

DESCRIPTION OF COURSES**GUIDE TO ABBREVIATIONS:**

- MAIN — Main Campus
 JDC — Robert L. Johnson Downtown Center
 HTC — Hillsdale Technology Center
 ADR — JCC Lenawee Center
 F,W,S — Semesters the course is offered, i.e. Fall, Winter or Spring

Internships, independent study, special topics and work experience are special options offered in each discipline. See their activity descriptions. Students seeking any of these options should meet and discuss the choice with the respective faculty.

ACCOUNTING (ACC)**ACC 115 Payroll Accounting (2 CR)**

Application of payroll accounting rules and procedures for running a business. Employment and tax laws that affect payroll preparation. Skills, procedures, and concepts necessary to figure a company's payroll. Topics: hiring, gross pay, social security, income taxes, employee deductions and benefits, payroll accounting, earnings records, tax deposits, unemployment taxes, recording payroll transactions, form 940EZ, 941, reporting employees earnings and special situations.

ACC 130 Quickbooks Pro (2 CR)

Learn to use the many features of this popular and sophisticated small business computerized accounting system. Topics include customizing the system to your business, invoicing and bill paying, invoicing and statements, general ledger, accounts receivable, accounts payable, checking accounts and credit cards, on-line banking, reports and graphs, payroll, inventory, financial management, contract management, job costing and budgeting, and tax reports.

Prerequisite: ACC 211

ACC 145 Business Tax Accounting (3 CR/F)

This course will introduce the student to the various federal, state and local taxes (excluding income taxes) that a sole proprietorship, partnership or corporation will be required to file and pay with an emphasis on those applicable in the state of Michigan.

ACC 211 General Accounting (4 CR)

Fundamentals designed to give an overall picture and understanding of the field of accounting. An introductory business course for secretarial and other non-business majors.

Prerequisite: MTH 110 or MTH 112

ACC 216 Financial Accounting Concepts (4 CR/F,W)

This course is designed for the non-accounting supervisor/manager who must have an understanding of financial and managerial accounting as it is used in decision making.

ACC 231 Principles of Accounting I (4 CR/F,W,S)

Theory and practice of recording accounting data and preparation of financial statements in accordance with Generally Accepted Accounting Principles (GAAP) utilizing current software. Emphasis is on proprietorships. Introductory course in accounting for business administration and accounting majors.

Prerequisite: MTH 120 and ITE 101

ACC 232 Principles of Accounting II (4 CR/F,W,S)

Students learn the aspects of accounting unique to the corporation followed by an introduction to the managerial decision-making uses of accounting data utilizing current software. Topics studied include stocks, bonds, cash flow, cost accounting, break-even analysis, differential analysis, financial statements and budgeting.

Prerequisite: ACC 231

ACC 234 Managerial Accounting (4 CR)

Accumulation of a data base useful to management in a variety of decision making situations. Emphasizes manufacturing accounting, cost-volume relations, relevant costs, budgeting and standard costs for control, responsibility accounting, job and process cost systems, and quantitative techniques in managerial accounting.

Prerequisite: ACC 232

ACC 240 Intermediate Accounting (4 CR)

Review of accounting theory and processes, nature and content of the balance sheet and income statement, present value tables and their application, and currently applicable Generally Accepted Accounting Principles (GAAP) and recent Financial Accounting Standards Board (FASB) pronouncements.

Prerequisite: ACC 232

AVIATION FLIGHT TECHNOLOGY (AFT)**AFT 055 The Right Seat (0.33 CR)**

Designed for the spouse or friend of the licensed pilot to become familiar with communication, navigation, and basic flight procedures necessary to assist an ill or incapacitated pilot.

AFT 100 Basic Maneuvers (2 CR)

Ground instruction relating to in-flight maneuvering. Explains the theory and proper execution of ground and flight maneuvers required for Primary Flight.

AFT 110 Primary Ground School (3 CR)

Preparation for the FAA Private Pilot written examination by classroom work on federal aviation regulations, air space, meteorology, navigation, communication and aerodynamics.

AFT 115 Primary Flight I (4 CR)

20 hours of flight prepares the student for solo flight with 15 hours of dual instruction and 5 hours of solo flight. Includes preflight, start-up, radio communication, taxi, basic flight maneuvers, takeoffs, landings, etc.

AFT 120 Primary Flight II (4 CR)

30 hours of flight prepares the student for the Private Pilot Certificate with 15 hours of dual and 15 hours of solo flight to include solo cross-country, night and basic instrument training. **Prerequisite:** AFT 115

AFT 125 Commercial Ground School (3 CR)

Prepares the student for the FAA Commercial Pilot written examination. In-depth study of meteorology, Federal Aviation regulations, aircraft systems, airspace, aerodynamics, etc.

AFT 130 Commercial Flight I (4 CR)

Initial flight training leading to the Commercial Pilot Certificate with instrument rating. Advanced flight training includes chandelles, lazy 8s, pylons 8s, along with basic instrument techniques. **Prerequisite:** AFT 120

AFT 135 Instrument Ground School (3 CR)

Prepares the student for the FAA Instrument Pilot written examination through study of federal aviation regulations, A/C systems, meteorology, IFR departure, en route and arrival procedures. **Prerequisite:** AFT 120

AFT 140 Commercial Flight II (4 CR)

Continuation of advanced and instrument flight training including night, basic instrument procedures, navigation, and cross-country flight. Also includes introduction to complex aircraft. **Prerequisite:** AFT 130

AFT 200 Commercial Flight III (4 CR)

Continuation of advanced and instrument flight procedures with emphasis on high-performance maneuvers, solo cross-country and dual instrument en route and approach procedures. **Prerequisite:** AFT 140

AFT 205 Commercial Flight IV (4 CR)

Culmination of the commercial/instrument curriculum with requirements completed for Commercial Pilot Certificate with Instrument Rating in the complex aircraft. **Prerequisite:** AFT 200

AFT 210 Instrument Flight (4 CR)

Designed for the non-commercial pilot, includes all phases of instrument flight including basic instrument, departure, en route and arrival procedures. **Prerequisite:** AFT 135

AFT 215 Flight Instructor Theory (3 CR)

Preparation for completion of the two FAA written examinations for Flight Instructor-Airplane. Covers theory of instruction and analysis of flight maneuvers from the perspective of the instructor. **Prerequisite:** AFT 205

AFT 220 Flight Instructor Flight (3 CR)

Preparation for the Flight Instructor-Airplane Certificate through effective techniques of lesson planning, teaching methods, and analysis of maneuvers. **Prerequisite:** AFT 205

AFT 230 Instrument Flight Instructor Flight (3 CR)

Preparation of materials and teaching methods, analysis of maneuvers and instruction in flight instructor responsibilities. **Prerequisite:** AFT 215

AFT 235 Flight Transition (2 CR)

Provides the licensed pilot with the opportunity to develop the knowledge, experience, and flight skills needed for transition to the complex single-engine aircraft.

AFT 240 Biennial Flight Review Clinic (1 CR)

Provides the flight review necessary for FAA biennial requirements. Includes ground and flight review appropriate to the certificate or rating held by the student.

AFT 245 Simulator Training (1 CR)

Designed for the student in need of self-paced simulator training. Student may choose basic, advanced, or cross-country mode and proceed as needs require.

AFT 250 IFR Recurrency (1 CR)

Designed for the instrument pilot in need of recurrent training. Satisfies FAR Part 61 requirement for recent IFR experience. Student may utilize simulator, aircraft or both.

AFT 260 Multi-Engine Flight (1 CR)

Covers flight techniques and operational procedures of multi-engine airline aircraft. **Prerequisite:** AFT 210

AFT 270 Practical Application (1 CR)

Allows the licensed pilot (private or better) to proceed dual, solo or with passengers, in a directed extension of the learning experience. **Prerequisite:** AFT 120

AFT 275 Maintenance for Pilots (2 CR)

Pilot-owner oriented procedures for legal self-maintenance of aircraft. Considerable hands-on experience detailing preventative maintenance, inspection and repair of aircraft. Contains a review of federal aviation regulations, documents and standard practices pertaining to pilot-owner maintenance.

APPLIED INDUSTRIAL TECHNOLOGY (AIT)**AIT 117 Beginning Sheet Metal (2 CR) (SAME AS AIT 065)**

This class will teach methods and formulas necessary to shop fabricate the most common straight duct and fillings used in the HVAC industry.

AIT 118 Advanced Sheet Metal (2 CR) (SAME AS AIT 065)

This class will teach advanced methods and formulas necessary for transitional and round shop fabrication of duct fittings for the commercial HVAC industry.

AIT 121 Introduction to HVAC (3 CR)

The class will introduce the student to the variety of professions and work opportunities in the HVAC field. Students will also review the tools of the trade, safety practices, a basic introduction to components of heating and air conditioning equipment, heat transfer, psychometrics and air quality.

AIT 123 Application of HVAC Technology (3 CR)

The student will be taught to calculate heat loss and heat gain for residential and small commercial buildings, design duct distribution systems, and choose properly sized heating and air conditioning equipment. **Recommended: Basic knowledge of heating and air conditioning vocabulary.**

AIT 131 Basic HVAC Electrical/Controls (2 CR)

This class will cover the characteristics of basic electrical circuitry and low voltage control wiring, as well as electrical formulas and applications. **Recommended: Basic knowledge of heating and air conditioning vocabulary.**

AIT 135 Refrigeration & Air Conditioning I (3 CR)

This class will cover standard components, operational sequences, troubleshooting and repair of refrigeration and air conditioning equipment. **Recommended: Basic knowledge of heating and air conditioning vocabulary.**

AIT 136 Refrigeration & Air Conditioning II (3 CR)

This class will cover advanced components, operational sequences, troubleshooting and repair of refrigeration and air conditioning equipment. **Prerequisite: AIT 135**

AIT 137 Advanced HVAC Electrical/Controls (2 CR)

This class will cover characteristics of advanced electrical circuitry and low voltage control wiring, as well as electrical formulas and applications. **Prerequisite: AIT 131**

AIT 141 Basic Heating (2 CR)

This class will cover standard components, operational sequences, troubleshooting, and repair of gas and oil heating equipment. **Recommended: Basic knowledge of heating and air conditioning vocabulary.**

AIT 142 Advanced Heating (2 CR)

This class will cover advanced components, operational sequences, troubleshooting and repair of heating equipment. **Prerequisite: AIT 141**

AIT 200 Mechanical Code (2 CR)

This course covers local and national laws governing the installation of HVAC equipment and system components. *Students should take in last semester.*

AIT 201 Refrigeration Certification 1 CR

This class will cover the characteristics of and laws pertaining to the handling, installing and recovering of freons. Successful completion of this course will earn the student the required certification to legally purchase and use freon.

Prerequisite: AIT 135

ANTHROPOLOGY (ANT)**ANT 131 Cultural Anthropology (3 CR/E/W)**

This introduction to anthropology presents cultures from all continents, highlighting major lifestyles and illustrating human adaptation to environment from the beginnings of the human species to the present. The course focuses on the thesis that every society is based on an integrated culture, which satisfies human needs and facilitates survival.

ART**ART 101 Two-Dimensional Design (3 CR)**

Students will learn the principles and elements of 2-D design, study how to apply them and practice their application.

ART 103 Drawing I: Foundations (3 CR/ E/W)

Introduction to basic design principles and techniques. Contour and tonal drawing are explored using various subjects.

ART 111 Art History: Prehistoric - 1400 (3 CR)

Survey of art history and aesthetics covering art and architecture from prehistoric times to 1400.

ART 112 Art History: Renaissance to Present (3 CR/F,W,S)

Survey of art history and aesthetics covering art from the Renaissance through the twentieth century.

ART 131 Art Education (3 CR/F) (EVEN YEARS)

Students explore theories and philosophies of art education with an emphasis on elementary school children's artistic development and "hands-on" studio art projects.

ART 152 Painting I: Design & Color (3 CR)

The elements and principles of design and color are introduced to create composition. Emphasis is given to techniques using acrylics and/or watercolor.

Prerequisite: ART 103

ART 154 Landscape Painting (2 CR)

Landscape painting directly from nature. Provides students with experience in composition, color, drawing and painting.

ART 155 Watercolor Painting (3 CR)

The elements and principles of using watercolor are introduced to create composition. **Prerequisite:** ART 103

ART 201 Three-Dimensional Design: Shapes & Space (3 CR)

Students learn the principles and elements of 3-D design and study how to apply them. Students will understand and be able to demonstrate the different construction methods.

ART 205 Drawing II: Figure & Composition (3 CR)

Students learn the elements and principles of drawing from life, with the emphasis on basic anatomy and advanced compositional elements. Projects will incorporate advanced techniques and non-traditional media. **Prerequisite:** ART 103

ART 252 Painting II: The Figure (3 CR)

Student works will be primarily paintings from the costumed model. Students extend learning to solve problems dealing with complex compositional and color painting.

Prerequisite: ART 152

AUTOMOTIVE SERVICE TECHNOLOGY (AUT)**AUT 101 General Service (2 CR)**

This course is designed for those who wish to explore the automotive service technician occupation. Introductory exposure to the various service areas, along with student participation of various service tasks.

AUT 102 Engine Performance I (4 CR)

A comprehensive study including hands-on repair of the automobile's ignition and emission systems. Service procedures include scope analysis, compression testing, cylinder leak-down testing, component testing with digital multi-meters and lab

scopes, tune-up, and troubleshooting of the various systems. The combination of AUT 102 & 103 prepares the student with job skills for entry into the workforce and the knowledge for successfully completing the Michigan or ASE certification examinations required for mechanic licensing.

AUT 103 Engine Performance II (4 CR)

A comprehensive study including hands-on repair of the automobile's fuel and computerized engine control systems. Service procedures include fuel pressure testing, fuel injector testing, exhaust gas analysis, scan tool usage, component testing with digital multi-meters and lab scopes, and troubleshooting of the various systems. The combination of AUT 102 & 103 prepares the student with job skills for entry into the workforce and the knowledge for successfully completing the Michigan or ASE certification examinations required for mechanic licensing. Students are required to take the Michigan certification test as an integral part of the course.

AUT 105 Automotive Brakes (3 CR)

A comprehensive study including hands-on repair of the automobile's braking systems. Service procedures include drum brake service, disc brake service, machining drums and rotors, parking brake service, hydraulic system repair, anti-lock brake system service, and troubleshooting the various systems. This course prepares the student with job skills for entry into the workforce and the knowledge for successfully completing the Michigan or ASE certification examinations required for mechanic licensing. Students are required to take the Michigan certification test as an integral part of the course.

AUT 106 Suspension & Steering (3 CR)

A comprehensive study including hands-on repair of the automobile's steering and suspension systems. Service procedures include pre-alignment inspections, 4-wheel alignment, conventional suspension & steering systems, McPherson strut service, rack & pinion steering service, component replacement, and troubleshooting the various systems. This course prepares the student with job skills for entry into the workforce and the knowledge for successfully completing the Michigan or ASE certification examination required for mechanic licensing. Students are required to take the Michigan certification examination as an integral part of the course.

AUT 108 Automotive Air Conditioning & Heating (3 CR)

A comprehensive study including hands-on repair of the automobile's air conditioning and heating systems. Service procedures include cooling system service, refrigeration system service, control system repair, heater service, component testing, environmental issues (the ASE Refrigerant and Recovery Certification test is included and required), and troubleshooting the various systems. This course prepares the student with job

skills for entry into the workforce and the knowledge for successfully completing the Michigan or ASE certification examination required for mechanic licensing. Students are required to take the Michigan certification test as an integral part of the course.

AUT 112 Electrical Systems I (3 CR)

A comprehensive study including hands-on repair of the automobile's electrical system. Service procedures include basic electrical testing using test lights and multimeters, reading basic electrical schematics, battery service, starter service, alternator service, and troubleshooting the various systems. The combination of AUT 112 and 113 prepares the student with job skills for entry into the workforce and the knowledge for successfully completing the Michigan or ASE certification examination required for mechanic licensing.

AUT 113 Electrical Systems II (3 CR)

A comprehensive study including hands-on repair of the automobile's electrical system. Service procedures include basic electronics testing using digital multimeters, advanced electrical schematics, chassis wiring, lighting circuits, instrumentation, power seats, power windows, wiper systems, air bag systems, electrical accessories, and troubleshooting the various systems. The combination of AUT 112 and 113 prepares the student with job skills for entry into the workforce and the knowledge for successfully completing the Michigan or ASE certification examination required for mechanic licensing. Students are required to take the Michigan certification test as an integral part of the course. **Prerequisite:** AUT 112

AUT 118 Diesel Fundamentals (2 CR)

This course is designed for those who wish to explore modern automotive and light truck diesel engines. This will include a study of diesel operating principles, fuel systems, engine construction, sub-systems, diesel maintenance, and diagnosis. Shop time will include disassembly, exploration, and reassembly of compact diesel engines.

AUT 201 Engine Repair (4 CR)

A comprehensive study including hands-on repair of the automobile engine. Service procedures include cooling system repair, lubrication system repair, intake systems repair, exhaust repair, engine testing, engine replacement, engine disassembly, cleaning and measurement, cylinder head reconditioning, block reconditioning, machining operations, assembly techniques, and troubleshooting the various systems. This course prepares the student with job skills for entry into the workforce and the knowledge for successfully completing the Michigan or ASE certification examination required for mechanic licensing. Students are required to take the Michigan certification test as an integral part of the course.

AUT 202 Automatic Transmission (4 CR)

A comprehensive study including hands-on repair of automatic transmissions and transaxles. Service procedures include basic transmission service, transmission pressure testing, scan tool testing, transmission assembly replacement, transmission disassembly, inspection of parts, transmission reassembly, and troubleshooting the various systems. This course prepares the student with job skills for entry into the workforce and the knowledge to successfully complete the Michigan or ASE certification examination required for mechanic licensing. Students are required to take the Michigan certification test as an integral part of the course.

AUT 204 Manual Transmissions & Drivelines (3 CR)

A comprehensive study including hands-on repair of manual transmissions, manual transaxles, and drivelines. Service procedures include transmission service, clutch overhaul, half-shaft repair, drive-shaft repair, differential service, axle repair, and troubleshooting the various systems. This course prepares the student with job skills for entry into the workforce and the knowledge to successfully complete the Michigan or ASE certification examination required for mechanic licensing. Students are required to take the Michigan certification test as an integral part of the course.

AUT 210 Co-op Experience (4 CR)

This co-op experience is paid on-the-job training. It prepares the student to acquire hands-on job skills and work habits in conjunction with the student's employment site. The student will work at a sponsoring repair shop or dealership approximately three days a week (or to be arranged with instructor's approval) performing a variety of automotive repairs. Visits by the school supervisor provide the basis for evaluation. Students are required to complete a total of one co-op experience in the associate degree program.

AUT 211 Co-op Experience (4 CR)

This co-op experience is paid on-the-job training. It prepares the student to acquire hands-on job skills and work habits in conjunction with the student's employment site. The student will work at a sponsoring repair shop or dealership approximately three days a week (or to be arranged with instructor's approval) performing a variety of automotive repairs. Visits by the school supervisor provide the basis for evaluation. Students are required to complete a total of one co-op experience in the associate degree program.

AUT 212 Co-op Experience (4 CR)

This co-op experience is paid on-the-job training. It prepares the student to acquire hands-on job skills and work habits in conjunction with the student's employment site. The student will work at a sponsoring repair shop or dealership approximately three days a week (or to be arranged with

instructor's approval) performing a variety of automotive repairs. Visits by the school supervisor provide the basis for evaluation. Students are required to complete a total of one co-op experience in the associate degree program.

AUT 245 Auto Lab Experience (4 CR)

Lab time to work on auto repair projects in which students have completed coursework or are currently enrolled. May be used as an internal co-op.

BIOLOGY (BIO)

BIO 131 General Biology (4 CR/F,W,S)

Students survey the basic biological principles that regulate the structure and function of cells; the production and use of energy; the genetic, environmental and evolutionary influences on organisms; and the interrelationships between organisms and their environment.

BIO 132 Human Biology (4 CR/F,W)

Students focus on the structure and function of the human body, the unity and diversity of life, the nature of scientific inquiry, and the principles and processes of evolution as well as contemporary issues that relate to biology.

BIO 151 General Botany (4 CR/F)

Emphasizes the development, anatomy, physiology and evolution of angiosperms. A survey of the plant kingdom with representative life cycles stresses relationships among plant groups. A strong biology background or instructor permission.

BIO 152 General Zoology (4 CR/W)

A comparative study of the anatomical and evolutionary relationships of the major animal phyla with emphasis on development, structure and function of vertebrate systems.

Prerequisite: BIO 131

BIO 155 Human Anatomy & Physiology (5 CR/F,W,S)

A lecture and laboratory course in the anatomy and physiology of the human body. Study begins with introductions to basic terminology and cell structure, then extends to a survey of the organ systems. Laboratory study enhances via microscopic study of tissues, the examination of preserved specimens and anatomic models, the use of interactive anatomy and physiology computer models, and cat dissection. A strong biology background, Biology 132, Medical Terminology or Body Structure and Function is recommended.

BIO 220 Microbiology (4 CR/F,W)

Basic structure and function of microorganisms with special emphasis on recent advances in microbiology, pathogens, disease, control and immunity. Strong Biology Background Recommended

BIO 230 Human Heredity (4 CR)

Basic fundamentals of genetics with particular emphasis on human heredity and genetic diseases.

BUSINESS (BUS)

BUS 101 Marketing (3 CR/F,W,S)

Students analyze the marketplace to identify customer wants and needs and develop strategies to satisfy them. Emphasis is placed on research, marketing environments, strategic planning, buyer behavior, and the marketing functions of product/service planning, pricing, promotion and distribution.

BUS 105 Customer Service (3 CR)

In the face of change, an uncertain economy, and intensive competition, the student will learn how to create an unexpected, highly evolving experience, to create customer loyalty and compelling word of mouth internal customers, in addition to paying customers will be the focus. The core elements of service quality will be applied to both people-centered and technology-centered businesses, industries and organizations.

BUS 131 Introduction to Business (3 CR/F,W,S)

The globalization of business from Moscow to Katmandu to New York is technology linked and culturally diverse. This has created new challenges in teamwork, ethical dilemmas, quality, competition, social responsibility and opportunities unheard of just five short years ago. This course will take you on an exploration of these challenges and direct you in successfully utilizing them in your future.

BUS 132 Advertising, Promotion & Public Relations (3 CR/W)

Students study the principles and practices of numerous promotional tools used in marketing communications. Topics include creation of advertising, media strategies, message appeals, plus the use of specialty advertising, sales promotion and public relations.

BUS 135 Business Law I (3 CR/F,W)

This course offers an introduction to law and the legal system, dispute resolution and courts, business ethics, torts, contracts, sales and leases of goods, and negotiable instruments.

BUS 145 Business Law II (3 CR)

The student will learn the law governing the forms of business organization, including agency, partnerships, corporations, and real and personal property.

Prerequisite: BUS 135

BUS 150 Leadership (3 CR)

Both knowledge and behavior contribute to the leadership skills needed to enhance the contribution of your team. Students explore shared vision and values, team building, and decision-making. You will study leadership theory in ways that encourage development of our leadership skills, including effective use of power and influence, motivational tools, personality assessment, team communication, role modeling, and performance appraisal.

BUS 155 Human Relations in Business (3 CR/EW)

Understanding your self-concept, values, and goals is an indispensable tool in today's world. You will encompass these in a life plan while acquiring skills in emotional control, assertiveness, listening, conflict management, and image building to help you develop a successful, professional presence.

BUS 200 E-Commerce (3 CR)

This course studies the blending of business functions, the technology of the Internet. Business strategies are identified using Internet applications such as marketing, finance, and law within a global framework.

BUS 223 Human Resource Management (3 CR)

Create a desirable, productive work place by applying management skills in training, recruitment, team building, motivation and communication. The course also covers administration of benefits, safety and health, government regulation, composition and career development.

BUS 233 Sales (3 CR)

The course identifies various types of personal selling, buyer motives, sales psychology and the importance of building long-term relationships. Persuasive sales presentations are developed and given using steps of the selling process.

BUS 234 Business Management (3 CR/EW,S)

Today's successful manager must have the ability to blend theories and application skills in a variety of situations. You will study the management theories of Taylor and Fayol, as well as Bill Gates and Lee Iacocca, in ways that will allow development of your managerial skills and understanding of power, leadership styles, motivation tools, organizational design, environmental scanning and change processes.

Prerequisite: BUS 131

BUS 235 Principles of Retailing (3 CR)

This course surveys the status of retailing today and its role in the economy. It examines the retail store and its customers, location, organization and management. It also covers aspects of merchandising such as buying, pricing, merchandise control, services and promotion.

BUS 236 Small Business Management (3 CR/W,S)

Do you have what it takes to own your own business? Discover that, as well as sources of financing, forms of legal ownership, niche marketing, and most importantly, how to avoid business failure.

BUS 243 Business Problems & Solutions (3 CR/W)

Course will use basic concepts learned in accounting, management, data processing, marketing and human resource management. Students will be given practical experiences through participation in computer-assisted management simulation and/or case studies. This will give students the opportunity to demonstrate and reinforce prior learning in their individual business curriculum.

COMPUTER ASSISTED DRAFTING (CAD)**CAD 121 Technical Drafting I (4 CR)**

First course in technical drafting sequence. Topics include basic projections, lettering, dimensioning, drafting standards and working drawings. **Prerequisite:** CAD 131

CAD 122 Technical Drafting II (4 CR)

Detailing of work drawings, including dimensioning, threads and fasteners, weld symbols, tolerances and allowances, and material selection; algebra, geometry and trigonometry are used. **Prerequisite:** CAD 121

CAD 131 Computer Assisted Drafting I (AutoCAD) (3 CR)

Course on the applications in which the phases of computer graphics are involved. A general introduction to drafting applications will be presented. **Recommended:** Windows and blue print reading experience

CAD 132 Computer Assisted Drafting II (AutoCAD) (3 CR)

This course is a continuation of Computer Assisted Drafting I; a more advanced application of drafting functions and skills will be presented. **Prerequisite:** CAD 131

CAD 133 Computer Assisted Drafting III (AutoCAD) (3 CR)

Working with 3D UCS Coordinate system, surfacing, solids modeling and re-engineering of 3D objects.

Prerequisite: CAD 132

CAD 140 Computer Assisted Drafting I - Micro Station (3 CR)

Course on the applications in which the phases of computer graphics are involved. A general introduction to drafting applications using Micro Station software will be presented.

Recommended: Windows and blue print reading experience

CAD 141 Computer Assisted Drafting II - Micro Station (3 CR)

This course is a continuation of Computer Assisted Drafting I-Micro Station; a more advanced application of drafting functions and skills will be presented. **Prerequisite: CAD 140**

CHEMISTRY (CEM)**CEM 121 Chemistry of Life (4 CR/E,W,S)**

This course meets the chemistry requirement for ADN nursing, elementary education and programs requiring a lab science course. It introduces the fundamental principles of general chemistry (structure of atoms and compounds, states, energy, equations, radioactivity, solutions and acids/bases), organic (structure and properties of major classes), and biochemistry (carbohydrates, proteins, lipids, metabolism and body fluids).

CEM 131 General Chemistry (4 CR/E,W)

Fills requirement for some non-science majors. Provides background for CEM 141 for those with no recent high school chemistry. Fundamental principles of chemistry such as states of matter, simple atomic and molecular structure, and the periodic classification of elements. The study of water emphasizes the properties of solutions and acid-base relations.

CEM 132 Organic & Biological Chemistry (4 CR/W)

This course is an extension of material covered in CEM 131. It is required in many bachelor's degree programs, including nursing. Organic topics include the structure, physical properties and chemical behavior of the major classes of organic compounds. The structure, function, formation and reactions of carbohydrates, fats, proteins, and nucleic acids are covered, including enzymes, chemical messengers, and biochemical energy production. **Prerequisite: CEM 131, CEM 141, or CEM 121 with a 3.0 or higher grade**

CEM 141 General Inorganic Chemistry (5 CR/E,W)
(REPLACES CEM 151)

This course is required for most sciences, engineering, and pre-professional health majors. Students who are required to take organic chemistry for their major should enroll in CEM 141 during their first semester. Topics include atomic and molecular structure, periodicity, chemical bonding, states of matter, kinetic molecular theory and stoichiometry. **Prerequisite: MTH 120**

CEM 142 General Inorganic Chemistry & Analysis (5 CR/W)
(REPLACES CEM 152)

This course is the second semester of general chemistry and extends material covered in CEM 141. Covered concepts include chemical thermodynamics, electrochemical reactions, reaction kinetics, acid-base theories, nuclear chemistry, and aqueous solutions with emphasis on equilibrium. Experiments include quantitative methods, stoichiometry, colorimetry, and gravimetric analysis. **Prerequisite: CEM 141**

CEM 241 Organic Chemistry (5 CR/F)
(REPLACES CEM 251)

Comprehensive study of the major classes of organic compounds, their structures and reactions. The stereo-chemical properties and spectra (IR and NMR) of molecules and their mechanisms of reactions are stressed. The laboratory experiments demonstrate techniques used in organic reactions, syntheses illustrating types of reactions, analysis of major classes of compounds and kinetic studies. **Prerequisite: CEM 142**

CEM 242 Organic Chemistry (5 CR/W)
(REPLACES CEM 252)

A continuation of CEM 241. **Prerequisite: CEM 241**

COMPUTER SCIENCE (CPS)**CPS 175 Computer Programming I Fortran (3 CR/F)**

Students explore the design, development, and testing of computer programs written in the FORTRAN language. A programming course for, but not limited to, engineering and computer science majors. **Corequisite: MTH 151**

CPS 177 CS1: Science & Engineering (3 CR/W)

Students study digital computing systems and how they are used to solve problems in science and engineering. Students use procedural and object-oriented programming capabilities of C++ to design, develop, and test computer programs involving topics as integration, differentiation, linear systems, etc. A computer science course for, but not limited to, engineering and computer science majors. **Prerequisite: MTH 151**

CPS 217 Computer Science II (3 CR)

A continuation of CPS 177. Students are introduced to major data structures used for data storage and processing. These include arrays, lists, stacks, queries, and trees. Algorithms for searching, sorting, and updating structures are developed and analyzed. **Prerequisite: CPS 177**

CRIMINAL JUSTICE (CRJ)**CRJ 101 Criminal Law (3 CR/E/W)**

Covers both substantive and procedural law at local, state, and federal levels. Special emphasis on the Michigan Penal Code and landmark court decisions.

CRJ 102 Criminal Investigation (3 CR/F)

Fundamentals of criminal investigation; theory and practice; crime scene to courtroom with emphasis on techniques appropriate to specific crimes.

CRJ 104 Criminal Justice Psychology (3 CR/E/W)

An overview of criminal behavior from a psych-social perspective. Contemporary research, theory and practice concerning the psychology of crime are reviewed.

CRJ 111 Introduction to Criminal Justice (3 CR/E/W)

History, evolution and philosophy of the American criminal justice system. Emphasis on the interrelationship of system components: police, attorneys, courts and corrections.

CRJ 112 Crime & Delinquency (3 CR/F)

Introduction to deviant behavior and current criminological theories with emphasis on synthesis and police applications to juveniles; diversion and status offenses considered.

CRJ 113 Introduction to Criminalistics (3 CR)

Scientific methods applied to the collection, identification, preservation and transportation of physical evidence. Taught in a laboratory setting.

CRJ 114 Police Administration & Operations (3 CR/W)

Administration and operation of a police department including line/staff activities.

CRJ 116 Fire Investigation I (3 CR)

Reviews arson and fire laws and their application. Investigative methods unique to the fire scene will also be covered. Particular value to criminal justice students and fire fighting personnel.

CRJ 117 Criminology (3 CR/E/W)

(SAME AS SOC 117)

This course is based upon theories and studies involving the nature, social construction and causes of crime, criminal behavior and criminal justice processes.

CRJ 118 Criminal Evidence (3 CR)

Nature and types of criminal evidence. Rules governing the admissibility of evidence at trial. Direct and circumstantial evidence. Presentation of physical testimony and other material evidence. **Prerequisite:** CRJ 101

CRJ 119 Client Growth & Development (3 CR/E/W,S)

A corrections-oriented course involving the study of normal versus criminal behavior, human development and criminal pattern. Also involves the study of specific problems including substance abuse, sexual and medical problems and disorders.

CRJ 120 Human Relations for Corrections (3 CR/E/W,S)

A study of the meaning and function of culture and the social and psychological implications of discrimination. Also involves a survey of minorities in Michigan, attitude formation and professional responsiveness.

CRJ 121 Introduction to Corrections (3 CR/E/W,S)

A survey of the American corrections system as a component of the criminal justice system.

CRJ 122 Corrections Administration & Operations (3 CR)

Administration and operation of a correctional facility from an administrator's perspective. Principles of organization and management as applied to a modern correctional facility will be covered.

CRJ 124 Institution Populations (3 CR/E/W,S)

The nature, composition and dynamics of the prison population as a separate society are central topics in this course.

CRJ 125 Parole & Probation (3 CR)

Pre and post institutional treatment and alternatives are presented. Consideration also given to diversion and community-based correctional programs.

CRJ 127 Corrections Law (3 CR/E/W,S)

Deals with the law as it applies to the correctional system. Applicable court cases and legislation will be considered. Topics will include sentencing, prisoners' rights and responsibilities; loss of rights, prisoner remedies; community corrections and restoration of rights of offenders.

CRJ 203 Field Studies (3 CR)

(SAME AS SOC 203)

Only open to students who have reached sophomore level (26 or more credit hours), minimum 2.5 GPA and permission of the department. An opportunity for students to work for one semester in a law enforcement agency.

DANCE (DAN)**DAN 121 Jazz Techniques (3 CR) (SAME AS HPF 221)**

Designed for the beginner who has had little or no recent dance experience. Explores contemporary jazz technique, the elements of dance, improvisation and composition work.

DIAGNOSTIC MEDICAL SONOGRAPHY (DMS)**DMS 100 Introduction to Diagnostic Imaging (3 CR/F,W,S)**

Students are introduced to the radiologic sciences. Modalities discussed include X-rays, nuclear medicine, ultrasound, computerized axial tomography (CAT), magnetic resonance imaging (MRI) and photon emission tomography (PET). Students learn indications for a variety of diagnostic studies, how they are evaluated and interpreted, correlations of multiple studies, and how to prepare the patient for the study.

DMS 101 Sonographic Orientation (3 CR/S)

This course prepares sonography students for their clinical work-site experiences. Students will explore interpersonal relationship skills, ethical decision-making, and a review of clinical technical skills as they relate to the on-site work experience. Students will learn basic cross-sectional anatomy as related to beginning sonographic scanning of the abdomen.

Prerequisite: Acceptance into DMS program

DMS 104 Introduction to Sonographic Instrumentation (3 CR/S)

Students will learn the history and basic principles of static and real-time ultrasound machines. The instrumentation of A-mode and its conversion into the real time B-mode scanners will be explored. Laboratory assignments reinforce learning activities. **Prerequisite:** MTH 131

DMS 105 Sonographic Techniques (3 CR/F)

This course instructs the DMS student in scan planes, anatomical positioning, scan protocols, scan preparations, scan scheduling, appropriate history recording, correlations with other diagnostic procedures, and the techniques required for initiating and completing diagnostic sonographic procedures of the abdominal, obstetrical and gynecological patients.

Prerequisites: DMS 101 and DMS 104

DMS 107 Sonographic Orientation—Vascular (3 CR)

This course prepares sonography students for their clinical work-site experiences. Students will explore interpersonal relationship skills, ethical decision-making, and a review of clinical technical skills as they relate to the on-site work experience. Students will learn basic cross-sectional anatomy as related to beginning sonographic scanning of the abdomen and arterial venous systems.

DMS 110 Interpretation I (4 CR/F)

In-depth cross-sectional anatomy related to sonographic scanning of the abdomen, pelvis, and gravid uterus are presented. Specific attention to the coursing of vessels from points of origin to their location of termination is stressed and mastery level achievement is encouraged and expected.

Prerequisite: DMS 101

DMS 122 Clinical Experience I (6 CR/F)

Students receive supervised clinical work experience in an approved clinical education center. This course provides basic scanning opportunities, patient interviewing techniques, professional attitudes and ethics, and other basic patient/professional situations under the direct supervision of a registered diagnostic medical sonographer (RDMS). Completion of professional and technical scanning proficiencies are required. A minimum of 450 clinical hours are required to complete this course. **Prerequisite:** DMS 101

DMS 140 Sonographic Orientation & Technique (3 CR)

Prepares students for their clinical work-site experiences. Students will explore interpersonal relationship skills, ethical decision-making, and a review of clinical technical skills as they relate to the on-site work experience. Students will learn basic cross-sectional anatomy of the heart and will focus on beginning scanning techniques.

DMS 141 Adult Echo I (4 CR)

This course will instruct students to the normal anatomy and physiology of the adult heart. Topics will include ventricular wall segments and nomenclature, normal values and measurements determined by 2-D and m-mode calculations, normal physiology and coronary artery circulation.

Corequisite: DMS 140

DMS 143 Echo Clinical I (3 CR)

Students receive 240 hours of supervised clinical experience in an echo lab at an approved medical facility. This course provides hands-on experience in basic cardiac imaging, patient care, and application of knowledge and skills acquired in DMS 140 and DMS 141. **Corequisites:** DMS 140, DMS 141

DMS 144 Cardiovascular Principles (3 CR)

This course is a study of cardiac physiology, intracardiac pressures and principles of flow, cardiac hemodynamics and principles of Doppler. Problem solving, evaluation and performing basic echocardiographic interpretation will be covered in this course. **Prerequisite:** DMS 140, DMS 141

DMS 147 Echo Clinical II (5 CR)

Students receive 384 hours of supervised clinical experience in an echo lab at an approved medical facility. This course provides hands-on experience in intermediate level cardiac imaging, use of cardiovascular equations, and application of knowledge and skill acquired in DMS 144.

Prerequisite: DMS 143 **Corequisite:** DMS 144

DMS 151 Peripheral Arterial I (3 CR/F)

This course facilitates student learning of diagnostic testing methods for the peripheral arterial systems of the upper and lower extremities. Testing methods covered will include segmental pressures, Color Doppler Imaging (CDI) and duplex sonography. **Prerequisite:** BIO 155

DMS 152 Peripheral Arterial II (3 CR/W)

This course, a continuation of DMS 151, facilitates student learning of diagnostic testing methods for the peripheral arterial systems of the upper and lower extremities. Testing methods covered will include segmental pressures, color Doppler imaging (CDI) and duplex sonography. Abdominal vascular testing techniques will be included. **Prerequisite:** DMS 151

DMS 155 Peripheral Venous (3 CR/F)

This course facilitates student learning of diagnostic testing methods for the peripheral venous systems of the upper and lower extremities. Venous hemodynamics and testing methods covered include all areas of color Doppler imaging (CDI), air and photo plethysmography. **Prerequisite:** BIO 155

DMS 161 Vascular Clinical I (4 CR/F)

Students receive 300 hours of supervised clinical experience in an approved vascular laboratory. This course provides hands-on experiences in basic color Doppler imaging (CDI), hemodynamics, segmental pressures and duplex sonography. Students are instructed and supervised by registered vascular technologists. Completion of clinical competencies is required to complete this course.

DMS 206 Sonographic Instrumentation (4 CR/W)

Students explore the mechanics of A-mode, B-mode, M-mode, Doppler, and real time equipment. Accessory equipment such as cameras, transducers, phased, annular and linear arrays, and all types of hard copy documentation instruments are investigated. Multiple methods of preventative maintenance and quality control are presented. Laboratory reinforces learning activities.

DMS 211 Interpretation II (4 CR/W)

Students learn advanced cross-sectional anatomy and pathology as related to sonographic scanning of the abdomen, pelvis, and gravid uterus. The class gives specific attention to pathological change of specific, non-specific diseases, and trauma as they relate to sonographic imaging and sonographic interpretation of the abdomen, pelvis, gravid uterus, and small parts. Mastery level achievement is encouraged and expected. **Prerequisites:** DMS 110 & DMS 122

DMS 212 Interpretation III (4 CR/S)

Advanced scanning practices with introduction to cardiac, peripheral vascular, neurosonography, breast, prostate, and musculoskeletal scanning. Invasive procedures and intra-operative scanning protocols and techniques will be enhanced upon. Opportunity and aid is given for ARDMS board applications. Extensive review of all facets of sonography is included in preparation for the ARDMS board exams. **Prerequisites:** DMS 211 & DMS 223

DMS 223 Clinical Experience II (6 CR/W)

Supervised clinical experience in an approved clinical education center. Advanced scanning techniques to demonstrate cross-sectional anatomy and pathology of specific and non-specific disease and traumatic changes. Specific attention is given to fetal development, fetal anomalies, abnormal pre-natal and maternal conditions as they relate to sonographic scanning and interpreting of images. Although the student is still under the supervision of an RDMS professional, the student is expected to perform sonographic procedures independently as a regular portion of this course. Completion of professional and technical scanning proficiencies are required. A minimum of 450 clinical hours are required for successful completion of this course. **Prerequisite:** DMS 122

DMS 224 Clinical Experience III (6 CR/S)

Supervised clinical experience in an approved clinical education center. Advanced scanning procedures, methods and experience are provided in this course. Students experience advanced scanning modalities via M-mode, Doppler, 3 D, real-time and invasive procedures. Comparative interpretations of sonographic imaging with other diagnostic imaging modalities are provided. Scanning experience is coupled with image interpretation sessions with the radiologists. Students are expected to initiate, perform, and complete all sonographic procedures with direct supervision by an RDMS. Successful completion of professional and technical scanning proficiencies are required. A minimum of 450 clinical hours are required to successfully complete this course.

Prerequisites: DMS 211 & DMS 223

DMS 230 Breast Ultrasound (3 CR)

Breast ultrasound provides instruction in sonographic imaging of the human breast in normal and altered states. Students will learn embryology of the breast, advanced cross-sectional anatomy and pathology as related to sonographic scanning of the breast. The course gives special attention to pathological changes of specific and non-specific diseases, and trauma as they relate to sonographic imaging and interpretation of the breast. Sonographic correlation with other imaging modalities, biopsy techniques, ductography, sentinel node procedures, histology of the breast, and implants will be highlighted. Mastery level achievement is necessary and

expected to be successful within this course. **Prerequisites:** ARDMS or ARRT credentials or successful completion of DMS 211 & 223

DMS 240 Adult Echo II (4 CR)

Students will focus on the abnormal heart. Acquired valvular disease by m-mode, two dimensional and Doppler techniques will be learned. Coronary artery disease, diseases of the myocardium, cardiac masses and tumors, pericardial disease and diseases of the aorta will be studied. Students will also learn the various appearances of congenital heart disease in the adult heart. **Prerequisites:** DMS 140, DMS 141 AND DMS 144

DMS 242 Echo Clinical III (7 CR)

Students receive 512 hours of supervised clinical experience in an echo lab at an approved medical facility. This course provides hands-on experience at an advanced level of cardiac imaging and use of cardiovascular equations. Interpretation skills will apply. **Prerequisites:** DMS 143 and DMS 147
Corequisites: DMS 240 and DMS 206

DMS 251 Cerebrovascular I (3 CR/W)

Facilitates student learning of diagnostic testing methods and hemodynamics of the extracranial vessels of the head and neck. Testing methods covered include color Doppler imaging (CDI) and duplex sonography. **Prerequisite:** BIO 155

DMS 253 Cerebrovascular II (1 CR)

Continuation of DMS 251, Facilitates student learning of diagnostic testing methods and hemodynamics of the intracranial vessels. Testing methods covered include color Doppler imaging (CDI) and duplex sonography.
Prerequisite: DMS 251

DMS 265 Vascular Clinical II (4 CR/W)

A continuation of DMS 161. Students receive 300 hours of supervised clinical experience in an approved vascular laboratory. Provides hands-on experiences in basic and advanced color Doppler imaging (CDI), hemodynamics, segmental pressures and duplex sonography. Students are instructed and supervised by registered vascular technologists. Completion of clinical competencies required to complete this course.

DMS 266 Vascular Clinical III (4 CR/S)

A continuation of DMS 265. Students receive 300 hours of supervised clinical experience in an approved vascular laboratory. Provides hands-on experiences in advanced color Doppler imaging (CDI), hemodynamics, segmental pressures and duplex sonography. Students are instructed and supervised by registered vascular technologists. Completion of clinical competencies is required to complete this course.

ECONOMICS (ECN)

ECN 231 Macroeconomics (3 CR/F,W,S)

Covers macroeconomics. Explains the operation of free markets, the role of government in the economy, measurement of the national product, inflation and unemployment, monetary and fiscal policy, and economic growth.

ECN 232 Microeconomics (3 CR/F,W,S)

Concerns microeconomics, the market structure of firms operating in competition and monopoly, labor markets and unions, how income is distributed, current economic problems, international economics, and alternative economic systems.

EARLY CHILDHOOD EDUCATION (ECE) (formerly EDU)

ECE 130 Emergent Literacy (3 CR)

Based on the assumption that literacy begins long before a child's exposure to formal instruction, this course offers a blend of theory and application while enhancing the students understanding of emergent literacy. It explores the development and assessment of language and writing, the role of children's literature and shared language time, and the teacher's role in designing learning activities and providing a literacy-rich environment. Two observations outside of the scheduled class time will be required.

ECE 131 Working with Infant/Toddler (3 CR)

Working with children ages birth-3 years is not a scaled-down version of preschool. In this course, students study young infants (birth-8 months), Mobile infants (9-17 months) and toddlers (18-36 months). In preparation for providing quality care, students explore ways: 1) to establish and maintain a safe and healthy learning environment; 2) to advance physical and intellectual competence; 3) to support social and emotional development and provide positive guidance; 4) to establish positive and productive relationships with families; 5) to ensure a well-run, purposeful program responsive to participant needs; and 6) to maintain a commitment to professionalism. Two observation/field experiences outside the scheduled class time (associated with CDA competency areas) will be required. This course can be used, with others, to meet educational requirements for application to the Council for Professional Recognition for an Infant/Toddler Child Development Associate Certificate.

ECE 132 Working with Exceptional Children (3 CR)

Young children with special needs are increasingly receiving services in integrated settings along with their typically developing peers. In preparation for providing successful inclusion experiences, students explore: 1) the uniqueness of early childhood as a developmental phase; 2) the significant role of families in early education and intervention; 3) the role of developmentally and individually appropriate practices; 4) the importance of culturally competent professional behavior; and 5) the importance of collaborative interpersonal and inter-professional actions. One observation/field experience outside of the scheduled class time for each competency area is required.

ECE 133 Program Management (3 CR)

A high quality early childhood program is one that meets the needs of and promotes the physical, social, emotional and cognitive development of the children and adults—parents, staff and administrators—who are involved in the program. In preparation for administering a high quality program, students explore: 1) administration, organization and operation strategies - principles of management, 2) physical and programmatic environments, 3) curriculum, 4) staffing - selection and development, 5) communication - child-staff-parent interactions, 6) collaboration, 7) program evaluation, and 8) accreditation. Students will need to be working in, or have access to a program, where they can conduct two interviews/observations outside of the scheduled class time.

ECE 140 Early Childhood Guidance (3 CR)

This course explores issues related to health and safety within an early childhood setting and examines strategies in communicating and guiding the behaviors of young children. Methods and materials to enhance self-concept will also be explored. Students will learn about: 1) providing a safe environment to prevent and reduce injuries; 2) promoting good health and nutrition, and providing an environment that contributes to the prevention of illness; 3) actively communicating with children and providing opportunities and support for children to understand, acquire, and use verbal and non-verbal means of communicating thoughts and feelings; 4) providing physical and emotional security for each child and helping each child to know, accept and take pride in self, and to develop a sense of independence; and 5) providing a supportive environment in which children can begin to learn and practice appropriate and acceptable behaviors as an individual and as a group. These are 5 of the CDA competency standards. One observation outside the scheduled class time for each competency area is required.

ECE 142 Professionalism in Child Development (3 CR)

This course focuses on professionalism, families and program management. Students will: 1) explore strategies in communicating and establishing productive relationships with families, including maintaining an open, friendly, and cooperative relationship with each child's family that encourages their involvement in the program and supports the child's relationship with their family; 2) explore strategies for utilizing all available resources in order to manage an effective program operation by being a competent organizer, planner, record keeper, communicator and cooperative co-worker, and 3) address issues of professional commitment, ethical practices and advocacy in order to promote quality in early care and education service. These are three of the CDA competency standards. Students will also learn observation techniques and ways to individualize programming for young children. One observation outside the scheduled class time for each competency is required.

ECE 143 CDA Assessment Preparation (1 CR)

This course is designed to assist the student in preparing for direct assessment for the Child Development Associate Credential or CDA. The course includes guidance in preparation of documentation and review of standards related to 13 functional areas. All requirements will follow the recommendations of the Council for Professional Recognition. *Only students preparing an application for the CDA credential should enroll.* **Prerequisites:** ECE 140, ECE 142 and ECE 144

ECE 144 Early Childhood Education (3 CR)

(SAME AS EDU 246)

This course focuses on skills needed by providers in an early childhood setting. With a basis in early childhood development, the course content examines the meaning, importance, materials and methods in providing an appropriate learning environment for young children and enhancing social, physical, cognitive and creative development. Students will explore: 1) learning environments in terms of space, relationships, materials and routines as resources for constructing an interesting, secure, and enjoyable learning environment that encourages play, exploration and learning; 2) how to promote the physical development of children through the use of a variety of equipment, activities and opportunities; 3) enhancing the intellectual competence of children by providing activities and opportunities that encourage curiosity, exploration and problem-solving appropriate to the developmental levels and learning styles of children; 4) ways to provide opportunities that stimulate children to play with sound, rhythm, language, materials, space and ideas in individual ways and to express their creative abilities, and 5) social development in children through group acceptance, communication and getting along with others, empathy and mutual respect among children and

adults. These are five of the CDA competency standards. One observation outside the scheduled class time for each competency area is required.

ECE 150 Directed Teaching I (2 CR)

This course is designed to provide opportunities for students to integrate theory and practice in a childcare setting. Directed Teaching I allows for guided experiences with children, families and collaborative service partners under the supervision of a mentoring teacher. Through direct work in a childcare setting, journals, group discussions and individual instructor observations and meetings, students will build upon their understanding of the best possible current practices in early childhood education. Directed Teaching I focuses on the physical and programmatic environment. One hundred (100) clock hours of direct classroom experience are required.

Prerequisite: ECE 140 and ECE 144

ECE 151 Directed Teaching II (2 CR)

This course is designed to provide opportunities for students to integrate theory and practice in a childcare setting. Directed Teaching II allows for guided experiences with children, families and collaborative service partners under the supervision of a mentoring teacher. Through direct work in a childcare setting, journals, group discussions and individual instructor observations and meetings, students will build upon their understanding of the best possible current practices in early childhood education. Focus for Directed Teaching II includes factors that influence learning and lesson planning experience. One hundred (100) clock hours of direct classroom experience are required. **Pre- or Co-requisite:** ECE 150

ECE 152 Directed Teaching III (2 CR)

This course is designed to provide opportunities for students to integrate theory and practice in a childcare setting. Directed Teaching III allows for guided experiences with children, families and collaborative service partners under the supervision of a mentoring teacher. Through direct work in a childcare setting, journals, group discussions and individual instructor observations and meetings, students will build upon their understanding of the best possible current practices in early childhood education. Focus for Directed Teaching III includes observation and assessment, individualized planning and communication with parents. One hundred (100) clock hours of direct classroom experience are required. **Prerequisite:** ECE 151 and ECE 142

EDUCATION (EDU)

EDU 121 Exploring Teaching (3 CR/E/W)

"What are the things prospective teachers beginning their formal study of teacher education should know?" Students will gain a broader knowledge of the role of professional teacher and education components: schools, students, teachers and current issues. Students will explore and experience key concepts and skills through reading, research, discussions, design, execution and presentation of a lesson, professional portfolio development, technology, and 30 hours of educational site-based documented experiences.

ELECTRONIC TECHNOLOGY (ELT) (formerly EET)

ELT 070 Basic Industrial Electricity (2 CR)

Fundamentals of electricity covering such topics as: voltage, current and resistance; Ohm's Law; series circuits; parallel circuits; AC, DC, power; capacitors; inductance; transformers; various solid state devices; motors of various types. Class is designed for general maintenance mechanics, heating/refrigeration/air conditioning mechanics, other non-electrician uses.

ELT 074 National Electric Code (2 CR)

Study of the national and local electric code for wiring and apparatuses. Covers wiring design and protection, wiring methods and materials, equipment for general use including motors and controllers, special occupancies such as hazardous location; special equipment such as electric welding an machine tool wiring, and the use of tables and diagrams for the solution of practical wiring problems.

ELT 119 DC Fundamentals (3 CR)

Students examine the fundamental concepts of DC circuits including electricity, Ohm's law, resistance, and power. Series and parallel circuits will also be explored.

ELT 120 Circuit Analysis I (4 CR)

Students examine the fundamental concepts of DC circuits including electricity and magnetism, resistance, capacitance, inductance, series and parallel circuits, power and basic electrical measurements.

ELT 124 AC Fundamentals (2 CR)

A study of alternating electrical current is presented. Topics include AC measurements, inductive reactance and capacitive reactance in AC circuits. Transformers are also explored.

ELT 125 Circuit Analysis II (3 CR)

A study of alternating electrical current is presented. Topics include AC measurements, resistance, inductance and capacitance in AC circuits. Transformers and filters are explored.

Prerequisite: ELT 120

ELT 129 Semiconductor Devices (2 CR)

A study of electronic devices including diodes, transistors, integrated circuits, and other semiconductor devices; their characteristics and application to practical circuitry.

ELT 130 Electronics I (4 CR)

Study of electronic devices including diodes, bipolar and field effect transistors, integrated circuits, and other semiconductor devices; their parameters, nomenclature, characteristics, and application to practical circuitry. **Prerequisite:** ELT 125

ELT 139 Digital Electronic Fundamentals (3 CR)

A beginning course in digital electronics. Topics include number systems, basic logic gates, counters, shift registers. Decoders and encoders will also be explored.

ELT 140 Introduction to Digital Electronics (4 CR)

Beginning course in digital electronics. Topics include number systems, Boolean algebra, and basic logic gates and circuits.

ELT 148 Electrical Math I (2 CR)

Introductory course beginning with algebra involving addition, subtraction, multiplication, division, equations, powers of ten, Ohm's Law, factoring, and other functions of math related to electrical problem solving.

ELT 149 Electrical Math II (2 CR)

Advanced course covering angles, trigonometric problems, right triangles, equations, vectors, periodic functions and related math applications as a tool of the trade. **Prerequisite:** ELT 148

ELT 150 Residential Wiring (2 CR)

How to interpret residential blueprints, wiring diagrams, wiring systems, and supplementary information contained in the specifications, as well as requirements of the National Electric Code. Covers symbols and outlets, determining the number of circuits, conductor size and types, switch controls, heaters, water pumps, service entrance, furnace hook-up, and low voltage wiring.

ELT 151 Commercial Wiring (2 CR)

Learn to interpret wiring plans of commercial buildings for the electrical installation involved, as well as requirements of three phase 208/120 volt system, a variety of commercial occupancies, lighting fixtures, service entrances and metering facilities.

ELT 152 Industrial Wiring (2 CR)

Covers preliminary plan study, sub-station and high-voltage metering equipment, feeder duct and distribution transformers, panel boards and sub-feeders, lighting circuits, motors and controllers, precipitron units, synchronous condensers, three-way phase trolley ducts, signal systems, ventilating and alternate methods of feeder layout.

ELT 215 Electrical Troubleshooting (2 CR)

Troubleshooting in various areas such as: control circuits, combination starters, control devices, special controls, DC motors, AC motors, lighting systems with use of schematics, building drawings, and with emphasis on cutting troubleshooting time.

ELT 220 Industrial Motion Control (3 CR)

Motion controls as used in real world situations. Including PLC, Robotics, Servos, Sensing devices, Actuators, and Controls. **Prerequisite:** ELT 119, ELT 124, and ELT 139

ELT 250 Electric Motors & Controls (4 CR)

Basic principles involved in the operation of motors and controls. Study includes single-phase motors and their operating principles, polyphase systems and the various control devices used with these systems.

ELT 260 Basic Programmable Controllers (4 CR)

Basic programmable controllers course for apprentices and skilled trades trainees looking at the history, characteristics, application and limitation of PCs. Numeration systems, binary-coded decimals, ASCII, gray code and Boolean logic studied. Additional study includes input/output devices, processing and programming functions, program development, documentation, start-up and troubleshooting.

ELT 265 SLC 500 Programming & Troubleshooting (2 CR)

Students will gain skills in programming and troubleshooting real world inputs and outputs. Hands-on instruction is used exclusively.

ELT 266 RSLOGIX Programming & Troubleshooting (2 CR)

For RSLOGIX programming and troubleshooting. Topics include adding rungs, addressing I/O, online and offline editing and troubleshooting tools.

ELT 270 Communications Circuits (4 CR)

Circuits and theory related to electronic communication. Topics covered include RF amplifiers and oscillators, modulation and detection, fiber optics, antennas, digital techniques, transmitters and receivers.

Prerequisite: ELT 125 and ELT 130

ELT 275 Robotics Systems (2 CR)

Designed to investigate the industrial robot and its role in an integrated manufacturing system. Topics include robot classification, work cells, tooling, sensors, programming, and system integration.

ELT 280 Digital Systems (4 CR)

Hardware organization of digital systems with emphasis on microprocessors and minicomputers. Treatment extends from general programming and interfacing techniques common to all microprocessors to the operation, programming, and applications of representative microprocessor families.

Prerequisite: ELT 140

ENGINEERING (EGR)**EGR 100 Introduction to Engineering (4 CR/F)**

This course will introduce students to the field of engineering. Students will become familiar with each major area of specialization. Emphasis will be placed on problem solving techniques and interpretation of data and results. Replaces EGR 153.

EGR 261 Engineering Mechanics I (4 CR/F)

Students survey the fundamentals of solid mechanics. This course covers equilibrium, static equivalence, stress, strain, material behavior, particular application to deflection of beams and axial, bending, torsion, shear and combined stresses, as well as an introduction to stability of columns.

Prerequisite: MTH 154

EGR 262 Engineering Mechanics II (4 CR/W)

Students examine the principles of dynamics, including the motion of a particle, the kinematics and kinetics of plane motion of rigid bodies, the principle of work and energy, impulse and momentum, and mechanical vibrations. **Prerequisite:** EGR 261

EMERGENCY MEDICAL SERVICES (EMS)**EMS 110 CPR & First Aid (2 CR)**

(SAME AS NUR 110 & HOC 110)

Provides instruction in adult, child and infant cardiopulmonary resuscitation, as well as standard first aid. It is designed to prepare an individual to handle medical or accidental emergencies until professional help arrives or until the victim can seek help, and to handle minor injuries that do not require professional assistance. Upon successful completion of this course the student is qualified to receive CPR and Standard First Aid certificates through the Red Cross.

EMS 125 EMT: Ambulance (6 CR/F)

Part I of a two semester EMT-A course. Completion of a clinical practicum is required and must be arranged on student's time. Completion of EMT 125 and EMT 126 enables student to take Michigan EMT Licensing exam. Lab included.

EMS 126 EMT: Ambulance (6 CR/W)

Part II of a two semester EMT-A course. Completion of a clinical practicum is required and must be arranged on student's time. Completion of EMT 125 and EMT 126 will enable student to take Michigan EMT Licensing exam.

Prerequisite: EMS 125

EMS 211 Paramedic I (8 CR/F)

Paramedic course leading to certification as advanced emergency medical technician. First semester covering medical, legal, patient assessment, acid base balance, IV therapy, and respiratory. **Prerequisite:** BIO 155 or can be taken concurrently

EMS 212 Paramedic Lab I (2 CR/F)

Laboratory for EMS 211.

EMS 213 Paramedic Clinical I (2 CR/F)

Clinical for EMS 211.

EMS 221 Paramedic II (8 CR/W)

Continuation of paramedic training, covering cardiology and pharmacology. **Prerequisite:** EMS 211

EMS 222 Paramedic Lab II (2 CR/W)

Laboratory for EMS 221.

EMS 223 Paramedic Clinical II (2 CR/W)

Clinical for EMS 221.

EMS 231 Paramedic III (8 CR/S)

Continuation of paramedic training, covering medical emergencies, environmental emergencies and psychological emergencies. **Prerequisite:** EMS 221

EMS 232 Paramedic Lab III (2 CR/S)

Laboratory for EMS 231.

EMS 233 Paramedic Clinical III (2 CR/S)

Clinical for EMS 231.

EMS 242 Paramedic Lab IV (2 CR)

This is the fourth and final lab in the paramedic program. During this lab time the student will review all practical skills in order to better prepare for the National Registry exam. In addition, the student will practice written test taking skills with sample tests and a national review manual. Class will meet every other week for the full semester of 16 weeks allowing 8 lab sessions. **Prerequisite:** EMS 231

EMS 243 Paramedic Clinical IV (6 CR)

This is the final clinical rotation for senior paramedic students. Students will schedule one EMS Ambulance shift per week along with one hospital shift per week. This clinical rotation will last for the full semester of 16 weeks.

Prerequisite: EMS 231

ENGLISH (ENG)**ENG 101 Introduction to Writing (3 CR/E,W,S)**

Intensive course in composition for students who need supplementary help in writing. A personal approach helps students enhance their writing abilities, resolve writing problems and explore writing strategies.

ENG 102 Introduction to Writing (3 CR/E,W,S)

Intensive course in composition for students who need supplementary help in writing. A personal approach helps students enhance their writing abilities, resolve writing problems and explore writing strategies.

ENG 106 Publication Newspaper (3 CR/E,W)

Students work with editors and advisors of college newspaper in reporting, copywriting, photography, layout, make-up, advertising sales and financing. May be repeated once for credit.

ENG 109 Reading Essentials (3 CR/E,W,S)

Provides the most fundamental support for students who need to develop college-level reading skills. Students must show an ability to read some pre-college writing independently. They are provided with a sequentially structured approach to comprehending college-level writing. Student writing is a significant component.

ENG 110 College Reading (3 CR/E,W,S)

Intended for students who have developed their reading skills nearly to the college level. Further skill and knowledge development focuses on the common patterns of text found in both narrative and expository writing, on strategies for self-monitoring and memory enhancement, and on the development of vocabulary typically found in college level textbooks. Student writing is a significant component.

ENG 131 Writing Experience (3 CR/E,W,S)

An intensive, personalized writing course designed to meet the needs of students from a wide range of disciplines. Course is designed to help students become comfortable and confident with their writing while working to improve and refine skills. Frequent writing and conferences. Research methodology and documentation included.

ENG 132 Writing Experience (3 CR/E,W,S)

Continuation of the writing instruction and practice begun in English 131 with an emphasis on critical thinking, information gathering and those forms of writing useful to academic and professional life. Research paper required.

Prerequisite: ENG 131

ENG 206 Publication Newspaper (2 CR/E,W)

Students work with editors and advisors of college newspaper in reporting, copywriting, photography, layout, make-up, advertising sales, and financing. May be repeated once for credit. **Prerequisite:** ENG 106

ENG 210 Introduction to Film (3 CR/W)

Students are introduced to film as a visual art and to basic film terms and techniques, such as composition, movement, editing and sound. Readings in film history, genre, theory and criticism. Includes JCC Winter Film Series.

Prerequisite: ENG 131

ENG 232 Technical & Business Writing (3 CR/E,W,S)

A course designed to provide practice in a variety of written and oral communications to meet the requirements of the workplace. Projects may include mechanism descriptions, instructions, resumes, proposals, feasibility and other reports. Frequent writing, both in and out of class, as well as oral presentations, group projects, and individual conferences.

Prerequisites: ENG 131

ENG 236 Women In a Changing Society (3 CR/W)

(SAME AS SOC 236)

Inquiry into historical and changing roles of women, looking at causes of these changes and their effects on women and society through literature, sociology, biology and history.

Prerequisite: ENG 131

ENG 246 Short Story & Novel (3 CR/E,W)

Students are introduced to traditional and contemporary fictional genres. This course emphasizes understanding, appreciation, and the critical analysis of narrative art. Selections for study are chosen from English and American literature as well as world literature in translation. **Prerequisite:** ENG 131

ENG 247 Poetry & Drama (3 CR/E,W)

Students are introduced to lyric and dramatic genres. This course emphasizes understanding, appreciation, and enjoyment of poetry and theatre as language performances and literary forms. Selections for study are chosen from English and American literature as well as world literature in translation.

Prerequisite: ENG 131

ENG 249 African-American Literature (3 CR)

Survey of the literature of African-American writers. Emphasis is on the major writers in narrative, poetry, fiction, essay and drama. **Prerequisite:** ENG 131

ENG 252 Shakespeare (3 CR/W)

Students read representative plays and are introduced to the Elizabethan world. Course emphasizes developing understanding, appreciation, and critical analysis skills. **Prerequisite:** ENG 131

ENG 254 Children's Literature (3 CR/E,W)

Students survey the various genre of children's literature from a critical point of view. Course emphasizes developing student competency in oral reading and presentation of children's literature. **Prerequisite:** ENG 131

ENG 255 American Literature—19th Century (3 CR/E,W)

Students examine the development of a distinctive American literature and culture during the 19th century. Students read selections from many writers, with emphasis on major figures such as Hawthorne, Melville, Thoreau, Emerson, Poe, Dickinson, Whitman, Douglass and Jacobs. **Prerequisite:** ENG 131

ENG 256 American Literature—20th Century (3 CR/E,W)

Students examine the literature and culture of America from 1890 to the present, with emphasis on the development of organic and post-modern writing in narrative, poetic and critical modes. **Prerequisite:** ENG 131

ENG 257 World Literature I (3 CR)

Students compare major themes and writers from Africa, America, Asia and Europe. **Prerequisite:** ENG 131

ENG 261 Creative Writing I (3 CR/E,W)

Students experiment with writing poetry, fiction, drama and creative nonfiction for discussion and criticism. Students invent, collaborate and revise before submitting a portfolio of their work. Contemporary readings and visiting authors/videos enhance the class, but primary attention is given to students' creative writing process. **Prerequisite:** ENG 131

ENG 262 Creative Writing II (3 CR)

Students in this workshop write fiction, poetry and other forms and present writing for criticism and discussion. Contemporary readings emphasize participation of writers in a living act. Students write and workshop fiction, poetry and other genres. Contemporary readings emphasize writing invention and writing communities. **Prerequisite:** ENG 261

FINANCE (FIN)**FIN 100 Introduction to Wall Street (1 CR/E,W)**

Introduces the student to the world of investing and the institutions in the financial marketplace. Covers the organization and function of the stock market, brokerage firms, financial information on the Internet and other topics appropriate to an understanding of Wall Street.

FIN 101 Personal Finance (3 CR)

Introduces the student to the workings of our economy, personal financial planning and budgeting, building for the future, and making your money work.

FIN 102 Introduction to Wall Street II (1 CR)

Designed for the advanced novice or intermediate investor. The course will help develop the skills to analyze individual stocks and to construct a portfolio to meet financial goals. **Prerequisite:** FIN 100

FIN 210 Principles of Finance (3 CR)

Introduces the student to current asset management, financing growth, cost of capital, capital budgeting, and the workings of the money and capital markets. **Prerequisite:** ACC 232

FRENCH (FRN)**FRN 131 Elementary French I (4 CR/F)**

Introduces and develops the four skills of language learning: listening, speaking, reading and writing, with special emphasis on listening and speaking.

FRN 132 Elementary French II (4 CR/W)

Provides increased practice in the basic language skills; listening, speaking, reading and writing. **Prerequisite:** FRN 131

FRN 231 Intermediate French I (4 CR/F)

Improves the basic skills of language learning with emphasis on speaking and writing. Introduces readings from well-known French authors. **Prerequisite:** FRN 132

FRN 232 Intermediate French II (4 CR/W)

Continues to stress speaking practice and writing improvement, with readings and discussions in French. **Prerequisite:** FRN 231

FRESHMAN YEAR SEMINAR (FYS)**FYS 101 Be a Master Student (2 CR)**

Extended orientation to college designed to help students be more effective. Includes developing skills in writing, reading, critical thinking, decision-making, note taking and time management. Also assists students in identifying career goals, selecting a major and coping with test anxiety.

GEOLOGY (GEL)**GEL 160 Introduction to Geology (4 CR/F,W)**

The course covers minerals, rocks, earthquakes and volcanoes. It also covers the landscapes and behaviors of continents and oceans. Diagrams, photographs, topographic maps, Internet resources and hands-on exercises are utilized to support the concepts.

GEL 161 Historical Geology (4 CR)

Study of the history of the earth, the evolution of continents, oceans, and life before humans. Exercises include graphic problems in subsurface geology.

GENERAL EDUCATION (GEN)**GEN 022 Portfolio Development (1 CR)**

Students may receive credit towards a degree for certain life experiences. Course guides student in developing a portfolio to document their learning experience.

GEOGRAPHY (GEO)**GEO 131 Physical Geography (3 CR/F)**

The course begins with maps and grid systems. Map exercises are used all semester to enhance the textbook. Other topics include meteorology, vegetation, earth materials and a range of tectonic and landscape subjects.

GEO 132 World Regions (3 CR/W)

This course covers all regions of the world from a human perspective. Topics include resources, population, settlements, agriculture, manufacturing and transportation. There is special emphasis on Internet research in the classroom.

GERMAN (GER)**GER 131 Elementary German (4 CR/F)**

Introduces and develops the four skills of language learning: listening, speaking, reading and writing, with special emphasis on listening and speaking.

GER 132 Elementary German (4 CR/W)

Continuation of German 131 with increased practice in listening, reading, writing and speaking. **Prerequisite:** GER 131

GER 231 Intermediate German (4 CR/F)

Emphasis on selected readings of representative German contemporary writers. Practice in writing, speaking and listening. **Prerequisite:** GER 132

GER 232 Intermediate German (4 CR/W)

Continuation of German 231. Selected readings from contemporary writers and poets. Emphasis on speaking and writing improvement. **Prerequisite:** GER 231

HISTORY (HIS)**HIS 120 Ancient History (3 CR/F,W)**

Attempts to answer the question, "Where did it all begin?" with a leisurely survey of the politics, art and religion of the ancient world from history's beginning in Sumeria to the end of the ancient world when the Western Roman Empire faded out of sight in 476 A.D.

HIS 125 African—American History (3 CR)

Examines the role African-Americans who have historically played in the political, economical, and social construction of America.

HIS 131 Western Civilization to 1555 (4 CR/F,W,S)

Together with History 132, constitutes the basic history course, as well as an introduction to the humanities; the roots of Western culture and its development through the Reformation. Emphasis is placed upon the social, philosophical, scientific, artistic, and religious evolution, as well as the political setting.

HIS 132 Western Civilization 1555 to Present (4 CR/F,W,S)

Continuation of History 131, emphasizing the development of new political areas, economic and social theories, the evolution and expansion of modern states, and efforts to control international tensions.

HIS 231 Development of the U.S. Through the Civil War (3 CR/F,W,S)

The study of American national history beginning with the colonization to the Civil War. Themes include exploration and settlement, development of political theory, development of the West and its influence on the country, the growth of sectionalism and the Civil War.

HIS 232 Development of the U.S. From the Civil War (3 CR/F,W,S)

Continuation of HIS 231, from the period of the Civil War and Reconstruction. Emphasis on industrial, commercial, and agricultural expansion; intellectual currents; outstanding social changes; the nation's expanding role in the world affairs, and the Cold War.

HIS 235 Twentieth Century History (3 CR)

Examination of national and international developments in the past century focusing on such matters as colonialism, global warfare, and emerging nations, appearance and disappearance of communism. In addition, polarization of wealth and power, the revolution in technology, communication, businesses and industry, the conflict between the globalization movement and national tendencies will be examined.

HEALTH OCCUPATIONS (HOC)**HOC 130 Introduction to Health Occupations (3 CR/F,W,S)**

Students through classroom and laboratory facilitation will examine health care teams, interactions between and reactions of patients in normal and altered states, professionalism, OSHA standards, medical ethics, lifting, moving, emergency assessment and response.

HEALTH & PHYSICAL FITNESS (HPF)**HPF 110 Golf (1 CR)**

Learn beginning skills, rules and courtesies. This course emphasizes the swing, chipping, and putting. Students play nine holes of golf. Some equipment may be provided.

HPF 139 Spinning (1 CR)

A fast paced, invigorating workout to music utilizing specialized "spinning" stationary exercise bikes. Students are able to exercise at their own pace. The class is designed for a wide range of fitness levels.

HPF 156 Lifetime Fitness (2 CR)

For beginning exercisers and those reconditioning from injury, disability, or illness. Emphasis is placed on balance, coordination, flexibility, muscular strength and endurance.

HPF 160 Wellness (1 CR/F,W,S)

Learn the theoretical and practical relationship of lifestyle to productivity. Students examine attitudes and behaviors that enhance quality of life and maximize personal potential. Students have opportunities for self-evaluation.

HPF 161 Personalized Fitness (1 CR)

Receive a personalized fitness program, which requires 25 hours of exercise during convenient times. This self-paced course emphasizes both cardiovascular and muscular fitness.

HPF 168 Weight Training & Conditioning (2 CR/F,W)

Includes both didactic and practical application of the principles of comprehensive exercise. Learn about the multi-dimensional components of exercise including cardiovascular, flexibility and body composition. Special focus is placed on muscular strength and endurance within the context of a wellness perspective. Under the supervision of the instructor, students work out in a state of the art fitness facility that includes Eagle/Cybex equipment and multiple cardiovascular machines as well as a ten-lap/mile track.

HPF 169 Aerobic Rhythms (1 CR)

Students at various fitness levels participate in a choreographed exercise/dance and step class for the improvement of cardiovascular fitness, strength and flexibility.

HPF 182 Light Walking (1 CR)

Use walking to develop cardiovascular fitness and lose weight. This course emphasizes both muscular endurance and flexibility.

HPF 184 Race Walking (1 CR)

Learn how to apply proper race walking techniques as well as training techniques that enhance race walking performance. This course emphasizes physical activity.

HPF 185 Circuit Training (1 CR)

Participate in a challenging aerobic workout. The class emphasizes cardiovascular fitness utilizing a variety of work stations.

HPF 187 Interval Training (1 CR)

Participate in a vigorous running workout. Intervals ranging in distance from 200-800 meters form the basis of the workout.

HPF 221 Jazz Techniques (3 CR) (SAME AS DAN 121)

Beginner to intermediate level class exploring contemporary jazz and modern dance techniques. Includes an introduction to the fundamentals of choreography, exploration of the elements of dance, and history of dance.

HPF 268 Advanced Weight Training (2 CR/F,W)

Participate in fitness evaluations and individually prescribed programs designed to develop strength, aerobic endurance and flexibility. **Prerequisite:** HPF 168

HPF 277 Stress Management (2 CR)

Examine current information and techniques related to stress management. Students learn basic concepts and skills related to the holistic management of stress.

HPF 278 Stress Management for Parents (2 CR)

Parents learn how to manage stress effectively and improve their parenting skills. The course will be practical in nature.

HUMANITIES (HUM)**HUM 131 Cultural Connections (3 CR/E,W,S)**

This interdisciplinary course examines contemporary issues, their human and technological components, and their historical precedents through art, music, literature and philosophy.

INFORMATION TECHNOLOGY EDUCATION (ITE)**ITE 040 MS Works – Windows (1 CR)**

Students are introduced to the software package Microsoft Works and its modules for word processing, spreadsheets and database. **Typing ability necessary to be successful in this class.**

ITE 042 MS Frontpage Workshop (1 CR)

Learn the following FrontPage components: creating and managing a Web site, adding a Web page, editing and enhancing a Web page, and building a Web for user input. This is one component of the Microsoft Office User Specialist Expert certification test. **Typing ability necessary to be successful in this class.**

ITE 043 Microsoft Outlook Workshop (1 CR)

Learn to use Outlook's components to create and use the calendar feature to schedule meetings and multiple day events, establish a "contacts" database, keep journals, notes and use the task manager for prioritizing jobs. This is one component of the Microsoft Office User Specialist Expert certification test. **Typing ability necessary to be successful in this class.**

ITE 044 MS Office Integrated Workshop (1 CR)

Capstone workshop in which students with current skill in MS Office Pro learn how to integrate the four applications. **Typing ability necessary to be successful in this class.**

ITE 045 MS Word–Windows (1 CR)

Learn to process documents using Microsoft Word, including letters, memos and reports. **Typing ability necessary to be successful in this class.**

ITE 047 Operating System: UNIX (1 CR/W)

Overview of the UNIX operating system, commands, batch files and other basic topics. **Typing ability necessary to be successful in this class.**

ITE 050 Internet (1 CR/F)

Learn to navigate the Internet and use File Transfer Protocol (FTP), Archie, Wide Area Information Servers (WAIS) and Gopher services to retrieve information from a variety of sources. Sources include library catalogs, shareware and freeware archives, government documents, newspapers, magazines, books, newsgroups, medical and legal publications and scholarly documents.

ITE 064 WordPerfect: Windows I (1 CR/F)

Learn how to operate WordPerfect, including changing the default directory, menus, editing, saving, printing, cut and paste, search and replace, using and modifying the button bar, speller and thesaurus, formatting with the ruler and enhancing text.

ITE 065 IBM PC Workshop (1 CR)

Through hands-on practice, students are introduced to the personal computer. This course covers Windows operating system word processing, spreadsheet, data manager and graphs.

ITE 067 MS DOS Workshop (1 CR/F)

Learn the IBM (or equivalent) personal computer and its components. Course covers the operating systems background, Disk Operating System (DOS) commands, tree structure, EDLIN, Microsoft - DOS command files, and designing and writing simple batch files.

ITE 080 Excel: Windows I (1 CR)

Create business applications using the Excel spreadsheet within the Windows graphical user interface (GUI). This course covers basic commands, cell ranges, formulas, and mathematical, financial and statistical functions.

ITE 083 Windows Workshop (1 CR/F)

Introduction to Windows: the desktop, working in windows, customization, accessories, managing files and folders, multi-tasking, local and area networks and, when time permits, Internet interface and faxes. **Typing ability necessary to be successful in this class.**

ITE 091 MS Access Workshop (1 CR)

Learn how to create, query, maintain, present data as reports and forms, include graphs, tables and clip art in printouts, and use macros to create application systems for databases.

Prerequisite: ITE 101

ITE 092 MS PowerPoint Workshop (1 CR)

Learn how to create electronic presentations using a computer, overhead transparencies, and 35 millimeter slides using PowerPoint's word processing and outlining features.

Prerequisite: ITE 101

ITE 100 Introduction to Information Technology Education (1 CR)

Introduction to windows operating system and accessing information on the Internet. Mouse usage and basic file system operations will be covered.

ITE 101 Information Technology Education (3 CR/E,W,S)

Enhance computer knowledge. Course covers computer system concepts with an emphasis on several software applications. **Prerequisite: ENG 110 and ITE 100. Typing ability necessary to be successful in this class.**

ITE 108 Business Programming: Logic & Theory (3 CR/F)

Explore the development of the logic and theory for writing business programs that control the operation of a computer. Course covers the development of loops, at-end routines, control of branching through decision-making, table handling, program documentation and disk concepts.

Prerequisite: ITE 101

ITE 111 System Concepts & Design (3 CR/W)

Design a system, the related documentation, and required programs using an existing business as a model. Course covers flow charting a system, defining problems, pre-paring new forms. Students determine a desirable file structure.

Programming language familiarity necessary to be successful in this class.

ITE 113 Microsoft Office Professional Integration (3 CR)

Introduction and skill development in the four applications of Microsoft Office (Microsoft Word, Excel, Access, PowerPoint), plus the full integration of all four packages. **Typing ability necessary to be successful in this class.**

ITE 114 Advanced Microsoft Office (3 CR)

Learn the advanced features of Microsoft Office: creating documents with tables and charts, mail merge and newsletters in Word; generating templates and multiple worksheets, macros using Visual Basic, and manipulating databases in Excel; presenting data and using macros in Access; embedding visuals and customizing presentations in PowerPoint.

Prerequisite: ITE 113

ITE 117 Computer Programming: BASIC (3 CR/E,W)

Create business applications using structured QBASIC programming language. Course covers input/output, arithmetic operations, comparing, interactive programming, arrays, menus, subroutines, sorting, string processing, files, report generation and functions. **Prerequisite: ITE 108 (may be taken concurrently)**

ITE 127 MS Access Comprehensive (3 CR/E,W)

Planning, creating and displaying databases, sorting and report preparation, data entry screens, data validation and data

selection, and multiple file operations. **Typing ability necessary to be successful in this class.**

ITE 129 Office Administrative Systems (4 CR)

Develop and integrate administrative support skills in communication, information technologies, administrative procedures, problem solving. Topics: records management, information/communication systems, including electronic, space management and ergonomics, quality and productivity improvement techniques, meeting/travel planning, report preparation/presentation and employment skills.

Prerequisite: ITE 101

ITE 130 Microsoft Excel (3 CR)

Learn Excel components: charts, creating workbooks, using drawing tools, formatting and auditing worksheets, functions, Internet and intranet documents, modifying and printing workbooks, ranges, database queries, importing and exporting data, macros, working with multiple workbooks, working with existing and creating new templates, and advanced workgroup functions. This is one component of the Microsoft Office User Specialist Expert certification test. **Typing ability necessary to be successful in this class. Prerequisite: MTH 110**

ITE 134 Visual BASIC (3 CR/F)

Values and variables, instructions and grouping, designing for user interaction, graphic objects and controls, arithmetic functions, text, bit-mapped graphics, error trapping and debugging, and physical data. **Prerequisite: ITE 108, for programming majors, may be taken concurrently.**

ITE 135 Advanced Visual BASIC (3 CR)

Learn the advanced features of Visual Basic such as writing database programs using ADO, Active X documents and controls and extending VB by using the Windows API.

Prerequisites: ITE 134

ITE 150 Java Programming (4 CR/F)

First course in Java programming. Students will write Java programs in a PC laboratory. Control structures, methods, object-oriented programming, classes, applets and user interfaces are discussed. Lab included. **Prerequisite: ITE 108, for programming majors, may be taken concurrently**

ITE 151 Advanced Java Programming (3 CR/W)

Continuation of ITE 150, Java Programming. Students learn advanced topics such as creating a graphical user interface (GUI) using multiple threads and work with Java's networking capabilities, new I/O features, including character streams and object serialization, and new language features.

Prerequisite: ITE 150

ITE 160 HTML (2 CR)

Create web pages using HTML. Students will learn techniques and strategies to build and promote successful web pages. Features such as Columns, Frames, Image Maps and META tags will be covered in this course. **Prerequisite:** ITE 101

ITE 161 Web Animation (3 CR)

Design fully interactive sites using Macromedia Flash. Students will draw vector graphics, use key tools to produce animations, and create inactivity that drives dynamic web sites. Students will also produce multimedia presentations. **Prerequisites:** ART 201, ITE 101, ITE 160

ITE 162 Web Integration/Database (3 CR)

Students will experience different approaches for creating Web pages that interact with databases. This course will define how Web sites are being used to support electronic commerce applications. **Prerequisites:** ITE 101, ITE 127, ITE 163

ITE 163 Web Programming (3 CR)

Students will learn to design and maintain interactive and dynamic web applications within a server-based scripting environment. **Prerequisites:** ITE 101, ITE 160

ITE 171 Desktop Publishing (3 CR/E/W)

Create documents using word processing software and graphics design software and produce typeset quality copy. Students use microcomputers and laser printer. Course covers reproduction of half tones and electronic transmission to printing companies. **Prerequisite:** ITE 101

ITE 177 WordPerfect Windows (3 CR/E/W)

Learn to use the major functions of WordPerfect for Windows, including creating and editing documents, the WordPerfect button bar, file manager, document formatting, printing, merging, macros, columns, desktop publishing features and sort and select. **Typing ability necessary to be successful in this class.**

ITE 182 Programming In C++ (3 CR/F)

Learn how to do programming in the C++ language using language structure, commands, functions and object-oriented programming. **Prerequisite:** ITE 108, for programming majors, may be taken concurrently.

ITE 183 Advanced C++ (3 CR/W)

Hands-on programming course using the Visual C++ language. Object oriented programming concepts, input handling, the Microsoft Foundation Class, and using the Windows programming interface with Visual C++ tools are some of the topics discussed. **Prerequisite:** ITE 182

ITE 186 Microsoft Word (3 CR)

Produce, store and revise letters, memos, tables and reports using Microsoft Word. Headers, footers, mail merge, document assembly, grammar and spell checker, thesaurus, and outlining. **Typing ability necessary to be successful in this class.**

ITE 204 Computer Usage for Managerial Applications (3 CR/F)

Illustrates how the computer can be a valuable asset to the accountant. Hands-on experience with Excel spreadsheets, database, graphics and Peachtree software. **Prerequisite:** ACC 232

ITE 205 Introduction to Statistics (3 CR/E,W,S)
(SAME AS MTH 133, PSY 143)

Introduction to basic descriptive statistics, probability theorems, frequency distributions and functions, binomial and normal probability distributions and functions, probability density functions, hypothesis testing, statistical inference, Chi-square analysis, linear regression and correlation. **Prerequisite:** MTH 131

ITE 211 Typography & Layout (3 CR/F)

Learn principles of type identification, selection and use in the professional rendering of comprehensive layouts. Utilization of tools, materials and techniques of rendering emphasized.

ITE 220 Network+ (NET TECH) (3 CR)

Learn the basic concepts and prerequisites of network computing and get the background information you need to prepare for network administration certification. **Prerequisite:** ITE 101

ITE 221 Foundations of Novell Networking (3 CR/E/W)

Provides students with basic knowledge about implementing NetWare 6 and using its management tools. Students will focus on Installing and Using NetWare 6, Managing Novell eDirectory, Managing Printing, Managing Storage Space, Managing email and Instant Messaging Services, Implementing Internet Services and Managing Security. **Prerequisite:** ITE 101

ITE 222 Novell Network Management: NetWare 6 (3 CR/W)

Provide students with the knowledge and skill to perform the network management tasks that are most common yet critical to administrators of LANs and WANs. Emphasis will be placed on use of the network management utilities of NetWare 6, deployment of NetWare 6 features, and troubleshooting skills that a student in an entry-level network administration position must have to manage the daily network operations of an organization. **Prerequisite:** ITE 221

ITE 224 NDS Design & Implementation (575) (2 CR/W)

Learn a process that shows the sequence of skills and tasks necessary to effect a solid design and implementation schedule. Presents the logical progression of steps and deliverables developed and practiced by Novell Consulting Services personnel in real world engagements.

Prerequisite: ITE 221 and ITE 222

ITE 229 Integrating Windows NT (2 CR)

Streamline NT administration by using Novell Directory Services for NT and the NetWare Administrator. Hands-on experience with Novell Administrator for Windows NT.

Prerequisite: ITE 221

ITE 230 NetWare 4.11-5.0 Upgrade (2 CR)

Focuses on introducing, explaining, and comparing significant changes, updates and new features found in NetWare 5. **Prerequisite:** ITE 221 and ITE 222

ITE 231 LINUX Installation & Configuration (3 CR)

An overview of the Unix Operating System. Installing LINUX, configuring hardware for your server and using common applications. **Prerequisite:** ITE 101

ITE 233 A+ Hardware Component (3 CR)

Basic computer theory, logic, technological evolution. Fundamental PC components, I/O peripheral identification, implementation and functionality, Printer fundamentals/types/diagnostics/trouble shooting/basic repair.

Corequisite: ITE 101

ITE 235 A+ O/S Component (3 CR)

Familiarization with basic DOS functionality and manipulation for diagnostics, troubleshooting and repair with WIN O/S. Installation, configuration, troubleshooting, diagnostics, upgrade familiarity with necessary MS products for A+ certification.

Corequisite: ITE 233

ITE 237 A+ Certification Exam Preparation (1 CR)

Focus on A+ core exam module component essentials/fundamentals to include real time test environment and materials. **Prerequisite:** ITE 235

ITE 239 Network+ Networking Fundamental Component (3 CR)

Familiarization with basic Networking media components, configuration, functionality and manipulation for installation, diagnostics, troubleshooting, integration, upgrade and repair. Familiarization with MS, Novell, Linux O/S platform configuration, functionality and manipulation for installation, diagnostics, troubleshooting, integration and upgrade in both Peer to Peer and Server Centric environments.

Corequisite: ITE 101

ITE 241 Network+ Networking Protocols (3 CR)

Historical evolution of networking, Introduction to the DOD and OSI models including all related protocols for both peer-to-peer and server-centric LAN/WAN environments.

Prerequisite: ITE 101

ITE 243 Network+ Certification Exam Preparation (1 CR)

Focus on Network+ core exam module component essentials/fundamentals to include real time test environment and materials. **Prerequisite:** ITE 241

ITE 246 Advanced Novell Network Management (3 CR)

Advanced Novell Network Management (Course 3005) will provide students with advanced management and troubleshooting knowledge pertaining to a NetWare 6 network and its components using the web services, tools and utilities that ship with NetWare 6. **Prerequisite:** ITE 222

ITE 254 Design MS SQL Database (3 CR)

Provides the technical skills required to design and implement database solution by using Microsoft SQL Server.

Prerequisite: ITE 255

ITE 255 Admin MS SQL Server (3 CR)

Provides the knowledge and skills required to install, configure, administer and trouble shoot Microsoft SQL Server.

Prerequisite: ITE 262

ITE 261 Windows 2000 Networking 1 (3 CR)

Introduces students to Microsoft Windows 2000 and to the networking technologies it supports. Helps prepare the student for part of Exams 70-210 and 70-215. **Prerequisite:** ITE 101

ITE 262 Windows 2000 Networking 2 (4 CR)

Students will install, configure, administer and troubleshoot Microsoft Windows 2000 Professional and Windows 2000 Server. Helps the student prepare for the MCSE Exams 70-210 and 70-215. **Prerequisite:** ITE 261.

ITE 263 Windows 2000 Networking 3 (3 CR)

Students will install, configure, manage and troubleshoot a network infrastructure that uses the Microsoft Windows 2000 Server products. Helps prepare students for the MCSE Exam 70-216. **Prerequisite:** ITE 262.

ITE 264 Windows 2000 Networking 4 (3 CR)

Students will install, configure, administer and troubleshoot Microsoft Windows 2000 Active Directory services and Group Policy. Helps prepare students for the MCSE Exam 70-217.

Prerequisite: ITE 263.

ITE 265 Design MS WIN2K Directory SVC (3 CR)

Students will plan, configure, implement and troubleshoot Microsoft Windows 2000 directory services in an enterprise

environment. Helps prepare students for Exam 70-219.

Prerequisite: ITE 264.

ITE 266 Design MS WIN2K Network SVC (3 CR)

Students will create a networking services infrastructure design, using various technologies such as DHCP, DNS, NAT, Proxy Server and others. Helps prepare the student for MCSE Exam 70-221. **Prerequisite:** ITE 264.

ITE 267 Design a Secure MS WIN2K Network (3 CR)

Students will design a security framework for small, medium, and enterprise networks using Microsoft Windows 2000 technologies. Helps prepare the student for Exam 70-220.

Prerequisite: ITE 264.

ITE 270 Graphic Creativity (1 CR/S)

Create successful client presentations through illustration techniques, artwork resources, organizing priorities and managing deadlines. Learn brainstorming and mental warm up techniques while finding your own rhythm and timing.

ITE 271 Desktop Publishing II (3 CR/W)

Advanced desktop publishing techniques. Emphasis on integration of software packages and complex page layout techniques. The primary software package is QuarkXPress.

Prerequisite: ITE 171 and ITE 211

ITE 272 Graphic Illustration (3 CR/F)

Introduces students to techniques and materials used by professional designers and illustrators. Projects include three-dimensional artwork, exploded and assembled drawings, and art to enhance instructional materials. Computer-assisted methods introduced. **Prerequisite:** ART 101 or ART 103 or ART 152

ITE 273 Graphic Imaging (3 CR/W)

Learn the intricacies of scanning and editing images for producing practical and expressive graphic images on a computer using Adobe PhotoShop software. *Recommend that graphic design majors should take ITE 211 first.*

ITE 274 Graphic Technology Applications (3 CR/W)

Learn how to integrate several software packages producing final products that are print shop ready. **Prerequisite:** ITE 271, ITE 272* and ITE 273* *ITE 271 and 273 may be taken concurrently

ITE 275 Web Page Design (3 CR/S)

Develop efficient Web pages and sites for the Internet utilizing multiple software applications on the Mac. Emphasis on page layout and design. **Prerequisite:** ITE 273

ITE 276 Practicum in Printing I (3 CR)

Students receive hands-on introductory to how screen and offset printing works. This class will be project-oriented.

Prerequisite: ITE 101 and ITE 171, can be prior to or concurrent.

ITE 277 Practicum in Printing II (3 CR)

Students will receive extensive hands-on experience in four-color/process printing. **Prerequisite:** ITE 273 and ITE 276, can be prior to or concurrent

LICENSED PRACTICAL NURSING (LPN)

LPN 131 Foundations of Nursing (6 CR/W)

Introduction to the nursing process and their role as caregiver. Maslow's hierarchy of needs is explored, along with nursing skills that meet basic physiologic and safety needs. Laboratory and clinical experience provide the student an opportunity to demonstrate initial application of the roles of caregivers and member of the discipline in a highly structured, supervised setting.

LPN 132 Medications (3 CR/F,W)

Introduction to the purpose, use, and action of medication in meeting basic human needs. Safety and legal implications discussed. Nursing process serves as the framework for understanding client needs during medication therapy.

Prerequisite: BIO 155, LPN 141 or MOA 141 and MTH 110 or equivalent.

LPN 141 Body Structure & Function (4 CR/F,W,S)

(SAME AS MOA 141)

Introduction to body structure, function, and disease processes to provide a foundation for understanding normal and abnormal body functions.

LPN 145 Normal/Therapeutic Nutrition (3 CR/F,W,S)

(SAME AS MOA 145, NUR 207)

Basic nutritional concepts presented with emphasis on application to patient care. Selected nutritional disorders and fundamentals of diet therapy are included.

LPN 180 Nursing Care of Adults—IA (6 CR/F)

Use the nursing process to implement the caregiver role with adult clients experiencing basic physiologic needs. Understanding of how disease states of various body systems (respiratory, gastrointestinal, endocrine and immune) alter the client's needs and their ability to meet their needs explored. Clinical experience provides the student the opportunity to demonstrate the roles of caregiver and member of the discipline. **Prerequisite:** LPN 131 and MOA 110

LPN 181 Nursing Care of Adults—IB (6 CR/F)

Use the nursing process to implement the caregiver role with adult clients experiencing basic physiologic needs. Understanding of how disease states of various body systems (oncology, cardiovascular, reproductive and musculoskeletal) alter the client's needs and their ability to meet these needs explored. Clinical experience provides the opportunity to demonstrate the roles of caregiver and member of the discipline. **Prerequisite:** LPN 131 and MOA 110

LPN 182 Role of the Practical Nurse (2 CR/W)

Review the ethical/legal responsibilities of the LPN along with the scope of practice of the LPN. Issues related to types of health care organizations, LPN organizations, continuing education, and licensure covered. Students learn how to prepare for and take the NCLEX-PN examination. Information on home management, resume preparation and job seeking skills included. **Prerequisite:** LPN 180 and LPN 181

LPN 183 Nursing Care of Adults—II (6 CR/W)

Use the nursing process to implement the caregiver role with adult clients experiencing sensory, neurology, renal and mental health conditions. Maslow's hierarchy of needs is utilized as the framework for understanding client responses to disease states. Emphasis placed on the special needs of elderly clients. Clinical experiences are designed to reinforce theory and demonstrate the roles of caregiver and member of the discipline. **Prerequisite:** LPN 180 and LPN 181

LPN 184 Maternal/Child Concepts (6 CR/W)

Extend the use of the nursing process to the childbearing and childrearing clients. Maslow's hierarchy of needs is utilized as a framework to care for the client who has a well-defined health care problem in a structured setting. Includes a clinical setting. **Prerequisite:** LPN 180 and LPN 181

MEDICAL ASSISTANT (MOA)**MOA 111 Medical Assistant Techniques I (3 CR/W)**

Through class and laboratory practice learn clinical practices, procedures and routines performed by the medical office assistant. The assistant's role in the preparation for examination and treatment of the patient, basic techniques in vital signs, medical asepsis, office emergencies and assisting in office surgery emphasized. **Prerequisite:** BIO 155 or LPN 141 or MOA141

MOA 112 Insurance, Reports, Law & Ethics (3 CR/E/W)

Presents principles and concepts of medical law and bioethics, as well as an overview of health care financing through third party payers. Topics include: medical practice arts, the patient-health worker relationship, medical liability law and suit prevention, private insurance and government programs, and bioethical issues in medicine.

MOA 115 Health Science Smart Start (2 CR)

Survival strategies for health occupation majors. Skills include reading strategies, note taking, time management and test taking.

MOA 120 Medical Terminology (3 CR/E/W,S)

(FORMERLY MOA 110)

Programmed learning word building system approach is used to teach basic medical terms including origins, prefixes, suffixes, word roots, plurals, and grammar. Pronunciation, spelling, definitions, and usage of medical terms stressed.

MOA 141 Body Structure & Function (4 CR/E/W,S)

(SAME AS LPN 141)

Introduction to the body structure and function providing a foundation for understanding normal and abnormal body functions and disease processes.

MOA 145 Normal/Therapeutic Nutrition (3 CR/E/W,S)

(SAME AS LPN 145, NUR 207)

Basic nutritional concepts presented with emphasis on application to patient care. Selected nutritional disorders and fundamentals of diet therapy included.

MOA 204 Seminar & Externship (5 CR/W)

Requires 225 hours minimum placement in a licensed health practitioner's office or clinic and a two-hour weekly seminar. This experience includes practice of basic medical assisting skills and application of knowledge in administrative and clinical areas. Seminar offers discussions of experience on externship, professionalism, continuing education, job search, and review of skills for the CMA exam.

Prerequisite: SEC 241, MOA 241, MOA 211

MOA 207 Health Unit Clerk (3 CR) (REPLACES MOA 206)

Practical classroom instruction in theories and skills needed to perform Health Unit Clerk duties in a hospital or extended care facility. Subjects include: communication devices and their use, transcribing physician orders onto Kardex or Patient Profiles, completing medication administration records, charting rules, medical record maintenance, confidentiality, computer orders, human relations, unit organization and time management, policies and procedures for unit clerks, medical terminology review, medical abbreviation usage, physician orders by specialty and ordering supplies for the unit.

Prerequisites: MOA 110 and ITE 101

MOA 208 Health Unit Clerk Internship (2 CR)

(REPLACES MOA 206)

Practical clinical experience as a Health Unit Clerk in a hospital or extended care facility. 150 hours of non-paid time will include applying skills and knowledge learned in the Unit Clerk classroom. Students placed and monitored by their instructor following a personal consultation.

Prerequisite: Department Permission

MOA 211 Medical Assistant Techniques II (4 CR/F)

Through class and laboratory, clinical skills and knowledge are practiced in the following areas: EKG, office emergencies, administration of medications, venipuncture, pediatrics, gynecology, obstetrics, gerontology, urology and community resources. Lab included. **Prerequisite:** MOA 141 or LPN 141 or BIO 155 and MOA 120

MOA 241 Medical Records (3 CR/F,W)

Using lecture and practice, learn charting principles and practices, diagnostic and procedure coding, insurance billing, health histories, organization of record systems, technology and legalities. **Prerequisite:** MOA 120 and MOA 112

MOA 242 Advanced Medical Billing (3 CR/W)

Designed to teach advanced skills in medical insurance billing. Correct preparation of major carrier claims including use of modifiers and rebilling skills emphasized.

Prerequisite: MOA 241

MOA 245 Billing/Transcript Externship (2 CR/W)

125-hour externship experience with an eight-hour seminar designed to practice skills in either a medical billing or transcription facility.

MATHEMATICS (MTH)**MTH 090 Math Skills (2 CR)**

This course will provide an entry-level math course for students whose skills are not sufficient for them to take MTH 110, Prealgebra. It will be a self-paced course, with individualized instruction through the use of computer software. This will allow each student to begin working at whatever level he/she needs, and to proceed at his/her own pace. The goal is for the student to develop the necessary skills in order to take Pre-algebra.

MTH 110 PreAlgebra (3 CR/F,W,S)

Review of arithmetic of positive and negative integers, fractions, decimals, percentages. Covers measurement and geometric calculations. Basic algebraic concepts include simplifying expressions and solving simple equations.

MTH 112 Business Math (3 CR/F,W,S)

Review basic math and elementary formula skills and their application to the topics characteristic of the business area such as simple interest and bank discount, installment buying, compound interest, annuities as well as simple statistics, stocks and bonds, and insurance. **Prerequisite:** MTH 110

MTH 120 Beginning Algebra (4 CR/F,W,S)

Study variables and variable expressions, integers, laws of exponents, equations (linear, quadratic, rational, radical and absolute value), linear inequalities, linear systems, coordinate graphing and problem solving. **Prerequisite:** MTH 110

MTH 131 Intermediate Algebra (4 CR/F,W,S)

Emphasizes simplifying expressions, solving equations, and graphing functions, including linear, quadric, polynomial, rational, radical, exponential and logarithmic. Problem solving and mathematical modeling are integrated throughout. Appropriate technology to include a graphing calculator. **Prerequisite:** MTH 120

MTH 132 Plane Trigonometry (2 CR)

Learn definitions of trigonometric functions, solution of right and oblique triangles, radian measure, graphs of functions, equations, and identities. Graphing calculator required. **Prerequisite:** MTH 131

MTH 133 Introduction to Probability & Statistics (3 CR/F,W,S) (SAME AS ITE 205, PSY 143)

Introduction to basic descriptive statistics, probability theorems, frequency distributions and functions, binomial and normal probability distributions and functions, probability density functions, hypothesis testing, statistical inference, Chi-square analysis, linear regression and correlation. **Prerequisite:** MTH 131

MTH 140 Pre-Calculus (5 CR/F,W,S)

Major emphasis is on the concept of functions. Study polynomial, rational, exponential, logarithmic, trigonometric and inverse trigonometric functions, their properties, graphs, and related equations and applications. Additional topics include systems of equations, matrices, conic sections, sequences and series, and probability. A graphing calculator is required and used extensively. **Prerequisite:** MTH 131

MTH 147 Discrete Mathematics (3 CR)

Discrete mathematics covering sets, relations, recursion, mathematical induction, logic, proofs, counting methods, graphs, and Boolean algebra. **Prerequisite:** MTH 140

MTH 151 Calculus I (4 CR/F,W,S)

First calculus course for business, mathematics, engineering and science students explores introductory plane analytic geometry, the derivative, the integral, and their applications for algebraic, trigonometric, exponential and logarithmic functions. Graphing calculator required. **Prerequisite:** MTH 140

MTH 154 Calculus II (5 CR/F,W,S)

Explore the following topics: methods and applications of the derivative and integral for inverse trigonometric and hyperbolic functions, indeterminate forms, series, polar and parametric representation of functions, matrices, determinants, solution of systems of equations, and vectors. Graphing calculator required.

Prerequisite: MTH 151

MTH 210 Foundations of Mathematics (3 CR)

(SAME AS MTH 111)

Provides background material for students preparing to teach at the elementary level. Emphasizes the structure and properties of the number system. Covers concepts, models and algorithms for whole numbers, integers, fractions, decimals, and percents.

Some additional hours of on-site field work

required. **Prerequisite:** MTH 131

MTH 211 Foundations of Mathematics II (3 CR)

The course will provide the second semester of math content for elementary education majors. It is a continuation course for MTH 210, Foundations of Mathematics I.

Prerequisites: MTH 210

MTH 251 Calculus III (4 CR/F,W)

Solid analytical geometry is integrated throughout this course covering the calculus of vector valued functions, multivariable functions, and vector fields with applications. Also covers linear algebra topic of vector spaces. Graphing calculator required.

Prerequisite: MTH 154

MTH 254 Differential Equations (4 CR/W)

Explore solutions of first order differential equations, linear differential equations with constant coefficients, variation of parameters, series solutions, Laplace transforms, eigenvectors and eigenvalues and application to solution of systems of linear first order equations. Graphing calculator required.

Prerequisite: MTH 154

MUSIC (MUS)**MUS 103 Keyboard I (2 CR/F,W)**

Sequence of courses that teach music reading and performance on piano. The course stresses functional keyboard skills.

MUS 104 Keyboard II (2 CR/F,W)

Sequence of courses that teach music reading and performance on piano. The course stresses functional keyboard skills. **Prerequisite:** MUS 103

MUS 105 Keyboard III (2 CR/F,W)

Sequence of courses that teach music reading and performance on piano. The course stresses functional keyboard skills. **Prerequisite:** MUS 104

MUS 106 Keyboard IV (2 CR/F,W)

Sequence of courses that teach music reading and performance on piano. The course stresses functional keyboard skills. **Prerequisite:** MUS 105

MUS 107 Beginning Guitar (2 CR)

Beginner class instruction in playing folk and classical guitar. Each student provides own guitar.

MUS 108 Intermediate Guitar I (2 CR)

Continuation of MUS 107. **Prerequisite:** MUS 107

MUS 118 Percussion Methods (2 CR)

Performance and teaching techniques of percussion instruments.

MUS 120 Woodwind Methods (2 CR)

Performance and teaching techniques of woodwind instruments.

MUS 121 Brass Methods (2 CR)

Performance and teaching techniques of brass instruments.

MUS 123 Voice Class (2 CR/F,W)

Designed to aid in vocal techniques and develop stage presence. Topics include breathing techniques, vocal evaluation, developing a personal style and working with a microphone. Repeatable 2 times

MUS 124 Advanced Voice Class (2 CR/F,W)

Sequence of Voice Class, MUS 123. Class continues the development of vocal technique, with emphasis on performance. **Prerequisite:** MUS 123 Repeatable 2 times

MUS 126 Jackson Community Concert Choir (1 CR)

Study and performance of choral music. Admission with department permission required.

MUS 129 Community Concert Band (1 CR/F,W)

Study and performance of concert band music performances. Admission with department permission required. Repeatable 4 times

MUS 130 Survey of Non-Western Music (3 CR)

Discovering the music of non-western cultures through lecture and directed listening.

MUS 131 Understanding Music (3 CR)

Lecture and directed listening on the elements, forms and historic chronology of Western music.

MUS 132 History of Popular Music in America, 1840-Present (3 CR)

Students explore the development of popular music in America and focus on the musical, social, and economic influences of commercial music in an historical context.

MUS 133 Music Education (3 CR)

Elementary education student is taught the fundamentals of music and then given practical experience in teaching, creating, and accompanying songs and how to enhance an elementary classroom with music.

MUS 140 Small Instrumental Groups I (1 CR)

Small ensembles of instrumentalists performing selected materials. The size and type of these ensembles determined by the available instrumentation. Students interested in this course must register with the Music Department.

MUS 141 Small Instrumental Groups II (1 CR)

Small ensembles of instrumentalists performing selected materials. The size and type of these ensembles determined by the available instrumentation. Students interested in this course must register with the Music Department.

MUS 142 Small Instrumental Groups III (1 CR)

Small ensembles of instrumentalists performing selected materials. The size and type of these ensembles determined by the available instrumentation. Students interested in this course must register with the Music Department.

MUS 143 Small Instrumental Groups IV (1 CR)

Small ensembles of instrumentalists performing selected materials. The size and type of these ensembles determined by the available instrumentation. Students interested in this course must register with the Music Department.

MUS 151 Music Theory I (4 CR)

Study of scales, key signatures, chord structure, intervals, chord progression, and non-harmonic tones. This course includes sight singing, keyboard harmony and ear training.

MUS 152 Music Theory II (4 CR)

Continued study of scales, key signatures, chord structure, intervals, chord progression, and non-harmonic tones. This course includes sight singing, keyboard harmony and ear training. **Prerequisite:** MUS 151

MUS 161 Audio Production 3 CR

Recording technique, the studio, multi-track recording, mixing, rhythm tracks, lead and instrumental overdubs, guide tracks, mix down, editing, and sound reinforcement.

MUS 167 Applied Music (1 CR)

Private study on all instruments is open to all students. This is a requirement for music majors pursuing a bachelor's degree. All students must register with Music Department at the beginning of each semester. Recital and jury required.

MUS 168 Applied Music (1 CR)

Private study on all instruments is open to all students. This is a requirement for music majors pursuing a bachelor's degree. All students must register with Music Department at the beginning of each semester. Recital and jury required.

Prerequisite: MUS 167 or MUS 177

MUS 177 Applied Music (1 CR)

Private study on all instruments is open to all students. This is a requirement for music majors pursuing a bachelor's degree. All students must register with Music Department at the beginning of each semester. Recital and jury required.

MUS 178 Applied Music (1 CR)

Private study on all instruments is open to all students. This is a requirement for music majors pursuing a bachelor's degree. All students must register with Music Department at the beginning of each semester. Recital and jury required.

Prerequisite: MUS 167 or MUS 177

MUS 181 Orchestral Music (2 CR)

Study and performance of symphonic music. Students must register with the Music Department. Audition and performance required.

MUS 190 Broadway Revue (1 CR/FW)

Study and perform Broadway, jazz and popular vocal literature. The performance aspect includes singing, stage presence, staging and movement. This ensemble rehearses a total of 3-4 hours per week. Audition is required. Repeatable 4 times

MUS 251 Advanced Music Theory I (4 CR)

Study of modulation seventh chords, altered chords, and 20th century techniques. This course includes keyboard harmony, sight singing and ear training.

Prerequisite: MUS 152 and MUS 151

MUS 252 Advanced Music Theory II (4 CR)

Study of modulation seventh chords, altered chords, and 20th century techniques. This course includes keyboard harmony, sight singing and ear training. **Prerequisite:** MUS 251

MUS 267 Applied Music (1 CR)

Private study on all instruments is open to all students. This is a requirement for music majors pursuing a bachelor's degree. All students must register with Music Department at the beginning of each semester. Recital and jury required.

Prerequisite: MUS 168 or MUS 178

MUS 268 Applied Music (1 CR)

Private study on all instruments is open to all students. This is a requirement for music majors pursuing a bachelor's degree. All students must register with Music Department at the beginning of each semester. Recital and jury required.

Prerequisite: MUS 267 or MUS 277

MUS 277 Applied Music (1 CR)

Private study on all instruments is open to all students. This is a requirement for music majors pursuing a bachelor's degree. All students must register with Music Department at the beginning of each semester. Recital and jury required.

Prerequisite: MUS 168 or MUS 178

MUS 278 Applied Music (1 CR)

Private study on all instruments is open to all students. This is a requirement for music majors pursuing a bachelor's degree. All students must register with Music Department at the beginning of each semester. Recital and jury required.

Prerequisite: MUS 267 or MUS 277

NATURAL SCIENCE (NSC)**NSC 131 Contemporary Science (4 CR/E,W,S)**

An interdisciplinary course that introduces the nature of science as a process. Particular topics from biology, chemistry, physics, geology and astronomy covered with an emphasis on critical thinking and evaluating evidence to examine competing theories. The interrelationships and interaction of the sciences are stressed, as is the relationship of science and technology. This course is ideal as a first science course for students whose science background is minimal, who are anxious about science, or who have not had a science course for several years.

NURSING (NUR)**NUR 101 Fundamentals of Nursing (6 CR/E,W)**

Become familiar with the nursing process as it relates to universal self-care requisites. Assistance is provided in acquiring and demonstrating competency in basic nursing skills. Emphasis is placed upon assessing self-care agency and therapeutic self-care demand. That information is then used to devise appropriate nursing diagnosis, to plan, implement, and evaluate a plan of care for clients requiring nursing actions to meet their universal self-care demands. Laboratory and clinical experiences are included.

NUR 103 Introduction to Professional Nursing (3 CR/F)

Provides a foundation in the scientific and social dimension of nursing as a discipline and a health profession. Examine the historical development of nursing and its impact on contemporary nursing. Cultural variables and personal values examined by the student. The societal context of nursing is reviewed, providing the student with an appreciation of the health care system, with particular emphasis on legal and ethical frameworks.

NUR 120 Transition Bridge (3 CR/F)

Become familiar with the nursing process as it relates to self-care theory. Exploration of the legal and professional scope of practice discussed. Laboratory experiences will be included.

NUR 121 Pharmacology (3 CR/E,W,S)

Students are introduced to basic knowledge and skills needed to safely administer medications to clients with self-care needs. This course includes medication action, use, side effects, nursing implications and client education for major drug groups.

Prerequisite: BIO 155 or LPN 141 or MOA 141 and MTH 110 or equivalent.

NUR 170 Self-Care (1 CR/E,W)

Students will be introduced to Orem's theory of self-care. The theory of self-care deficits and theory of nursing systems discussed as they relate to the clients, as well as to the students. Students use a variety of methodologies, which will then be a part of their repertoire of self-care knowledge and skills.

NUR 171 Supportive Educative Nursing (4 CR/E,W)

Apply the nursing process to promote self-care for adults with common, well-defined needs. This course explains problems of the client needing supportive-educative care. Clinical experience designed to reinforce the theory included.

Prerequisite: NUR 121, NUR 101 and NUR 170

NUR 172 Pathophysiology (4 CR/E,W)

Study of human diseases and the mechanisms that govern them. Addresses etiology, clinical presentation and appropriate treatment of disease processes and nursing action.

Prerequisite: BIO 155 and NUR 101 or NUR 120 as a co-requisite.

NUR 173 Family I (4 CR/E,W)

Focus on family centered care utilizing the maternal child health standards. This course utilizes the self-care model and the nursing process as the framework to assist the student in collaborating with the client/family or other health care members in meeting the supportive-educative needs of the client/family in childrearing and childbearing experiences.

Prerequisite: PSY 252, NUR 101, NUR 121 and NUR 170

NUR 207 Normal/Therapeutic Nutrition (3 CR/E,W,S)
(SAME AS MOA 145, LPN 145)

Basic nutritional concepts presented with emphasis on application to patient care. Selected nutritional disorders and fundamentals of diet therapy are included.

NUR 242 Physical Assessment (1 CR/E,W)

Designed for nurses to learn physical assessment skills including inspection, palpation, percussion and auscultation. Included are interviewing techniques and assessment of cardiac, musculoskeletal, GI, neurological and respiratory systems.

Corequisite: NUR 101

NUR 245 Health Assessment (3 CR/F)

Provides the beginning nursing student with necessary skills and knowledge required to perform a health and physical assessment, while assessing the health status of clients ranging from infancy through old age. Focuses on assessment of the client in all fields (social, psychosocial, biological, affective, cognitive, physical, developmental, race/ethnicity, cultural and spiritual). Students will distinguish normal from abnormal findings in clients across the lifespan. Laboratory, lecture, audio visual and physical examination will be used to provide the student with tools to conduct appropriate and skillful health assessments, apply appropriate decision-making skills and document on future clients, in their unique clinical settings.

Prerequisite: BIO 155, admission to the U of M-BSN transfer program or ADN program.

NUR 270 Partially Compensatory (4 CR/E,W)

Apply the nursing process to promote self-care for clients with chronic health needs. Explores problems of the "partially compensatory" elderly client. Clinical experience is provided in the hospital and community. **Prerequisite:** NUR 171, NUR 172, and NUR 173 or NUR 120

NUR 271 Family II (4 CR/E,W)

Further develop the self-care model by utilizing the nursing process to assist clients/families with complex self-care demands and deficits. Explores the relationship of dependent care agents and nursing systems. Includes clinical experiences with children, childbearing and childrearing clients, designed to reinforce theory. **Prerequisite:** NUR 171, NUR 172 and NUR 173 or NUR 120

NUR 272 Mental Health (5 CR/E,W)

Explore learning experiences that promote satisfactory assimilation of fundamental mental health and mental illness concepts in their delivery of the nursing process with clients and family systems. A clinical component is provided for students to develop mental health nursing care skills.

Prerequisite: NUR 171, NUR 172 and NUR 173 or NUR 120

NUR 273 Wholly Compensatory (5 CR/E,W)

Utilize the nursing process to provide wholly compensatory care for clients. Caring for clients requiring complex nursing interventions and medical regimens. Includes clinical in acute care settings. **Prerequisite:** NUR 270, NUR 271, NUR 272

NUR 274 Leadership (4 CR/E,W)

Focus on the role changes from student to graduate and examine the nurse agent's role in a leadership position, as well as responsibility, accountability and liability in a health care setting. Current health care trends which impact the client's self-care examined. Stresses continued skill development and includes clinical experience. **Prerequisite:** NUR 273

PHILOSOPHY (PHL)**PHL 231 Introduction to Philosophy (3 CR/E,W,S)**

In this course, you will be exposed to some of the major figures in Western philosophy, and through them, some of the most important philosophical questions. You will discuss questions such as: Is ethics all a matter of opinion? What is the good life for human beings? When is the state justified in using coercive power? What is the nature of knowledge, and how do we get knowledge? What is the nature of reality? Can we prove the existence of God?

PHL 232 Logic (3 CR/W)

This course gives you a background in both informal and formal logic. Informal logic, which is derived from everyday types of discussions and arguments, is dealt with first. Topics included are the nature of arguments in general, statistical arguments, and fallacies (bad arguments). Formal logic involves dealing with arguments in an artificial language and is the ancestor of digital computers and every computer programming language. You will learn how to manipulate the artificial language and construct relatively simple proofs.

PHYSICS (PHY)**PHY 131 Conceptual Physics (4 CR/E, W)**

Become familiar with basic concepts used in physics to describe and explain various physical phenomena. The course covers the following topics: kinematics (the description of motion); mechanics (the study of force, momentum, and energy); the behavior of solids, liquids and gases; temperature and heat; waves and sound; electricity and magnetism; and optics. The course is designed to familiarize the student with the basics of physics using a minimum of mathematics.

PHY 151 Astronomy (4 CR)

A descriptive course, primarily for non-science majors, covering the general field of astronomy. Topics include telescopes, motions of the sky, planetology, stellar evolution, and cosmology. **Prerequisite: MTH 120 or higher**

PHY 161 Industrial Physics (2 CR)

Physical principles of mechanics and heat and their applications to machines, liquids, gases, structural materials, laws of moving bodies, heat control and heat engines.

PHY 231 College Physics I (4 CR/F)

Pre-professional and engineering technology students explore kinematics, mechanics, dynamics, thermodynamics, acoustics, and general wave motion.

Prerequisite: MTH 132 or higher

PHY 232 College Physics II (4 CR/W)

Students cover topics in electricity, magnetism, and modern physics. A continuation of PHY 231. **Prerequisite: PHY 231**

PHY 251 Modern University Physics I (5 CR/F)

Students cover classical mechanics, thermodynamics, and wave motion. This course should be elected by all science and engineering students. **Prerequisite: MTH 151 or higher**

PHY 252 Modern University Physics II (5 CR/W)

Students cover topics in classical electricity and magnetism, optics, special relativity, and modern physics. A continuation of PHY 251. **Prerequisite: PHY 251**

POLITICAL SCIENCE (PLS)**PLS 141 American National Government (3 CR/E,W,S)**

Develops a systematic framework for the interpretation of political activity in the U.S. Numerous models explain the theoretical foundations of government and the decision-making process.

PLS 262 International Relations (3 CR)

Survey contemporary world affairs and examine the nation-state system, the struggle for power, and factors creating harmony and hostility among states.

PSYCHOLOGY (PSY)**PSY 101 Career Planning (3 CR)**

Study of personal characteristics, create occupational prospects and explore job possibilities, make career decisions, and implement occupational choices through job search techniques.

PSY 102 Career Decision (2 CR)

A systematic process of making occupational choices. Three fundamental parts: self-study, career exploration, and selecting and ranking potential occupations. (Course meets for the first 10 weeks of the semester.)

PSY 103 Job Search Techniques (1 CR)

Developing sources of job leads, writing resumes and cover letters, completing job applications, conducting interviews, and researching work organizations and job survival methods. (Meets for the last five weeks of the semester.)

PSY 140 Introduction to Psychology (4 CR/E,W,S)

Overview of the field of psychology, including learning, development, emotion, motivation, personality, abnormal behavior, and psychotherapy.

PSY 143 Introduction to Probability & Statistics (3 CR/E,W,S)
(SAME AS MTH 133, ITE 205)

Introduction to basic descriptive statistics, probability theorems, frequency distributions and functions, binomial and normal probability distributions and functions, probability density functions, hypothesis testing, statistical inference, Chi-square analysis, linear regression and correlation.

Prerequisite: MTH 131

PSY 152 Social Psychology (3 CR/W) (SAME AS SOC 152)

Theoretical synthesis of social influences, including attitude formation, social and cognitive development, aggression, prosocial behavior, prejudice, conformity, culture and gender differences, influences, group processes and inter personal attraction. **Prerequisite: PSY 140 or SOC 231**

PSY 161 Introduction to Counseling (3 CR)

Learn basic counseling microskills against a backdrop of comparative theories and systems of counseling. Ethical, legal, and practical issues included. **Prerequisite: PSY 140**

PSY 222 Applied Behavior Analysis (3 CR)

Methods and techniques for changing behaviors based on learning principles. Includes modeling, simulation, role playing, operant, aversion, fear reduction and self-management methods. **Prerequisite: PSY 140**

PSY 245 Infancy and Childhood (3 CR)

Physical, mental, emotional, and social development of the human individual from conception through childhood. Genetic, prenatal, and postnatal influences on development are examined. Cognitive and social learning theories are used to integrate research findings. **Prerequisite: PSY 140**

PSY 251 Abnormal Psychology (3 CR/E/W)

Survey of those behaviors that do not fit the norm of society, including causal factors, specific disorders & treatment methods. **Prerequisite:** PSY 140

PSY 252 Developmental Psychology (3 CR/E/W)

Principles and theories of human development from conception through adulthood, with applications to foster optimal development. Cognitive, behavioral and social learning theories are used to integrate research findings.

Prerequisite: PSY 140 or NUR 101

PSY 256 Educational Psychology (3 CR)

Application of psychological theories to the teaching-learning process. Principles of cognitive and social development discussed along with discipline, motivation, and assessment and evaluation.

PSY 290 Human Sexuality (3 CR)

Physiological, psychological, and sociocultural influences on human sexuality, including gender, sexual maturation and behavior, identity, values, orientation, relationships, sexually transmitted diseases, sexual disorders, and therapy.

Prerequisite: PSY 140

RADIOGRAPHY (RAD)**RAD 120 Radiologic Orientation (2 CR)**

The fields of radiologic technology are presented in this course. Hospital and medical clinical personnel, departments, history, hierarchy, development, means and methods of operation are studied with emphasis on the moral, legal and professional rights and responsibilities of the radiographer. Basic radiation protection is presented.

RAD 121 Radiographic Positioning I (4 CR)

A study of proper methods and types of equipment used in positioning for radiographic examinations, interpretation of radiologic request, related positioning terminology, and special positioning variations due to patient age and condition. Anatomy and positioning for the upper and lower extremities, chest, thoracic cage and abdomen are presented. Lab experience is utilized to emphasize course material. Methods of radiation protection are demonstrated. Lab included.

RAD 125 Radiographic Positioning II (4 CR)

Continuation for RAD 121, Radiographic Positioning I. Anatomy and positioning for the skull with related anatomical regions and parts, digestive, urinary, respiratory and spinal column are presented. Lab experiences are used to emphasize course material. Methods of radiation protection are demonstrated and emphasized. Lab included.

Prerequisite: RAD 121

RAD 126 Clinical Practicum I (3 CR)

Clinical experience is provided in this course under the direct supervision of ARRT-registered radiographers. Clinical competencies will be given corresponding to the exams completed in the classroom. Performance standards are used to evaluate the student's progress. **Prerequisite:** RAD 121

RAD 160 Fundamentals of Radiologic Science (4 CR)

Emphasis is on the application of fundamentals to the practice of diagnostic imaging. The course relates the principles of electricity, magnetism, electromagnetic energy, x-ray interaction with matter, radiation protection and the x-ray machine. Emphasis is on the understanding of these principles so as to manipulate a variety of factors to obtain a diagnostic radiograph. A lab experience is utilized to reinforce course content. Lab included. **Prerequisite:** RAD 126

RAD 161 Radiographic Exposure (4 CR)

The essential factors influencing the quality of radiographs will be presented. Exposure factors, accessory devices, various pathological influences, geometric influences, and recording media are presented. Energized laboratory experience will be performed to teach and reinforce learning. Radiation protection methods are studied. Lab included.

RAD 162 Clinical Practicum II (3 CR)

Continuation of Clinical Practicum I. **Prerequisite:** RAD 126

RAD 210 Clinical Practicum III (5 CR)

Continuation of Clinical Practicum II. **Prerequisite:** RAD 162

RAD 212 Special RAD Studies (4 CR)

A more detailed study of special radiographic procedures performed in the radiology department. The course will investigate myelograms, arthrography, sialography, venography, arteriography and intervention procedures, as well as other specialized imaging modalities. **Prerequisite:** RAD 160

RAD 213 Radiobiology (2 CR)

Students review the basics of cell biology and study the basic biologic interaction of radiation. That study will include cellular and tissue response to radiation, as well as radiation pathology, the total body radiation response, and the late effects of radiation. It will conclude with a discussion of clinical radiobiology that includes diagnostic radiology, nuclear medicine and therapeutic radiology. **Prerequisite:** BIO 155

RAD 214 Clinical Practicum IV (5 CR)

Continuation of Clinical Practicum III. **Prerequisite:** RAD 210

RAD 218 Radiographic Pathology (3 CR)

A survey of medical-surgical diseases and the body's natural means of reacting to such diseases. The immune process, inflammatory response process, traumatic and pathologic disturbances, and the natural homeostasis process are presented. Basic congenital abnormalities and normal growth are discussed. Pathologic conditions are related to the effect they have on the imaging process. **Prerequisite:** BIO 155

RAD 219 Clinical Practicum V (5 CR)

Continuation of Clinical Practicum IV. **Prerequisite:** RAD 214

SECRETARIAL SCIENCE (SEC)**SEC 108 Learning the Keyboard (1 CR/F)**

Learn keyboard fundamentals needed for success in computer-related programs. The students learn proper finger placement and key locations on a microcomputer.

SEC 109 Keyboard Speed/Accuracy (1 CR/F)

At course entry, your keyboarding speed and accuracy is measured. A diagnosis of your specific keyboarding problems is made. Your skill improvement goals will be established and appropriate practice lesson selected. Periodic program check timings administered to measure your progress. Work is normally done on a microcomputer.

SEC 131 Beginning Keyboard/Typing (3 CR/F)

Students are introduced to the keyboard and centering, tabulation, memoranda and letters and develop skill and speed. Students learn on microcomputer using word processing software.

SEC 132 Intermediate Keyboard/Typing (3 CR/F)

Learn production typing including tables, letters, manuscripts, reports, and business forms. Students learn on microcomputer using word processing software. Advanced word processing functions are included. **Prerequisite:** SEC 131

SEC 206 Machine Transcription & Editing (3 CR/F)

Transcribing business correspondence from machine recorded dictation. Emphasis is on correct English usage, spelling, punctuation and editing as well as proper form and typewriting techniques. **Prerequisite:** SEC 132

SEC 230 Machine Transcription for the Medical Assistant (2 CR/F)

Develop basic proficiency in transcribing medical correspondence from machine dictation. Emphasizes correct English usage, medical terminology, spelling, punctuation, proper form, and typewriting techniques.

Prerequisite: MOA 110, MOA 141, and ITE 101

SEC 231 Legal Secretarial Practice (3 CR)

Learn to prepare legal documents such as wills, trusts, contracts, corporate articles and bylaws, deeds, and memoranda of law. Prepare and use the forms for probate and bankruptcy, and type legal correspondence. Functions of notaries, record management, and law library responsibilities discussed. Dictation and transcription by shorthand or machine. Emphasizes vocabulary, accuracy, and understanding of documents and procedures. **Prerequisite:** Three of the following: MOA 110, ENG 131 or ENG 231, ITE 101 or ITE 186

SEC 235 Advanced Medical Machine Transcription (3 CR/F)

Cover the following topics: ophthalmology, orthopedics, neurology, mental health and patient case histories. A continuation of SEC 230. **Prerequisite:** SEC 230

SEC 241 Medical Office Procedures (3 CR/W)

Learn the basic concepts of medical office work. Includes coverage of the responsibilities of medical office personnel, including patient contact, maintaining medical records, peg-board accounting and medical office management. **Prerequisite:** Three of the following: MOA 110, ENG 232, ITE 177

SEC 242 Legal Secretarial Procedures (3 CR)

Students introduced to the record management, diary, library, notary and other functions of legal support personnel, and to legal ethics. Prepare correspondence, legal documents, pleadings and other court papers from draft, machine dictation and formbook sources. Accuracy, understanding document content and use, and legal vocabulary emphasized. **Prerequisite:** BUS 145 and ITE 129

SOCIOLOGY (SOC)**SOC 117 Criminology (3 CR/E/W)**

(SAME AS CRJ 117)

Provides an understanding of the cultural nature, origin, and development of criminal behavior with attention given to the psychological and sociological factors involved.

SOC 152 Social Psychology (3 CR/W)

(SAME AS PSY 152)

Theoretical synthesis of social influences, including attitude formation, social and cognitive development, aggression, prosocial behavior, prejudice, conformity, culture and gender differences/influences, group processes, and inter personal attraction. **Prerequisite:** PSY 140 and SOC 231

SOC 203 Field Studies (3 CR)*(SAME AS CRJ 203)*

Only open to students who have reached sophomore level (26 or more credit hours), a minimum 2.5 GPA and permission of the department. An opportunity for students to work for one semester in a law enforcement agency.

SOC 231 Principles of Sociology (3 CR/F,W,S)

The discipline and its contributions to understanding the fundamental processes of social interaction. Includes development of self, socialization process, groups and social structure. Application of sociological principles to our society by examination of relevant research.

SOC 235 Minority Groups in America (3 CR)

Sociology of dominant-minority relations in contemporary American society. Attention to specific ethnic, religious, and racial minorities in terms of prejudice and discrimination.

SOC 236 Women in a Changing Society (3 CR/W)*(SAME AS ENG 236)*

Inquiry into historical and changing roles of women, looking at causes of these changes and their effects on women and society through literature, sociology, biology and history.

Prerequisite: ENG 131**SOC 243 Family Relationships (3 CR)**

The family as a unit in a social context. Structure, function, roles, and relationships of the family are examined. Special emphasis on family formation and problems in development of family life.

SOC 251 Modern Social Problems (3 CR)

Survey of contemporary social problems that perplex people in regard to their personal, social, occupational, economic, or political relations. Systematic investigation of underlying conditions, processes and consequences of problematic behavior. **Prerequisite:** SOC 231

SPEECH (SPH)**SPH 101 Forensic Intercollegiate (1 CR)**

Participate in intercollegiate debate and forensic tournaments. Earn one credit hour per semester, not to exceed four credit hours. Admission to activity does not ensure credit.

SPH 102 Forensic Intercollegiate (1 CR)

Participate in intercollegiate debate and forensic tournaments. Earn one credit hour per semester, not to exceed four credit hours. Admission to activity does not ensure credit.

SPH 200 Speech Writing (1 CR)

Learn to write persuasive, informative, and after dinner speeches. Concentrates on content, organization and technique.

SPH 201 Forensic Intercollegiate (1 CR)

Participate in intercollegiate debate and forensic tournaments. Earn one credit hour per semester, not to exceed four credit hours. Admission to activity does not ensure credit.

SPH 202 Forensic Intercollegiate (1 CR)

Participate in intercollegiate debate and forensic tournaments. Earn one credit hour per semester, not to exceed four credit hours. Admission to activity does not ensure credit.

SPH 231 Communication Fundamentals (3 CR/F,W,S)

Learn the basic principles of speaking well, including interpersonal speech, non-verbal communication, discussion and small group dynamics, and public address. Student speeches are analyzed and criticized for effectiveness.

SPH 233 Argumentation & Debate (3 CR)

Students are provided theory and practice in debate, emphasizing principles of research, logical reasoning, and oral presentation of reasoned discourse in group situations.

SPH 234 Public Address (3 CR)

Explore the role of the speaker, audience, occasion, and the message. Offers opportunities for participation in all general purposes of speech plus some special occasion speeches. Delivery methods are impromptu, extemporaneous, manuscript, and memorized. Outlining, organization, delivery technique and other theories of public address stressed.

SPH 240 Interpersonal Communication (3 CR)

Learn to improve communication in a one-on-one basis and in small group situations. Emphasizes concepts and techniques with people in a variety of human relations situations. Includes units on perspective of interpersonal communication, self-disclosure, creating messages, coping with conflict, intimate relationships and the workplace.

SPANISH (SPN)**SPN 131 Elementary Spanish (4 CR/F, W, S)**

Introduces and develops the four skills of language learning: listening, speaking, reading and writing, with special emphasis on listening and speaking.

SPN 132 Elementary Spanish II (4 CR/W)

Provides increased practice in the basic language skills, listening, speaking, reading and writing. **Prerequisite:** SPN 131

SPN 231 Intermediate Spanish I (4 CR/F)

Improves the basic skills of language learning with emphasis on speaking and writing. Introduces sustained readings in Spanish. **Prerequisite:** SPN 132

SPN 232 Intermediate Spanish II (4 CR/W)

Continues to stress speaking practice and writing improvement. Readings and discussions in Spanish, focusing on contemporary events and Hispanic culture.

Prerequisite: SPN 231

THEATRE (THR)**THR 101 Acting (3 CR)**

Basic technique of acting. For non-majors only.

THR 116 Introduction to Theatre (3 CR/F/W)

Survey of Western theatre and drama. Appreciation of theatre through understanding of historical development and societal function. Theatre architecture, production, costuming, and acting styles, as well as important dramatists and reading of representative plays.

THR 131 Basic Stagecraft (3 CR)

Basic theory in set design and lighting design including tools, equipment, terminology, and techniques relevant to stage scenery and theatrical lighting.

THR 134 Stagecraft II (3 CR)

Continuation of Stagecraft I focusing on further developing techniques of stage scenery construction, rigging, scene painting and technical drafting. Process and methods of communicating design ideas through graphic representation are presented.

Prerequisite: THR 131

THR 145 Fundamentals of Acting I (4 CR/F)

Fundamental theories and methodologies of acting and character development, using theatre games, improvisations and scene work with an emphasis on developing an ensemble.

THR 146 Fundamentals of Acting II (4 CR/W)

Continuation of THR 145, with advanced character work and an opportunity to rehearse and perform with the touring Youth Theatre production. **Prerequisite:** THR 145

THR 148 Fundamentals of Acting III (4 CR)

Advanced acting studies with an opportunity to direct and perform one-act plays in the Theatreworks production.

Prerequisite: THR 145 or THR 146

THR 149 Fundamentals of Acting IV (4 CR)

Acting IV students are showcased in a full-length play chosen with the instructor in a three night performance in Studio One.

Prerequisite: THR 148

THR 151 Stage Makeup (3 CR)

Fundamental techniques of design and application of makeup for theatrical production.

THR 231 Lighting & Sound Design I (3 CR)

Covers the theoretical and practical aspects of lighting and sound design for theatre and dance. Emphasis placed on practical execution of design and problem solving.

THR 232 Lighting & Sound Design II (3 CR)

Continuation of THR 231. An advanced study of lighting and sound theory, and production, with emphasis on design.

Prerequisite: THR 231

THR 251 Stage Makeup II (3 CR)

Advanced techniques of make-up for the stage including design and construction of masks. **Prerequisite:** THR 151

THR 260 Introduction to Directing (3 CR)

Fundamentals of play directing. Exploration of text analysis, staging techniques and rehearsal processes. Student-directed scenes analyzed and critiqued.

THR 268 Theatre Practicum (3 CR)

Practicum for actors, directors, technicians, and playwrights. Students are assigned duties to gain practical experience within their field. May be taken for a total of nine credits.

SPECIAL OPTIONS

Each discipline offers the following options. Contact the specific faculty for more information.

- **INDEPENDENT STUDY – VARIABLE CREDIT**

In-depth study of topics in any discipline that is of special interest to the student. Topic is selected and detailed in consultation with a faculty member.

- **SPECIAL TOPICS – VARIABLE CREDIT**

Intensive, in-depth investigation of one topic of current interest in any discipline. Different topics are chosen by the department.

- **WORK EXPERIENCE - INTERNSHIPS - SEMINARS
VARIABLE CREDIT**

Learn through meaningful work experience with an approved company in any discipline. The position must be obtained by the student and approved by the department before registration is permitted. Students apply the skills and knowledge gained from course work. A department faculty member supervises.