in the economy. Topics of study will include the Federal Reserve System, the operations of commercial banks, credit controls, the theory of income determination, as well as recent trends in banking.

SS 323 Introduction To Managerial Economics. 3 Semester Hours. (Also listed as EC 323.)
A course that analyzes the behavior of individual firms and households carrying on production or consumption. The material provides a practical examination of important macroeconomic principles behind the operation of any modern business and explains the analytical tools used in making effective management decisions.